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"Information is Cheap, but Meaning is Expensive": Building Analytical Skill into Legal Research Instruction

Yasmin Sokkar Harker

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Law students and new attorneys must have well-developed analytical skills in order to find information that is pertinent to their legal problems and to become competent legal researchers in today's information-rich environment. Law librarians and legal research instructors can help develop students' analytical skills by asking them to participate in activities that encourage metacognition about processes that are critical to information seeking.

Introduction

¶1 In an interview about computing and human progress, science historian George Dyson explained, "Information is cheap, but meaning is expensive. Where is the meaning? Only human beings can tell you where it is."[1] Today's lawyer works in a world flooded with so much information that it is easy to get lost. It is the lawyer's job to find information that is pertinent to the legal problems presented and ultimately to create something meaningful from that information.

¶2 In this information-rich environment, though, new attorneys often do not have the skills necessary to be competent legal researchers. Judges, attorneys, and law firm librarians all report dissatisfaction with the quality and efficiency of law student and new associate research.[2] An important skill often lacking is the ability to find information that is relevant to the legal problem, particularly if the information is abstract or conceptual in nature. Students and new attorneys also have difficulty when they are required to use analogies to link the information to the legal issue.

¶3 This problem is exacerbated by the ascendance of computer-assisted legal research (CALR) systems, such as WestlawNext and Lexis Advance, which are based predominantly on "Google-like" keyword searching. Without the underlying organizational structure that is intrinsic to print-based legal publishing, new researchers are easily distracted by the superficialities of legal information, such as fact similarities and literal definitions, and thus fail to discover legal rules and concepts.[3] CALR, Google, and the explosion of online information have also created an environment in which information literacy is critical. The speed and ease with which Internet content is created makes the ability to evaluate the information's credibility and reliability even more crucial,[4] and this ability can only be developed if one has strong analytical skills.

¶4 This article suggests approaches to supporting analytical skill development in legal research instruction. It urges instructors to use class activities that require students to reflect on their decision-making processes and to use metacognition to facilitate the recognition of concepts, analogies, and the process of legal research, an approach informed by the fields of cognitive and educational psychology. It discusses research on learning and metacognition, as well as Bloom's taxonomy of learning domains and Paul Callister's modification of that taxonomy for legal research. The first section looks at the literature on law student and new attorney

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1. George Dyson, *"Information Is Cheap, Meaning Is Expensive,"* EUROPEAN (Oct. 17, 2011), http://theeuropean-magazine.com/352-dyson-george/353-evolution-and-innovation (interview with George Dyson).

2. *See, e.g.*, THOMSON/WEST, RESEARCH SKILLS FOR LAWYERS AND LAW STUDENTS 3 (2007), *available at* http://west.thomson.com/pdf/librarian/Legal_Research_white_paper.pdf; Sanford N. Greenberg, *Legal Research Training: Preparing Students for a Rapidly Changing Research Environment*, 13 LEGAL WRITING: J. LEGAL WRITING INST. 241, 242 (2007). *See also* Carol R. Young & Barbara Blanco, *What Students Don't Know* Will *Hurt Them: A Frank View from the Field on How to Better Prepare Our Clinic and Externship Students*, 14 CLINICAL L. REV. 105 (2007).

3. *See* Barbara Bintliff, *Context and Legal Research*, 99 LAW LIBR. J. 249, 2007 LAW LIBR. J. 15; Sarah Valentine, *Legal Research as a Fundamental Skill: A Lifeboat for Students and Law Schools*, 39 U. BALT. L. REV. 173, 195–96 (2010).

4. *See* Valentine, *supra* note 3, at 220–21.

legal research skills and the impact of CALR on research skills and then presents the context for building analytical skill into a research class for law students. The next section considers what "thinking like a lawyer" means for legal research, and the difference between a lawyer's and a librarian's approach to information, arguing that analytical skills for legal research should be taught in a separate legal research class. Finally, it presents theories of learning from cognitive and educational psychology and ideas for practical implementation of these theories.

Legal Research Is a Critical Skill Law Students and New Attorneys Lack

Legal Research as a Critical Skill

¶5 Legal research is the foundation for almost everything done by attorneys. No matter the field of specialization, and whether in the role of adviser or advocate, lawyers must learn the appropriate law and apply it to specific circumstances. Indeed, a report by the American Bar Association (ABA) Task Force on Law Schools and the Profession (the MacCrate Report) identified legal research as one of the "fundamental lawyering skills" that are "essential for competent representation."[5] Although the more recent Carnegie Report did not identify specific skills critical to lawyering, it did list "practical skill" as one of the three pillars that provide structure to legal education.[6]

¶6 Given the central role legal research plays in a lawyer's work, it is no surprise that legal research constitutes a major portion of an average new attorney's workday. According to a 2007 Thomson/West–sponsored study, a new associate at a law firm will spend forty-five percent of the workday conducting legal research.[7] Moreover, because the doctrine of *stare decisis* is such a central feature of the American legal system, everything a lawyer does, from writing a motion to conducting discovery, must be firmly rooted in sound legal research. Not only do lawyers spend a significant amount of time researching, professional responsibility also demands that they do so competently. Lawyers failing to perform adequate legal research are subject to discipline,[8] sanctions,[9] and lawsuits.[10]

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5. Am. Bar Ass'n, Section of Legal Educ. & Admissions to the Bar, Legal Education and Professional Development—An Educational Continuum: Report of the Task Force on Law Schools and the Profession: Narrowing the Gap 135 (1992).

6. *See* William M. Sullivan et al., Educating Lawyers: Preparation for the Profession of Law 14 (2007).

7. Thomson/West, *supra* note 2, at 2.

8. Deborah K. Hackerson, *Access to Justice Starts in the Library: The Importance of Competent Research Skills and Free/Low-Cost Research Resources*, 62 Me. L. Rev. 473, 477 (2010) (discussing legal research as a necessary component of competent representation).

9. Marguerite L. Butler, *Rule 11—Sanctions and a Lawyer's Failure to Conduct Competent Legal Research*, 29 Cap. U. L. Rev. 681, 687–97 (2002) (discussing the evolution and variety of Rule 11 sanctions for inadequate research).

10. Ellie Margolis, *Surfin' Safari—Why Competent Lawyers Should Research on the Web*, 10 Yale J.L. & Tech. 82, 102–06 (2007–2008) (examining cases in which lawyers have been sued for malpractice due to inadequate research).

Law Students and New Attorneys Often Lack Legal Research Skills

¶7 For decades, law librarians and legal research educators have grappled with the question of how to improve the research skills of law students and send new attorneys into the field ready to practice. Much thought and dozens of approaches to teaching legal research have been tried, but the feedback law schools are receiving from the field is grim: new lawyers lack legal research skills.

¶8 A brief review of the literature from the past few decades supports the conclusion that legal employers are dissatisfied with the legal research skills of law students and incoming associates. They are perceived as unable to identify the applicable sources of law and unable to create efficient or cost-effective legal research strategies.[11] Librarians complain that law students are ignorant of legal research tools[12] and print-based resources.[13] Moreover, they have trouble applying "concepts and analogies" to their legal research and are unable to understand the context of their search results.[14] In a 2005 survey asking externship field supervisors to choose five skills that students were most lacking, "quality of research" and "efficiency of research" were among the top choices, with "quality of research" chosen by thirty-five percent of respondents and "efficiency of research" chosen by thirty-two percent.[15]

¶9 This lack of legal research skills is costly, both in terms of attorney time and in terms of commercial database charges. An unskilled researcher can spend hours searching online in expensive databases—there are anecdotes in the law librarian community about new associates who have "accidentally" spent thousands of dollars in one Westlaw or LexisNexis session, and a 2007 study found that law firms write off a significant portion of new associate research billings.[16] Given the current economic climate, clients are increasingly wary of the costs associated with legal research. A recent survey of cost recovery in law firms reveals that legal research is one of the top two expenses for which clients are "pushing back" or refusing to pay.[17] And in the public interest and social justice contexts, minimizing the costs of legal research is essential.[18]

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11. *See* Thomson/West, *supra* note 2, at 4; Joan S. Howland & Nancy J. Lewis, *The Effectiveness of Law School Legal Research Training Programs*, 40 J. Legal Educ. 381, 383–88 (1990).

12. Patrick Meyer, *Law School Legal Research Requirements for New Attorneys*, 101 Law Libr. J. 297, 300, 2009 Law Libr. J. 17, ¶ 6.

13. *See* Greenberg, *supra* note 2, at 242.

14. *See* Thomson/West, *supra* note 2, at 2; Scott P. Stolley, *Shortcomings of Technology: The Corruption of Legal Research*, For the Def., Apr. 2004, at 39, 40.

15. Young & Blanco, *supra* note 2, at 117. According to the Young and Blanco survey, the eight skills most lacking in student externs were attention to detail (chosen by 56%); quality of argument and analysis (53%); poise and confidence (41%); initiative and self-reliance (38%); quality of research (35%); efficiency of research (32%); following basic rules of grammar, construction, and format (26%); and knowledge of available research resources (21%). *Id.* at 116–17.

16. Thomson/West, *supra* note 2, at 2.

17. Robert C. Mattern, *Soft Cost Recovery: Was the 2010 Model the Beginning of the End?*, Legal Mgmt., Mar./Apr. 2011, at 56, 60.

18. Hackerson, *supra* note 8, at 474–75.

CALR Exacerbates Legal Research Inadequacies

¶10 Searching LexisNexis, Westlaw, and, increasingly, Google, has become the dominant method for conducting legal research. The 2012 Legal Technology Survey Report from the ABA reported that 58.9% of lawyers regularly used free online services for research, and 58.4% regularly used fee-based online services for research.[19] When asked whether or not they conducted legal research online, 95.9% of lawyers said that they did,[20] and 82.2% said they conducted legal research using fee-based services.[21]

¶11 Along with the improved access and speed promised by online legal research, both fee-based and free, there are also major drawbacks. Chief Justice John Roberts articulated one problem in a speech at Drake University Law School:

> [B]lind reliance on research that focuses merely on words, and not on concepts, poses the same hazards that lawyers encountered in the late nineteenth century. Lawyers run the risk that word searches will uncover reams of marginally relevant precedent superficially on point, thereby distracting them from engaging in critical analysis or structuring of the underlying legal principles.[22]

In that speech, Chief Justice Roberts noted a problematic consequence of the paradigm shift from print-based to online legal research. In print-based research, there are formatting and organizational cues that indicate the structure of the content. For example, a treatise section is located within the organizational structure set forth by the treatise table of contents. Just by flipping through the pages to find the section, the researcher receives information about where that topic fits in a conceptual hierarchy. In online research, especially when using keyword searching, those cues are removed, leaving the researcher to sort out the structure by herself.[23]

¶12 Since the early 1980s, when commercial legal databases began to be used in law offices and law schools, several articles have been published evaluating the impact of this paradigm shift on legal research. In 1986, Daniel Dabney evaluated full-text CALR systems and found that "[t]hey do not provide comprehensive (or even adequate) retrieval of documents by subject."[24] In the same year, Bob Berring expanded on that idea, positing that full-text searching created a new paradigm in the legal literature by removing an underlying legal structure that had been inherent in print research. He found that in the "old paradigm," the "location of issues and cases . . . was part of their meaning," but in the new paradigm, "[f]ree-text searching . . . . deprives the researcher of context."[25]

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19. Am. Bar Ass'n, 2012 Legal Technology Survey Report, at V-25 (2012).

20. *Id.* at V-34.

21. *Id.* at V-40.

22. *Remarks of the Honorable John G. Roberts, Jr., Chief Justice, Supreme Court of the United States*, 57 Drake L. Rev. 1, 9 (2008).

23. *See id.* at 9.

24. Daniel P. Dabney, *The Curse of Thamus: An Analysis of Full-Text Document Retrieval*, 78 Law Libr. J. 5, 35 (1986).

25. Robert C. Berring, *Full-Text Databases and Legal Research: Backing into the Future*, 1 High Tech. L.J. 27, 54 (1986).

¶13 Despite improvements to commercial database search algorithms, scholars have continued to note the limitations of CALR. In 1996, Barbara Bintliff found that in CALR, "[t]here is no overriding organization of concepts and rules."[26] And in 1998, Molly Warner Lien observed that full-text searching results in research that lacks analysis of "the wisdom, correctness and applicability of legal arguments."[27] In her 2007 article *Context and Legal Research*, Bintliff described how electronic searching has created "shifting context" for legal problems that is removed from an overarching framework.[28] Attempts to electronically reproduce the underlying structure of print-based research, such as KeySearch in Westlaw, have been only marginally successful.[29] Despite the limitations of CALR, students tend to be overly confident in their electronic searches. A study conducted by Lee Peoples revealed that law students have more confidence in the results of an electronic search than in the results of a digest search, even though they answered more questions correctly when using the digest.[30]

¶14 More recently, Sarah Valentine has written at length about the impact CALR has on legal research. Specifically, she described how the link between legal analysis and legal research, which had been inherent in print-based research, has been severed by CALR. The absence of this link impedes students' ability to see the broad legal principles that apply to their legal issues, thus threatening their ability to become good researchers. Valentine called for legal educators to address this problem, stating: "The disjunction caused by the shift in legal paradigms must be addressed in the first year of law school and it must be addressed in legal research."[31]

¶15 While the majority of articles have criticized the effects of CALR on research skills, there are some who argue that the problem is not as dire as it is widely pronounced to be. For example, in a 2009 article, Judith Lihosit found that despite the absence of an underlying legal structure in full-text search results, attorneys are receiving that structure through on-the-job training and guidance from more experienced attorneys.[32]

¶16 The impact of the next, more "Google-like," generation of legal research systems (such as WestlawNext and Lexis Advance) on legal research has not yet been fully explored. However, because the lack of discrete databases in those systems dispenses with even more of the underlying legal structure, they may move researchers even further away from context. Ronald Wheeler has noted that because WestlawNext does not require the researcher to choose a database before searching, much of the analysis that used to be done *before* executing a search will

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26. Barbara Bintliff, *From Creativity to Computerese: Thinking Like a Lawyer in the Computer Age*, 88 Law Libr. J. 338, 346 (1996).

27. Molly Warner Lien, Essay, *Technocentrism and the Soul of the Common Law Lawyer*, 48 Am. U. L. Rev. 85, 89 (1998).

28. Bintliff, *supra* note 3, at 262, ¶ 48.

29. *See* Lee F. Peoples, *The Death of the Digest and the Pitfalls of Electronic Research: What Is the Modern Legal Researcher to Do?*, 97 Law Libr. J. 661, 665–66, 2005 Law Libr. J. 41, ¶¶ 12–14.

30. *Id.* at 676, ¶ 38.

31. Valentine, *supra* note 3, at 197.

32. Judith Lihosit, *Research in the Wild: CALR and the Role of Informal Apprenticeship in Attorney Training*, 101 Law Libr. J. 157, 175, 2009 Law Libr. J. 2, ¶¶ 48–50.

no longer be necessary to retrieve results. Thus, it is up to the researcher to apply analysis to the search results:

> With WestlawNext, researchers do not have to think about their legal questions and ponder whether they are likely to be controlled by statute, common law, or regulation. Without having to ponder those questions, researchers don't develop a sense of which types of documents are best to consider, given their unique facts and circumstances.[33]

¶17 CALR is now the dominant legal research method, and this is unlikely to change. The underlying legal structure and formatting once so influential in print-based legal research are gone, so legal research educators must teach the lawyers of the future to use their own analysis in its place. Many scholars have offered excellent suggestions to effect the changes and improvements within the legal research classroom and curriculum that will be necessary to accomplish this goal. These include creating new textbooks for the new legal research paradigm,[34] incorporating legal research throughout the curriculum,[35] using collaborative learning tools,[36] using problem-based or resource-based approaches,[37] and teaching students to begin with secondary sources.[38]

¶18 One crucial area for improvement is analytical skill development. Because researchers are no longer guided by structure or context, they must rely on their own analytical skills to connect legal problems to the information they find. This will be even more imperative in the future, and "[t]eachers of legal research will need to focus much more on examining and evaluating sources when using WestlawNext."[39] Legal research educators must help students develop strong analytical skills to cope in a digital environment.

Information Literacy

¶19 The huge amount and variety of information on the Internet has made information literacy critical to legal research. Lawyers must be able to assess the credibility and reliability of information in order to use it wisely and ethically. Despite the fact that most incoming law students have spent years using the Internet, the research shows that they are not information literate.[40] They tend to overestimate their research skills[41] and equate being able to access information with

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33. Ronald E. Wheeler, *Does WestlawNext Really Change Everything? The Implications of WestlawNext on Legal Research*, 103 Law Libr. J. 359, 374, 2011 Law Libr. J. 23, ¶ 47.

34. Bintliff, *supra* note 3, at 263–66, ¶¶ 52–63.

35. *See, e.g.*, Aliza B. Kaplan & Kathleen Darvil, *Think [and Practice] like a Lawyer: Legal Research for the New Millennials*, 8 Legal Comm. & Rhetoric: JALWD 153, 181–84 (2011).

36. *See, e.g.*, *id.* at 180–81.

37. *See, e.g.*, Margaret Butler, *Resource-Based Learning and Course Design: A Brief Theoretical Overview and Practical Suggestions*, 104 Law Libr. J. 219, 2012 Law Libr. J. 19.

38. *See, e.g.*, Elizabeth McKenzie & Susan Vaughn, *PCs and CALR: Changing the Way Lawyers Think* 7 (Suffolk Univ. Law Sch. Faculty Publ'ns, Paper No. 34, 2007), *available at* http://lsr.nellco.org/suffolk_fp/34.

39. Wheeler, *supra* note 33, at 374, ¶ 45.

40. *See* Ian Gallacher, *"Who Are Those Guys?": The Results of a Survey Studying the Information Literacy of Incoming Law Students*, 44 Cal. W. L. Rev. 151 (2007).

41. *Id.* at 189–92.

being able to master it.[42] Legal research instructors must address information literacy, and this means the development of analytical skills must be prioritized.

The Context for Teaching Legal Research Skills

Thinking like a Lawyer

¶20 The predominance of Westlaw, LexisNexis, and Google and the sheer amount of information available to modern researchers underscore the need for lawyers to find meaning in a world of information. But the ability to find meaning can only exist where there are strong analytical skills. What does analytical skill mean for legal research?

¶21 In her article, *From Creativity to Computerese: Thinking Like a Lawyer in the Computer Age*, Bintliff urged researchers to think like lawyers and defined "thinking like a lawyer" in the legal research context in part as "finding, analyzing and applying 'the law.'"[43] In discussing the shortcomings of new lawyers, Scott Stolley identified a major problem as their inability to work with "concepts and analogies," stating:

> In their computer dependence, our new law graduates have difficulty with concepts and analogies. Unfortunately, they are often tied to the literalness of computer-produced research. . . . I have had other computer-dependent associates tell me that they can't find a case that says something I know is out there.[44]

And in a discussion of legal research and user interface design, Julie Jones noted that in an information-rich environment, the "efficient allocation of attention to the right information" is key.[45] Researchers must be able to sort through an abundance of information and make decisions about which pieces of information merit attention.

¶22 Valentine urged legal research educators to teach legal research "as an iterative process of problem solving."[46] In order to do so, legal research teachers must make sure students are able to move through "a process of creating a research plan, researching, reflecting on what has been found, applying it to both the issue at hand and to the original research plan, and repeating the process as needed until applicable legal context and specific rules and procedures are distilled"[47] and must require of the students "analysis, synthesis, and application of information to the facts and issues at hand."[48]

¶23 A review of cases in which lawyers failed to conduct competent legal research gives insight into what "analytical skill" means for legal research. Marguerite Butler examined Rule 11 cases in which lawyers were sanctioned for

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42. Lien, *supra* note 27, at 118.
43. Bintliff, *supra* note 26, at 339.
44. Stolley, *supra* note 14, at 40.
45. Julie M. Jones, *Not Just Key Numbers and Keywords Anymore: How User Interface Design Affects Legal Research*, 101 Law Libr. J. 7, 10, 2009 Law Libr. J. 1, ¶ 5.
46. Valentine, *supra* note 3, at 218.
47. *Id.* at 219.
48. *Id.* at 220.

failure to conduct adequate legal research.[49] She found that lawyers fail to conduct competent legal research in two significant ways: by failing to find the law that applies to the facts of the case, or by failing in their "evaluation and selection" of the law.[50] These errors result in misapplications and misstatements of the law. For example, in one case a lawyer was sanctioned for arguing that "rhetorical hyperbole" in a defamation case was not protected by the First Amendment. However, the court found several Supreme Court decisions affirming First Amendment protections for rhetorical hyperbole.[51]

¶24 Failure to conduct competent legal research also leads to an ignorance of procedural rules, such as exhaustion of administrative remedies or statutes of limitation. In a case Butler cites, a federal court found that if the lawyer had conducted competent research, he would have found a line of cases that showed his due process claim to be "fundamentally flawed" and would not have filed the claim in federal court.[52] From this examination of cases we can infer that some lawyers are missing critical legal research skills including the ability to find authority by concept, the ability to critically evaluate authorities, and the ability to use analogies to link research results with case facts.

Lawyers and Librarians

¶25 Law librarians are called upon to engage with and evaluate legal information in a number of different ways, but these are not always the same ways in which lawyers are expected to engage with legal information.[53] At the reference desk, librarians are asked to recommend sources, but they are not necessarily expected to use or apply the results of those recommendations. For collection development, librarians are required to examine and evaluate research sources but are not required to use the information found within those research sources. A workweek for a reference librarian might include suggesting a database, compiling a list of cases on a certain topic, teaching a student how to Shepardize a case, explaining the difference between the *Federal Register* and the *Code of Federal Regulations*, helping a patron find a sample complaint, and deciding to purchase one treatise over another. Librarians are rarely asked to write a brief or argue before a judge. Thus, librarians place great value on the ability to evaluate "sources of legal information," perhaps even more than on the ability to evaluate the legal information itself.

¶26 The great majority of the law students we teach, though, will become practicing attorneys. They will use the information they find to provide support for briefs, advise clients, and formulate litigation strategies. For them, the goal of legal research will be

> to educate [themselves] about the potential legal theories and solutions applicable to a client's factual situation, determine likely legal and nonlegal outcomes, and use the accumulated information to strategize how best to influence courts, mediators, opposing counsel, and other players in the legal system.[54]

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49. Butler, *supra* note 9.
50. *Id.* at 714–15.
51. *Id.* at 696.
52. *Id.* at 712.
53. *See* David L. Armond & Shawn G. Nevers, *The Practitioner's Council: Connecting Legal Research Instruction and Current Legal Research Practice*, 103 Law Libr. J. 575, 576–77, 2011 Law Libr. J. 36, ¶¶ 6–9.
54. Valentine, *supra* note 3, at 218–19.

¶27 Practicing attorneys will not be as involved in deciding which databases or treatises will be purchased; they will not need to evaluate *sources* of legal information in the same way and to the same extent as librarians. Instead, they will need to engage directly with the information they find. This requires them to look at the information on the screen or the page, pay attention to some of the information, ignore some of the information, and ultimately select key pieces of information for later use. The best selections will be informed by the purpose of the research, the facts of the case, the jurisdiction of the case, and the venue in which the research will be presented.

¶28 As legal research teachers, librarians must consciously and explicitly address the difference between teaching students to evaluate sources of legal information and teaching them to analyze legal information itself. With that distinction in mind, law librarians must make an informed decision about how much emphasis should be placed on each skill and how each should be taught.

Why These Skills Must Be Taught in a Legal Research Class

¶29 The ability to analyze and synthesize; to think in concepts and analogies; to reflect on the information found; and to move through an iterative, analytical process of problem solving—these are critical analytical skills needed for legal research. But these skills are necessary in many areas of legal education—how are they different in the legal research context? What sets legal research apart?

¶30 In most law school classes, students function in a "closed universe," not an information-rich environment. They are expected to read closely a group of cases or a list of statutes and regulations that they have been given, and to analyze, dissect, critique, and apply only those materials. Even in classes that have an "open universe" component, such as legal research and writing, the focus is often on the writing, not the research. The research component is just a precursor to the writing, and students do not have the time to reflect on the choices they make during the research process. In contrast, in a legal research class, students must navigate an almost infinite amount of information and make decisions about which pieces are useful, which warrant further examination, and which should be ignored. A legal research class provides an environment in which the decisions made during the research process are the focus of the class, rather than a skill that is secondary or subordinate to a substantive topic or another lawyering skill.

Theories of Learning

¶31 Analytical skill is a concept that is difficult to describe and even more difficult to teach. Educators who want to help students build analytical skill should look to the research from education and cognitive psychology for guidance.

Metacognition

¶32 Metacognition is a powerful tool for developing complex analytical thinking:

> [Metacognition] has usually been broadly and rather loosely defined as any knowledge or cognitive activity that takes as its object, or regulates, any aspect of any cognitive enterprise. . . . It is called metacognition because its core meaning is "cognition about cognition." . . . Metacognitive territory includes both what you know about cognition and how you manage your own cognition. . . .
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>   Metacognitive skills are believed to play an important role in many types of cognitive activity that are related to problem solving. Examples are oral communication of information, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition, perception, attention, memory, logical reasoning, social cognition, and various forms of self-instruction and self-control.[55]

¶33 Educational psychologists have inquired into the question of what constitutes "good thinking" and found that it requires the possession of problem-solving strategies, as well as metacognitive knowledge about those strategies.[56] Metacognitive knowledge is critical to a person's understanding of when and where to apply particular problem-solving strategies.[57] Metacognition requires that the learner understand what "skills, strategies, and resources" are entailed in a task; it also requires that the learner know how and when to deploy these skills, strategies, and resources and be aware when they are working or not working and make adjustments in their deployment.[58]

¶34 In an experiment to examine the benefits of metacognition, researchers studied high school students learning geometry with the aid of a computer program called the Geometry Cognitive Tutor. The Geometry Cognitive Tutor required students not only to solve geometry problems, but also to explain all of the problem-solving steps correctly.[59] The program then provided feedback on both the solutions and the explanations. For one of the experiments, the researchers divided the students into two groups—one group used a version of Geometry Cognitive Tutor that required students to explain the problem-solving process, while the other used a version that did not. The students were then tested again for comprehension of geometry concepts. The researchers found "that self-explanation does not increase the *rate* at which knowledge is acquired as much as it changes the *nature* of the knowledge acquired."[60] Students who were required to explain the problem-solving process noticed gaps in their knowledge and repaired them, leading to a deeper understanding of the material. When faced with new geometry problems, they were

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55. John H. Flavell et al., Cognitive Development 164 (4th ed. 2002).
56. Michael Pressley & Christine B. McCormick, Advanced Educational Psychology for Educators, Researchers, and Policymakers 2 (1995).
57. *Id.* at 3.
58. Dale H. Schunk, Learning Theories 286 (6th ed. 2012).
59. Vincent A.W.M.M. Aleven & Kenneth R. Koedinger, *An Effective Metacognitive Strategy: Learning by Doing and Explaining with a Computer-Based Cognitive Tutor*, 26 Cognitive Sci. 147, 154 (2002).
60. *Id.* at 166.

better at transferring the knowledge they had learned to new problems, and were less likely to jump to conclusions.[61]

¶35 Metacognition is a powerful tool for improving information-seeking skills as well. Research has shown that information-seeking behavior is more successful when the researcher has strong metacognitive knowledge.[62] In an information-seeking context, metacognitive knowledge can mean knowledge of one's cognitive processes, which include "scanning, searching, questioning, chunking [organizing units of information into larger groups of information], generating hypotheses, and making decisions."[63] To determine the impact of cognitive factors on online research, researchers examined adult learners as they searched for information on specific topics. Searchers were instructed to think aloud as they moved through the search process, while investigators made audio recordings. Along with administering pre- and post-search surveys, the investigators examined these recordings and looked at the impact various factors had on the success of the search.[64] They found that searchers who had a high level of metacognitive knowledge were much more successful searchers: they were able to reflect on and refine their search processes, were active in processing and comprehending the information found, and were able to notice and remedy the gaps in their knowledge.[65] Further, searchers with strong metacognitive skills were also better oriented to the online system.[66]

¶36 Research has also found that metacognition is critical to legal reading comprehension and reasoning. For example, in a study comparing expert legal readers (law professors and attorneys) with novice legal readers (individuals with post-graduate degrees, but no legal education), researchers examined the metacognitive strategies used by both groups.[67] Each group was given two contracts cases to read and the readers were asked to think aloud while reading. The readers were observed and prompted with questions during the reading process. Expert legal readers used diverse metacognitive strategies with greater frequency than novice readers. These strategies included metacognition about the contextual markers of the case (such as the party names or citation) and metacognition about the synthesis of rules and facts.[68]

¶37 Legal research combines information-seeking skill with legal reading skill. Since metacognitive skill enhances both of these activities, legal research educators should make it a priority. Kristina Niedringhaus has written about the benefits of metacognitive knowledge to legal research education. She found that students who learn "by reflecting on what they have learned and filling in the gaps, will not only be better students, but will be able to contribute more fully to the classroom

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61. *Id.* at 173.

62. Janette R. Hill & Michael J. Hannafin, *Cognitive Strategies and Learning from the World Wide Web*, 45 Educ. Tech. Res. & Dev., no. 4, 1997, at 37, 38.

63. *Id.*

64. Factors examined included "perceived orientation, . . . perceived self-efficacy, . . . system knowledge, and . . . prior subject knowledge." *Id.*

65. *See id.* at 56–57.

66. *Id.* at 56.

67. Mary A. Lundeberg, *Metacognitive Aspects of Reading Comprehension: Studying Understanding in Legal Case Analysis*, 22 Reading Res. Q. 407, 410 (1987).

68. *See id.* at 413–15.

experiences."[69] Legal research educators should not only teach research strategies, they should help students acquire metacognitive knowledge about when and where to use those research strategies.

Bloom's and Callister's Taxonomies

¶38 To assist them in best helping students, legal research educators should identify and organize learning goals. This can be done by considering and implementing Bloom's taxonomy of learning, and Paul Callister's recently proposed adaptation of that taxonomy. In essence, Bloom's taxonomy provides a strategy for ordering learning concepts in a hierarchical fashion. Published in 1956, it identifies six successive stages of learning, arranged from least to most complex.[70] These stages are knowledge, comprehension, application, analysis, synthesis, and evaluation.[71] Since then, the taxonomy has been used widely and has been revised a number of times.

¶39 In a recent article on law school learning and neuroscience, Hillary Burgess discussed the taxonomy's application to legal education as a whole. She organized common law school objectives and activities such as "identify relevant case facts" and "synthesize rules" into the various levels of cognition.[72] Burgess noted that while law school activities teach the four lowest levels of cognition, law school exams test the three highest levels of cognition.[73]

¶40 In his article *Time to Blossom: An Inquiry into Bloom's Taxonomy as a Hierarchy and Means for Teaching Ordered Legal Research Skills*, Paul Callister adapted Bloom's taxonomy specifically for legal research instruction, and provided examples of legal research objectives ("learning competencies") for each of the levels and activities that may be used to support those learning competencies.[74] The levels of cognition in Callister's adapted taxonomy are slightly different than Bloom's and are more suited to the legal research process. For example, Callister collapses analysis and synthesis into a single level because of their interaction as an iterative process.[75] His levels, ordered from the most basic to the most advanced, are

- Remembering
- Understanding
- Application
- Analysis/Synthesis
- Concluding
- Metacognition[76]

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69. Kristina L. Niedringhaus, *Teaching Better Research Skills by Teaching Metacognitive Ability*, 18 PERSPECTIVES: TEACHING LEGAL RES. & WRITING 113, 115 (2010).

70. TAXONOMY OF EDUCATIONAL OBJECTIVES: THE CLASSIFICATION OF EDUCATIONAL GOALS; HANDBOOK 1: COGNITIVE DOMAIN (Benjamin S. Bloom ed., 1956).

71. *See* Paul D. Callister, *Time to Blossom: An Inquiry into Bloom's Taxonomy as a Hierarchy and Means for Teaching Ordered Legal Research Skills*, 102 LAW LIBR. J. 191, 197–99, 2010 LAW LIBR. J. 12, ¶¶ 16–17.

72. Hillary Burgess, *Deepening the Discourse Using the Legal Mind's Eye: Lessons from Neuroscience and Psychology that Optimize Law School Learning*, 29 QUINNIPIAC L. REV. 1, 21 fig.3 (2011).

73. *Id.* at 22.

74. Callister, *supra* note 71.

75. *Id.* at 205, ¶ 27.

76. *Id.* at 199–212, ¶¶ 19–41.

¶41 Callister suggests the following research competencies for the highest three levels: "[s]imulate analysis and synthesis on both simple and complex problems in a simulated practice environment";[77] "[r]esolve a problem and report a conclusion that takes a position as informed by research";[78] and "[r]eflect[] on and assess[] . . . research experiences and . . . critique, modify, and invent research schema."[79] Creating and implementing learning goals based on these research competencies will support the development of analytical skill.

Ideas for Practical Implementation

Helping Students Develop Analytical Skill in Legal Research

¶42 Legal research instruction often covers where and how to find legal information, as well as the processes and strategies for conducting legal research. However, legal research educators should specifically address analytical skill development as it pertains to selecting information in an information-rich environment, making sense of the information found, and choosing the "right" or "task-specific" information from the abundance of choices. This means building analytical skills such as conceptual thinking, reasoning by analogy, and thinking through an iterative process.

¶43 Armed with information about cognition and metacognition, as well as taxonomies, legal research educators can develop approaches to meet those goals. This can mean using questions, exercises, problems, or simulations that take students through a metacognitive process and foster metacognitive knowledge.

¶44 One method might be to use in-class questioning techniques to foster metacognition. In her article *Resource-Based Learning and Course Design*,[80] Meg Butler discusses different ways to use questioning effectively in the classroom. In particular, she recommends Socratic questions that elicit thinking and reflection about the decisions in the research process.[81] For example, a series of questions that ask a student to defend relying on a case that has a yellow citator flag may encourage metacognition so that a student's understanding "reflect[s] the difference between simply knowing there is a service to help legal researchers identify whether a legal opinion remains 'good law,' and understanding the significance of a yellow flag in KeyCite or Shepard's."[82]

¶45 Class questions, activities, and exercises can also be designed to encourage metacognition about a specific cognitive process used in information seeking, such as searching, scanning, chunking, generating hypotheses, or making decisions. For example, to foster metacognition on scanning, a student might be asked to scan the table of contents for a particular title or chapter in the *C.F.R.*, describe how the sections relate to one another conceptually, and explain how this might affect the

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77. *Id.* at 216.
78. *Id.* at 217.
79. *Id.*
80. Butler, *supra* note 37.
81. *Id.* at 226–27, ¶ 16.
82. *Id.* at 228, ¶ 20.

way he searches the *C.F.R.* in the future. Another example might be to ask students to read a fact pattern, find the encyclopedia article that best answers the question posed in the fact pattern, explain why that encyclopedia article was the most useful, and identify two or three research paths they could take based on the information found in the article. This would foster metacognition on decision making, both about what information to use and about the research process itself.

¶46 These kinds of questions, activities, and exercises will take students through metacognitive processes and allow them to identify and repair gaps in their knowledge. This in turn will strengthen their ability to think conceptually, analogously, and iteratively. A significant number of similar activities can be created by examining different stages of the legal research process and identifying a piece of metacognitive knowledge that is useful for that stage. Searching, scanning, chunking, generating hypotheses, and making decisions may be used as pieces of metacognitive knowledge to work with.

Examples from a Legal Research Class

¶47 The legal research teachers at CUNY Law School have for several years used a number of simulations and exercises throughout our legal research courses, based on our teaching experiences and continuing discussions about the course. The two-credit legal research course at CUNY is taught over the entire first year to incoming students and is graded. Evaluative devices include assignments, drills, and a multiple-choice exam. Generally speaking, the course requires increasingly complex analytical skill as the year progresses.

¶48 The spring 2011 final assignment given by the CUNY legal research faculty provides an example of a simulation that required the students to function at the higher levels of cognition from Bloom's and Callister's taxonomies.[83] It was a take-home assignment based on a single fact pattern (built either on statute or common law, and federal or state law, depending on the instructor). The students had three weeks to complete it. Our intention was to elicit the application of analytical skills and strengthen them through metacognition.

¶49 The assignment consisted of four parts: for part 1, students were required to complete a memo drawing conclusions as to how the law would affect their client and noting if more facts were needed before they would be able to reach further conclusions; for part 2 they were required to provide a list of the authorities they used, and for each authority, indicate how they found the authority and why they chose it; for part 3 they were required to describe and reflect on their research process; and for part 4 they were required to reflect on costs and suggest more cost-effective strategies.

¶50 Part 1 was designed to develop the skills of analysis, synthesis, and drawing conclusions. In addition, by asking the students if more facts were needed to draw further conclusions, we tried to elicit analysis and synthesis in the context of an iterative feature of legal research—that is, the idea that research often leads to more questions. For example, in a New York adoption statute, an unmarried father's consent to an adoption is required only if he has paid support to the child and has had

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83. The assignment is included *infra* as the appendix.

contact with the child. Because the fact pattern was silent on whether the father has paid child support, the student should indicate in the memo that knowledge of whether the father has paid child support is critical to application of the rule. Another example dealt with New York statutory and case law stating that discrimination against someone based on body weight can be unlawful if the weight is the result of a medical condition or is disabling. If the fact pattern is silent on whether the weight is the result of a medical condition or is disabling, the student should indicate that additional information is necessary.

¶51 We have found that a good way to create this type of fact pattern is to base it on a rule of law that has several factors and then omit one of the factors. Another method is to create a fact pattern based on a law that has exemptions, and make the fact pattern ambiguous as to whether the exemption is fulfilled. For example, under the Fair Labor Standards Act, a nonsupervisory employee is entitled to overtime pay, unless the employee can be considered an outside salesperson. If the fact pattern is ambiguous as to whether the employee is an outside salesperson, the student should note that additional information is required.

¶52 We hoped that anchoring the assignment to an analysis of the information the students found would help them assess their choices in parts 2 and 3 more thoroughly. Students' analyses in part 1 could also help us see how they articulated the conclusions they drew from the information they presented in parts 2 and 3.

¶53 Part 2's list of authorities was designed to encourage a metacognitive process about students' decision-making process as it related to authorities. That is, asking students to reflect on *why* they chose particular authorities would strengthen their ability to think conceptually and analogously. Part 3's reflection on the research process was designed to encourage a metacognitive process as to the legal research process as a whole. We hoped that by considering why they chose certain research tools and why they took certain research paths, students would be better able to plan and strategize. Part 4 asked students to reflect on the costs of legal research and suggest cost-effective alternatives, and in this way we hoped that their ability to plan and strategize in a cost-effective manner would improve.

¶54 All four parts were intended to reinforce knowledge of bibliographic tools learned over the entire academic year. Students needed to consult case law, statutes, and regulations. They had to review legal encyclopedias, treatises, law reviews, and other types of secondary sources and explain why they chose to rely upon them for information. They needed to update their information, and then explain their legal analysis. Finally, in examining the cost of their legal research project, they had to evaluate their research process and techniques and how they would affect a client.

¶55 Results from the assignment varied by student, but they were interesting and encouraging. When asked to explain their decisions as to the authorities they chose, most students considered why some authorities were more useful to their fact patterns than others, and a few explicitly identified when they chose cases because they were analogous to the fact pattern, even if the fact patterns were very different. A few explained that the concepts in a particular case were important to an element of the fact pattern, even though the fact pattern as a whole did not resemble the one they had been given. When asked to reflect on the overall legal research process, most students explained why some sources were useful to them

and which strategies worked best, but a few explicitly described how information from early in the research process changed their conceptualization of the legal question and encouraged them to change their strategy. Even for the students who did not engage with the information in a way that demonstrated analogous and conceptual thinking, the assignments gave the instructors the opportunity to comment on the questions and suggest ways students could develop their skills in this area.

Conclusion

¶56 Law students and new attorneys must have well-developed analytical skills in order to find information that is relevant to their legal problems and to become competent legal researchers. They must see past the superficialities of legal information, such as the literal meaning of words and the fact similarities between cases, and learn to engage more deeply with the information.

¶57 In order to ensure that our students become competent, efficient researchers, legal research instructors must make analytical skill development a priority in the classroom. Looking to the research on cognition and metacognition will help instructors create activities that engage and develop analytical skills. Particularly recommended are activities that elicit metacognition on specific cognitive processes and activities derived from the higher levels of Bloom's and Callister's taxonomies. The literature from cognitive and educational psychology offers an enormous amount of information instructors can use and apply, especially in the area of analytical skill development and learning. Legal research instructors can then create and share their activities with each other.

Appendix

Sample Research Assignment

Assignment Details

Your supervisor calls you into her office and says she needs a report on a specific issue which includes the following components:

1. A summary memo of your analysis.
2. A list of the sources you used in your analysis memo, including explanations of why you used them. In addition, list resources you think might be helpful as background information, or would help your supervisor understand what additional information might be needed.
3. An explanation of your legal research process or strategy so that a subsequent intern can replicate your results if necessary and understand the methodology used in your project.
4. A cost assessment that includes the time spent on the project, the time spent researching, and an estimate of online research costs. You should also include suggestions of cost-effective measures for the intern to follow when updating your research in a few months.

Each section is explained in further detail below. The facts will be provided to you in a separate handout.

1. Analysis Memo

Provide an analysis of your issue, explaining whether or not there is enough authority to support the argument your supervisor wants to make in the brief. If you believe that additional information is needed to help support the conclusion, be sure to discuss that as well. You should provide citations to relevant authority when necessary.

2. List of Primary and Secondary Sources

Your list should include all authority that you are citing in your analysis memo. For each source you should provide a citation and explain why the source was used for support in your analysis memo.

If your resources list includes materials that are not cited in the analysis memo, but were instrumental to your understanding of the concepts needed to make the analysis, be sure to list and explain those as well. Remember that your supervisor will be reviewing this section of your assignment to understand how you formulated the analysis you presented in your memo.

Provide the citations to no more than eight sources of primary authority that address your issue. Be sure to indicate whether the source is mandatory or persuasive precedent and the current status of each source. You should also describe and explain how you found each source and indicate the relevance of each authority to your analysis and why you chose it.

Provide three secondary sources that you found most useful in completing this assignment (providing multiple sections of the same source will count as only one

source). You must use at least two different types of secondary sources. Provide the citation information for each source, note how current each source is, and describe and explain how you found each source. You should also indicate the relevance of each secondary source to the formulation of your analysis memo.

3. Legal Research Process

Describe the legal research process or strategy you followed in completing the project. Remember that this section of the assignment will be primarily used in two ways:

- By your supervisor to assess the credibility of your results and support the summary of legal information you found; and
- To help a subsequent intern unfamiliar with this area of law understand how you arrived at your results, know what sources you consulted that were the most helpful, and re-create your research.

Your plan should include the reasons why you selected certain sources for research and how you determined the current status of any authority.

Your plan should not contain general directions about the utilization of a source (e.g., how you used an index and why it's important) but instead articulate the reasons why it was chosen at a certain point and why it was important to the overall process (e.g., you might note that for background information at the start of the process you used an index to gain certain information).

Finally, if there are any specific hints or tips you could offer an intern who will need to do further research on this issue, please include them in your plan.

4. Cost Assessment of Legal Research Process

During your research process, you should keep track of your time, and provide a final estimate of the time and costs for this project calculated as indicated on the attached Billing Invoice. A copy of a completed Billing Invoice must be handed in with your final assignment.

Review and reflect upon the information you have found and the legal research process you explained in part 3 of the assignment as well as the final costs as indicated on your Billing Invoice. Were you able to use any free online resources or cost-effective measures to assist you in the legal research process? In reexamining the process, do you think there is any area where you could have implemented alternative measures to save costs? Why or why not?

Billing Invoice

Service	Rate	Total Number	Total (Rate Multiplied by Number)
EXAMPLE			
Attorney time per billable hour	$100.00	18	18.00 × 100 = $1800.00
Attorney time[a] per billable hour	$100.00		
Each terms and connectors case law database search[b] (Include each initial search, and all subsequent searches that are edited)	$65.00		
Each natural language case law database search (Include each initial search, and all subsequent searches that are edited)	$100.00		
Each terms and connectors annotated code search	$75.00		
Each natural language annotated code search	$100.00		
Each online secondary source accessed for information	$100.00		
Each use of KeyCite or Shepard's services	$10.00		
			Total Bill:

[a] Your billable hours should include all time spent researching the assignment and the time spent composing and writing the entire assignment. For the purposes of this assignment, you should account for your time only in one-hour increments.

[b] Remember that using "Focus" or "Locate" does not trigger an additional search charge in LexisNexis or Westlaw. You may choose to use the "History" or "Research Trail" at the end of your research to help you review the information for this section.