Explicit Instruction in Legal Education: Boon or Spoon?

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I. INTRODUCTION

Legal education excels in honing students' critical thinking skills. At its best, it teaches students to slow down their thinking and cultivate skepticism of their intuitive reactions.[1] It does not shy away from making thinking difficult, whether through assigning 1L students complicated texts or engaging them in difficult classroom discussions. It teaches students to use abstract reasoning while simultaneously attending to specific, concrete facts.

At the same time, however, legal education privileges students who are faster readers and have prior background knowledge or larger

1. Learning theorists have long recognized that certain types of knowledge take more effort to acquire than others. Daniel Kahneman describes the differences as System 1 thinking, which is fast and unconscious, and System 2 thinking, which is slow and effortful. DANIEL KAHNEMAN, THINKING, FAST AND SLOW 20–22 (2011). Evolutionary psychologist David Geary locates the differences evolutionarily in biologically primary knowledge and biologically secondary knowledge. David C. Geary, *An Evolutionarily Informed Education Science*, 43 EDUC. PSYCH. 179, 180, 185 (2008). Humans learn the former effortlessly—e.g., our first language, the ability to recognize faces and cooperate with others—but must exert conscious effort to learn the latter—e.g., reading and writing. *See, e.g.*, JOHN SWELLER, PAUL AYRES, & SLAVA KALYUGA, COGNITIVE LOAD THEORY 3–8 (2011).

working memories.[2] Legal education prides itself on the accomplishments of students whose backgrounds primed them for success while minimizing its inconsistent results in teaching law to students who are not similarly prepared.[3]

Recognizing that legal reasoning does not come easily for many students, almost every law school offers some level of academic support to students.[4] In the decade and a half since the Carnegie Report,[5] law schools and the American Bar Association have focused their

2. *See, e.g.*, Malcolm Gladwell, *Puzzle Rush*, REVISIONIST HIST., at 24:09 (June 20, 2019), https://www.pushkin.fm/episode/puzzle-rush/. Using the metaphor of the tortoise and the hare, Gladwell points out the apparent misalignment between the skill necessary to obtain a higher LSAT score (ability to process information quickly) and the skill necessary to be an effective law clerk at the U.S. Supreme Court (slow, deep reading and thinking). *See also* DANIEL T. WILLINGHAM, WHY DON'T STUDENTS LIKE SCHOOL? 32–35 (2009) ("[P]eople with background knowledge remember substantially more of the material than people who do not have background knowledge.").

3. Law students' academic preparation for law school—and whether it is worse these days than it used to be—is beyond the scope of this Article. My premise is simple: We must teach the students we admit. If you are interested in this topic, see RICHARD ARUM & JOSIPA ROKSA, ACADEMICALLY ADRIFT: LIMITED LEARNING ON COLLEGE CAMPUSES (2011); DEREK BOK, OUR UNDERACHIEVING COLLEGES: A CANDID LOOK AT HOW MUCH STUDENTS LEARN AND WHY THEY SHOULD BE LEARNING MORE (2006); Jennifer M. Cooper, *Smarter Law Learning: Using Cognitive Science to Maximize Law Learning*, 44 CAP. U. L. REV. 551 (2016); Ruth Vance & Susan Stuart, *Of Moby Dick and Tartar Sauce: The Academically Underprepared Law Student and the Curse of Overconfidence*, 53 DUQ. L. REV. 133, 134 (2015) [hereinafter *Of Moby Dick and Tartar Sauce*] ("[M]any matriculating law students arrive at law school woefully underprepared at the same time legal educators are challenged with the task of producing practice-ready graduates."); Susan Stuart & Ruth Vance, *Bringing a Knife to a Gunfight: The Academically Underprepared Law Student and Legal Education Reform*, 48 VAL. U. L. REV. 41, 43 (2013) [hereinafter *Bringing a Knife to a Gunfight*] ("[T]he educational deficiencies of our students . . . make[] the 'old' structure of the academy ineffective today.").

4. This is not unique to law schools. Non-faculty support professionals have been the fastest growing segment of professional employment in higher education. ARUM & ROKSA, *supra* note 3, at 20 (citing Gary Rhoades, *The Study of the Academic Profession*, *in* SOCIOLOGY OF HIGHER EDUCATION: CONTRIBUTIONS AND THEIR CONTEXTS 113 (Patricia J. Gumport ed., 2007)).

5. WILLIAM M. SULLIVAN, ANNE COLBY, JUDITH WELCH WEGNER, LLOYD BOND, & LEE S. SHULMAN, EDUCATING LAWYERS: PREPARATION FOR THE PROFESSION OF LAW (2007) [hereinafter the CARNEGIE REPORT].

attention on formative versus summative assessments,[6] measurable outcomes and objectives,[7] and have begun discussing and incorporating principles of cognitive psychology and learning theory into legal pedagogy.[8] Legal pedagogy has become increasingly intentional and inclusive.[9]

Nonetheless, the academy uniformly recoils at the notion of "spoon-feeding" students.[10] While effective teaching can manifest in numerous ways, referring to a teaching technique as "spoon-feeding" is to dismiss it out of hand.[11] According to the academy's prevailing mythology, the ultimate reward of being able to think like a lawyer is obtained only via a painful pedagogical route.[12] A student's journey begins with fog, is attended by constant confusion, and ends with

6. *See* Am. Bar Ass'n, *Managing Director's Guidance Memo*, 2015 A.B.A. SEC. LEGAL EDUC. & ADMISSION TO BAR Standard 314, https://www.aals.org/wp-content/uploads/2015/06/ABA-Guidance-Stds-301-302-314-315-June-2015.pdf.

7. *See id.* at Standard 315.

8. *See, e.g.*, Ian Holloway & Steven I. Friedland, *The Double Life of Law Schools*, 68 CASE W. RSRV. L. REV. 397, 410 (2017) (identifying learning science as one driver of change in legal education).

9. *See, e.g.*, Deborah L. Borman & Catherine Haras, *Something Borrowed: Interdisciplinary Strategies for Legal Education*, 68 J. LEGAL EDUC. 357 (2019). Borman and Haras use the term "andragogy" instead of "pedagogy" in describing legal education, explaining that andragogy is the science of adult education and pedagogy the science of teaching children. *Id.* at 383 n.169.

10. *See, e.g.*, ANDREW J. MCCLURG, 1L OF A RIDE 212 (3d ed. 2017); Lawrence A. Cunningham, *Reflections on Contracts in the Real World: History, Currency, Context, and Other Values*, 88 WASH. L. REV. 1265, 1275–76 (2013) ("Law teachers have long argued about the proper pedagogical balance between spoon-feeding students the law and Socratic interrogation more reliant on the technique of 'hiding-the-ball.'"); Emily Grant, *Helicopter Professors*, 53 GONZ. L. REV. 1, 19–20 (2017) (discussing passive student learning as "waiting for the professor to spoon feed the relevant knowledge"); Stephen M. Johnson, *The Course Source: The Casebook Evolved*, 44 CAP. U. L. REV. 591, 597–98 (2016) (describing the case method as "far superior to the passive spoon-feeding of the lecture method that it replaced").

11. *See, e.g.*, Vernellia R. Randall, *Increasing Retention and Improving Performance: Practical Advice on Using Cooperative Learning in Law Schools*, 16 T.M. COOLEY L. REV. 201, 215 (1999) ("Many professors and students view helping or receiving help as cheating or as spoon-feeding.").

12. *See generally id.* at 202–03 (describing the current pedagogy as "intimidat[ing], competitive[], and . . . passive"); MCCLURG, *supra* note 10, at 104 (describing the Socratic method as "intimidating, humiliating, alienating, bewildering, and inefficient").

eventual understanding. Rather than explicitly teaching students foundational rules and concepts, professors use indirect methods, or implicit instruction, to guide students toward moments when the student suddenly sees the underlying structure of the law, and everything begins to make sense. The assumption is that to do otherwise will defeat students' learning by instilling passivity.[13] They will learn to think like lawyers only if they grapple with unfamiliar concepts and vocabulary until they eventually—somehow—reach illumination.

This theory of how students learn is not unique to the law.[14] Known variously as "inquiry learning" or "discovery learning," implicit instruction is a constructivist theory rooted in 19th century ideals.[15] According to this theory, if students are immersed in an expert problem and allowed to struggle, they will eventually discern the underlying principles, make sense of the chaos, and learn.[16] Moreover,

13. *See* MCCLURG, *supra* note 10, at 104–05 ("[T]he Socratic and case methods . . . can be excellent tools for guiding students to 'think like a lawyer' . . . you could memorize all the legal rules in the world, but still be a lousy lawyer. Good lawyering is about problem-solving and the Socratic and case methods are intended to force students to learn by doing rather than simply being told how it is done.").

14. *See* SWELLER, AYRES, & KALYUGA, *supra* note 1, at 11.

15. "Constructivists, like other postmodernists, view learning and knowledge as being constructed by each individual from her experience." Michael Hunter Schwartz, *Teaching Law by Design: How Learning Theory and Instructional Design Can Inform and Reform Law Teaching*, 38 SAN DIEGO L. REV. 347, 379–80 (2001); *see also* Jeremiah A. Ho, *Law as Instrumentality*, 101 MARQ. L. REV. 131, 137–38 (2017) (explaining that the formalist conception of "law as science," as promulgated by Christopher Langdell at Harvard Law School in the late-nineteenth century, continues to influence the inductive methodologies used today to impart knowledge in American legal education).

16. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 11 ("This view assumes that learners need to learn how to construct knowledge for themselves and so explicit instructional guidance should be avoided in favor of having learners discover knowledge."); *see also* Paul A. Kirschner, *Epistemology or Pedagogy, That Is the Question*, *in* CONSTRUCTIVIST INSTRUCTION: SUCCESS OR FAILURE? 144, 149 (Sigmund Tobias & Thomas M. Duffy eds., 2009) (noting that constructivist educators see a positivist domain with "general and identifiable truths," in which discovery of those truths "becomes trivialized to 'stage-managed pseudo-discovery of the inevitable'") (citing Derek Hodson, *Philosophy of Science, Science and Science Education*, 12 STUDIES SCI. EDUC. 25, 40 (1985)).

because they struggled, their learning will be deeper and perhaps even more creative.[17]

Over the past several decades, however, cognitive psychology and learning research have consistently shown this not to be true. Inquiry learning can be "a clunky and confusing way of learning the basic content of a discipline."[18] Some amount of explicit instruction, especially early in the student's learning, ensures that students build their understanding on a foundation of accurate knowledge.[19] In other words, explicit instruction paves the way for profound learning in the 1L year.[20]

Explicit instruction is a scaffolded process of instruction designed to gradually transfer control of the subject matter from the professor to the students.[21] Explicit instruction in the early stages of

17. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 11 ("Rather than showing learners how to best solve a problem, it is assumed that they learn more, or at least learn better, if they discover how to solve the problem by themselves, with minimal levels of guidance from instructors."). Importantly, some student struggles are associated with successful learning. *See infra* Section II.D (discussing "desirable difficulties").

18. Robert J. Sternberg, *Foreword*, *in* CONSTRUCTIVIST INSTRUCTION: SUCCESS OR FAILURE? x, xi (Sigmund Tobias & Thomas M. Duffy eds., 2009); *see also* David Klahr & Milena Nigam, *The Equivalence of Learning Paths in Early Science Instruction: Effects of Direct Instruction and Discovery Learning*, 15 PSYCH. SCI. 661 (2004) (finding that many more children learned from direct instruction than from discovery learning, and when asked to make broader, richer scientific judgments, the children who learned from direct instruction performed as well as those few children who discovered the method on their own).

19. Sternberg, *supra* note 18, at x–xi ("[T]he question is not whether expository or discovery learning is better; I think we left that question behind some time ago. The current question is under what circumstances, and for whom, is one kind of instruction superior to another.").

20. The notion of profoundly learning 1L subjects was used to describe Louis Schulze's successful academic support program at Florida International University College of Law. James S. McGrath & Andrew P. Morriss, *Assessments All the Way Down*, 21 GREEN BAG 2D 139, 149 (2018) ("By learning subjects profoundly the first time they study them, FIU graduates get a head start in preparing for the bar exam post-graduation as well as for their careers."). The hallmark of FIU's program is teaching students to be self-regulated learners. *See* Louis N. Schulze, Jr., *Using Science to Build Better Learners: One School's Successful Efforts to Raise Its Bar Passage Rates in an Era of Decline*, 68 J. LEGAL EDUC. 230 (2019).

21. Paul A. Kirschner, John Sweller, Richard E. Clark, *Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist,*

learning promotes accurate, thorough understanding of foundational knowledge.[22] When students have a solid foundation of knowledge, they are ready to engage in higher-order thinking.[23] In other words, explicit instruction prepares students for more complex thinking.

A professor using explicit instruction may provide students with substantive or procedural knowledge to accomplish the task assigned to them. If implicit instruction is designed to give students immediate control of their learning, with teachers giving only subtle suggestions and encouragement,[24] explicit instruction is designed with the teacher initially in control of the subject matter, gradually ceding control to the students.[25] While implicit instruction encourages students to explore a subject, often with minimal bounds, explicit instruction is more structured, channeling students down a particular path toward a specific learning goal.[26] The more knowledgeable a learner, the more useful

Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching, 41 EDUC. PSYCH. 75, 79 (2010) (discussed in PAUL A. KIRSCHNER & CARL HENDRICK, HOW LEARNING HAPPENS: SEMINAL WORKS IN EDUCATIONAL PSYCHOLOGY AND WHAT THEY MEAN IN PRACTICE 166–75 (2020)); Greg Ashman, *The Subtle Art of Slowly Losing Control*, RESEARCHED (June 24, 2019), https://researched.org.uk/2019/06/24/the-subtle-art-of-slowly-losing-control/.

22. KIRSCHNER & HENDRICK, *supra* note 21, at 176–85 (discussing Barak Rosenshine, *Principles of Instruction: Research-Based Strategies That All Teachers Should Know*, 36 AM. EDUCATOR 12 (2012) [hereinafter *Principles of Instruction*]); Barak Rosenshine, *The Empirical Support for Direct Instruction*, *in* CONSTRUCTIVIST INSTRUCTION: SUCCESS OR FAILURE? 201, 201–20 (Sigmund Tobias & Thomas M. Duffy eds., 2009) [hereinafter *The Empirical Support for Direct Instruction*].

23. This statement reflects Bloom's Taxonomy, which illustrates and explains numerous concepts in learning.

24. This metaphor describing nondirective clinical supervision is apt:

> Imagine you have been an excellent professional taxi driver for some time. Now, imagine you have to get into the back seat and let a beginning taxi driver take the wheel. You have to get her to take you safely to your destination without giving her directions. You need to help her understand the rules of the road and the operation of the vehicle with as little explicit instruction as possible.

Serge A. Martinez, *Why Are We Doing This? Cognitive Science and Nondirective Supervision in Clinical Teaching*, 26 KAN. J.L. & PUB. POL'Y 24, 24 (2016).

25. Ashman, *supra* note 21.

26. Discovery learning encourages students to "explore the problem space in order to see what moves are possible." John Sweller, *Cognitive Load During Problem Solving: Effects on Learning*, 12 COGNITIVE SCI. 257, 262 (1988); KIRSCHNER & HENDRICK, *supra* note 21, at 136–41 (discussing ALLEN NEWELL & HERBERT A.

implicit instruction is.[27] For brand-new learners, initial explicit instruction provides students with substantive and procedural knowledge, thereby freeing up space in their working memories to devote to thinking.[28]

Explicit instruction has many possible uses throughout the law school curriculum. A doctrinal professor may use explicit methods of instruction to ensure that everyone in the class has sufficient foundational knowledge, as may a professor teaching a course in practical lawyering skills, or an academic support instructor helping students fill in gaps in their knowledge.

Unfortunately, the deep hostility baked into the phrase "spoon-feeding" coupled with the lack of pedagogical standards addressing explicit instruction can lead conscientious professors to either shun explicit instruction or to use it and feel ashamed.[29] If the academy is to continue incorporating learning theory into its pedagogy, it must be able to articulate the differences between spoon-feeding and explicit instruction so that professors can thoughtfully choose when to use the latter, comfortable in knowing it is not the former.

Cognitive psychology research supports initial explicit instruction in new domains—even in law. Novice learners use their existing schema to make sense of what happens in the classroom. To the extent

SIMON, HUMAN PROBLEM SOLVING (1972)) ("A key ability to solve problems is a heightened search ability that is largely determined by the presence or absence of knowledge—if you don't know what you're looking for, then how do you know what to look for and how do you know when you find it?").

27. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 168–69 (advising "detailed, direct instructional support to novice learners," "a mix of direct instruction and problem-solving practice with reduced support" for intermediate learners, and "minimally guided problem-solving tasks" for advanced learners). "[I]nstructional methods effective for novices may . . . inhibit learning for more experienced learners." *Id.* at 169 (citing Slava Kalyuga, *Expertise Reversal Effect and Its Implications for Learner-tailored Instruction*, 19 EDUC. PSYCH. REV. 509 (2007); Slava Kalyuga & Alexander Renkl, *Expertise Reversal Effect and Its Instructional Implications: Introduction to the Special Issue*, 38 INSTRUCTIONAL SCI. 209 (2010)).

28. *See generally* Tiia Rüütmann & Hants Kipper, *Teaching Strategies for Direct and Indirect Instruction in Teaching Engineering*, 1 INT'L J. ENG'G PEDAGOGY 37 (2011).

29. The shame that accompanies explicit instruction is not limited to those teaching law. *See, e.g.*, Ashman, *supra* note 21 ("For years I was a guilty [math] teacher . . . . For some strange reason, students seemed to do better . . . if I first explained to them how to answer the questions and solve the problems.").

law schools expect students' background knowledge and skills to buoy them through their first year of law school, they are allowing students' privilege to leverage them into higher grades and more prestigious jobs.

This Article examines explicit instruction—what it is, whether it promotes learning, and whether it is a desirable pedagogical tool in a law professor's toolbox. Part II begins by examining cognitive psychological theories of how students think and learn to better articulate the differences between spoon-feeding and explicit instruction and understand when and why explicit instruction is useful. Part III examines the cognitive differences between novices and experts that support initial explicit instruction. Part IV examines experts' cognitive barriers to effective teaching. Part V provides practical examples of how professors can use explicit instruction in the law school classroom. It concludes that the time is ripe for the academy to bring explicit instruction out of the shadows, and to make evidence-based decisions about the proper role of explicit instruction in legal education.

II. IMPLICIT INSTRUCTION, EXPLICIT INSTRUCTION, AND SPOON-FEEDING

The goal of teaching is durable and flexible learning.[30] The specific goal of legal education is to teach students to think like lawyers.[31] Although many debate what it means to think like a lawyer, cognitive psychology views critical thinking of any sort as domain-specific.[32] Lawyers think like lawyers, chess players think like chess players, and plumbers think like plumbers. Domain-specific knowledge combined

30. Robert A. Bjork, *Memory and Metamemory Considerations in the Training of Human Beings*, *in* METACOGNITION: KNOWING ABOUT KNOWING 185, 186 (Janet Metcalfe & Arthur P. Shimamura eds., 1994).

31. Holloway & Friedland, *supra* note 8, at 398–99 (referring to the "oft-repeated saying" that "law schools [teach] people to 'think like lawyers,' but not how to actually be lawyers").

32. Daniel T. Willingham, *Critical Thinking: Why Is it So Hard to Teach?*, AM. EDUCATOR, Summer 2007, at 11 ("From the cognitive scientist's point of view, the mental activities that are typically called critical thinking are actually a subset of three types of thinking: reasoning, making judgments and decisions, and problem solving.").

with skill in using that knowledge makes one an expert.[33] If this were written as a formula, it might look like this:

Knowledge + Thinking = Expertise

Learning to reason is taxonomically distinct from acquiring knowledge.[34] Legal educators correctly resist using explicit instruction to teach students higher order thinking skills but incorrectly use implicit instruction to help students acquire basic knowledge of the law that they need if they are to think like lawyers. Moreover, initial explicit instruction can level the playing field among students who otherwise have significant differences in prior background knowledge, reading ability, and working memories.

A. Thinking About Knowledge

"Thinking" is a complex process, famously deconstructed and categorized by *Bloom's Taxonomy*.[35] Knowledge forms the base upon which more advanced thinking is built.[36] To solve a scientific problem, one must have some relevant scientific knowledge.[37] Similarly, to solve a legal problem, one must have some relevant legal knowledge. Students are novice learners lacking cognitive schema for understanding the law, and in many instances, lacking cognitive schema for critical thinking and complex reading.

A primary cultural norm of legal education is that students learn to reason like lawyers by actively engaging with complex texts (reading cases for class) and with their professors (Socratic dialogue).[38] This is quintessential implicit instruction—rather than convey knowledge and

33. *See* ANDERS ERICSSON & ROBERT POOL, PEAK: SECRETS FROM THE NEW SCIENCE OF EXPERTISE 60 (2016).

34. *See generally* BENJAMIN S. BLOOM, MAX D. ENGELHART, EDWARD J. FURST, WALKER H. HILL, & DAVID R. KRATHWOHL, TAXONOMY OF EDUCATIONAL OBJECTIVES: THE CLASSIFICATION OF EDUCATIONAL GOALS (15th prtg. 1969). The concepts in this book are commonly referred to as Bloom's Taxonomy.

35. *Id.*

36. *Id.*; *see also* WILLINGHAM, *supra* note 2, at 42–45.

37. Willingham, *supra* note 32, at 16 ("[B]ackground knowledge is necessary to reason scientifically.").

38. MCCLURG, *supra* note 10, at 103–05.

reasoning directly, legal education immerses students in appellate opinions and uses questions to guide them toward discerning both the underlying principles and rules of law as well as the process of legal reasoning.

Notably, learning to reason is taxonomically distinct from acquiring knowledge.[39] Using the same pedagogical techniques for both fails to recognize this distinction. Moreover, learning theory suggests that initial explicit instruction can level the playing field among students who otherwise have significant differences in prior background knowledge, reading ability, and working memories.

There are a few places in law school where explicit instruction is commonplace: academic support, bar exam preparation, and to a lesser extent, legal writing and research classes. As one bar prep student was heard saying, "'I wish that my professor had just done this in my 1L year. That class would have made so much more sense.'"[40] This is a common complaint among law students: Why do professors insist on hiding the ball?[41] Professors respond with sincere confusion, saying, "I don't know how I could have made it any clearer." Their unspoken thought may be, "had I made it any clearer, I would have been simply giving them the answer." In other words, professors may "hide the ball" to avoid spoon-feeding.

B. Law Is Biologically Secondary Knowledge

Cognitive psychologists categorize human knowledge as being either biologically primary or biologically secondary.[42] Examples of

39. *See generally* BLOOM, ENGLEHART, FURST, HILL, & KRATHWOHL, *supra* note 34. The taxonomy developed by Bloom and his colleagues articulated six taxonomical categories: (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis, and (6) evaluation. *Id.* at 18.

40. Bill MacDonald, *If Other Tests Were Like the Bar Exam*, LAW SCH. ACAD. SUPPORT BLOG (June 25, 2019), https://lawprofessors.typepad.com/academic_support/2019/06/if-other-tests-were-like-the-bar-exam.html.

41. Marsha Griggs, *Are We Hiding the Ball?*, LAW SCH. ACAD. SUPPORT BLOG (Oct. 14, 2019), https://lawprofessors.typepad.com/academic_support/2019/10/are-we-hiding-the-ball.html.

42. *See* SWELLER, AYRES, & KALYUGA, *supra* note 1. The authors note that "[t]here is no definitive tests that identify biologically primary knowledge." *Id.* at 6. For purposes of this Article, what is useful is recognizing that knowledge can be

biologically primary knowledge include acquiring one's first language, recognizing faces, using general problem-solving strategies, and learning how to interact with other human beings.[43] Because humans have evolved to require biologically primary knowledge, they do not need explicit instruction to acquire it.[44] In fact, humans generally acquire biological knowledge when they are very young and are unaware of their learning.[45]

Conversely, biologically secondary knowledge is required for cultural reasons rather than biological reasons.[46] Examples include reading and writing. "[W]hile we require many aspects of biologically primary knowledge in order to learn to write, learning to write is a vastly different skill than learning to speak."[47] Without explicit instruction, further, humans do not naturally acquire biologically secondary knowledge,[48] and schools exist to teach such knowledge.[49]

Moreover, "the cognitive system used to learn to speak is different from the system used to learn to write."[50] Whereas learning biologically primary knowledge is unconscious and effortless, learning biologically secondary knowledge requires conscious effort.[51] For this reason, immersion is insufficient to teach a biologically secondary skill.[52]

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categorized in this way and doing so allows certain insights into when explicit instruction is necessary or unnecessary.

43. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 3–5 (citing David C. Geary, *Educating the Evolved Mind: Conceptual Foundations for an Evolutionary Educational Psychology*, *in* EDUCATING THE EVOLVED MIND 1 (Jerry S. Carlson & Joel R. Levin eds., 2007); Geary, *supra* note 1.

44. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 8 ("Attempting to teach biologically primary knowledge may be futile.").

45. *Id.* at 6.

46. *Id.*

47. *Id.*

48. *Id.* at 7 ("We require formal and informal institutions to acquire the biologically secondary knowledge that constitutes culture.").

49. *Id.* ("The fact that we do not acquire secondary knowledge automatically or unconsciously has instructional consequences.").

50. *Id.*

51. *Id; see also* KAHNEMAN, *supra* note 1, at 20–22 (discussing effortful versus effortless learning).

52. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 7 ("Being surrounded by people who speak provides a guarantee that most persons will learn to speak. Being

Domain-specific cognitive skills such as legal analysis are biologically secondary. Problem-solving techniques such as a means-ends analysis appear to be biologically primary.[53] Problem-solving techniques that require domain-specific knowledge are biologically secondary.[54]

While legal reasoning is not biologically primary, students come to law school with general problem-solving skills that are biologically primary. These biologically primary skills are ones that they learned effortlessly when they were young. Students use those skills unconsciously, without choosing to do so. When we teach students to reason methodically and transparently, we are asking them to not only learn a new skill, but to identify and override their existing unconscious skills. We are asking them to exert significant effort.

C. What Is "Spoon-Feeding"?

Spoon-feeding refers generally to giving someone so much information that they do not have to think for themselves.[55] In education, it refers to teacher-centered classrooms where students are given the answers and expected merely to passively memorize and regurgitate them.[56] For some in the academy, spoon-feeding refers specifically to

surrounded by people who write provides no guarantee that a person will learn to write."). "Expecting learners to acquire biologically secondary knowledge via immersion may be just as futile as expecting biologically primary knowledge to be teachable." *Id.* at 8 (citing John Sweller, *Instructional Implications of David C. Geary's Evolutionary Educational Psychology*, 43 EDUC. PSYCH. 214, 214–16 (2008)).

53. *Id.* at 9–10.

54. *Id.* at 8.

55. *Spoon-feed*, CAMBRIDGE DICTIONARY (4th ed. 2013) ("[T]o give someone so much help or information that that person does not need to try himself or herself."); *Spoon-feed*, MERRIAM-WEBSTER DICTIONARY (11th ed. 2016) ("[T]o present (information) so completely as to preclude independent thought."); Griggs, *supra* note 41 ("[W]ould being more direct with learning deliverables produce more practice ready graduates, or would it dilute the quality of legal education as we know it?").

56. *E.g.*, Shiwen Zhou, *The Reform Strategy of Legal Education in China*, 22 PAC. MCGEORGE GLOB. BUS. & DEV. L.J. 69, 69 (2009) ("Traditional Chinese legal education consists of teachers on the platform speaking and students in the audience listening—the "spoon-feeding" method . . . . This makes it difficult for students to cultivate the ability to think independently."); Cecily E. Baskir, *Crossing Borders: Creating an American Law Clinic in China*, 19 CLINICAL L. REV. 163, 168 n.17 (2012) (describing undergraduate legal education in China); Fred Galves, *Will Video Kill the*

the pedagogy that preceded the case method in Langdellian times, when professors would lecture and students would merely listen.[57] The risk of "spoon-feeding" students is that it may undermine their ability to actively think about the topic, which is antithetical to legal reasoning.[58]

To the extent "spoon-feeding" refers to pedagogical practices that encourage passive learning, it is rightfully derided.[59] Law students must learn to logically reason their way through legal problems.[60] The question for educators is how to identify when they are spoon-feeding and when they are providing useful explicit instruction.

Importantly, professors' dismissal of certain pedagogical techniques as "spoon-feeding" may reflect more than their mere desire to encourage skilled legal thinking. For example, a professor may believe that law students should not have anything handed to them and that they should struggle if they are to earn the ultimate reward of being

Radio Star? Visual Learning and the Use of Display Technology in the Law School Classroom, 2004 U. ILL. J.L., TECH & POL'Y 195, 246 ("Is using display technology simply 'electronic spoon-feeding,' where the professor is reduced to a boring 'information-giver' shoveling out legal information through slides, while the students become inactive 'information-receivers' who copy the images without developing analytical skills in the process?").

57. *See* Johnson, supra note 10, at 597–98 ("Supporters of the case method argue it teaches students to 'think like a lawyer' (e.g., logically, critically, and carefully), and it is far superior to the passive spoon-feeding of the lecture method that it replaced.") (citing Stephen R. Alton, *Roll Over Langdell, Tell Llewellyn the News: A Brief History of American Legal Education*, 35 OKLA. CITY U. L. REV. 339, 351 (2010); John E. Dunsford, *In Praise of Casebooks (A Personal Reminiscence)*, 44 ST. LOUIS U. L.J. 821, 822 (2000); Stephen M. Johnson, *Teaching for Tomorrow: Utilizing Technology to Implement the Reforms of MacCrate, Carnegie, and Best Practices*, 92 NEB. L. REV. 46, 49 (2013); Stephen J. Shapiro, *Teaching First-Year Civil Procedure and Other Introductory Courses by the Problem Method*, 34 CREIGHTON L. REV. 245, 247 (2000)).

58. MCCLURG, supra note 10, at 212.

59. While cognitive overload is known to degrade a student's learning, see *infra* Section III.C, it is also generally accepted that cognitive underload also negatively affects learning. Fred Paas, Alexander Renkl, & John Sweller, *Cognitive Load Theory: Instructional Implications of the Interaction Between Information Structures and Cognitive Architecture*, 32 INSTRUCTIONAL SCI. 1, 1 (2004).

60. *See, e.g.*, Holloway & Friedland, *supra* note 8, at 416 ("[K]nowing the theory of the law without knowing how the law operates is, for most law students, a poor bargain.") (citing BRIAN Z. TAMANAHA, FAILING LAW SCHOOLS 172 (2012)).

lawyers.[61] They may believe that law students must pull themselves up by their own bootstraps and conclude that teaching students the skills they need to be competent law students and lawyers is spoon-feeding.[62] Related to this is the idea that lawyers must work hard and that law students should be introduced to those struggles early on.[63]

To a certain extent, the academy's dismissiveness of spoon-feeding may be an artifact of the traditional theory-skills divide.[64] According to this view, law schools must be more than mere trade schools,[65] and professors must teach students to be professionals, not mere technicians.[66] At its most extreme, this view holds that independent thought is the hallmark of a professional, and anytime a professor makes something explicit, he is robbing students of independent

61. *See, e.g.*, Lani Guinier, Michelle Fine, Jane Balin, Ann Bartow, & Deborah Lee Stachel, *Becoming Gentlemen: Women's Experiences at One Ivy League Law School*, 143 U. PA. L. REV. 1, 74 n.198 (1994) (describing one male colleague's attitude toward mentoring as being "similar to 'spoon-feeding,' which is antithetical to traditionally valued notions of rigorous analytic work, whose lessons are best learned in isolated, intimidating, or stressful circumstances").

62. *See, e.g.*, Rogelio Lasso, *From the Paper Chase to the Digital Chase: Technology and the Challenge of Teaching 21st Century Law Students*, 43 SANTA CLARA L. REV. 1, 28 n.143 (2002) ("Providing all students with the tools to become better self-teachers is more pedagogically sound than expecting students to learn on their own, both what they need to learn to be competent lawyers and how to learn it. However, for professors whose goal is to teach only those who already possess the tools to learn on their own . . . then perhaps providing all students with the tools to learn on their own is 'spoon-feeding.'").

63. *See, e.g.*, Janeen Kerper, *Let's Space Out: Rethinking the Design of Law School Texts*, 51 J. LEGAL EDUC. 267, 278 (2001) ("Some will inevitably object that generating more readable law school texts is spoon-feeding the students. After all, don't students need to know how to navigate dense and undifferentiated texts to survive as practitioners?").

64. Heather K. Gerken, *Resisting the Theory/Practice Divide: Why the "Theory School" is Ambitious About Practice*, 132 HARV. L. REV. F. 134, 148 (2019); *see also* Guinier, Fine, Balin, Bartow, & Stachel, *supra* note 61.

65. This criticism has lost its sting since the Carnegie Report. For example, the school where I teach went from being derisively referred to as "a trade school on the Clark Fork River" to being lauded as one of the top schools in the country for experiential learning and clinical training.

66. Holloway & Friedland, *supra* note 8, at 416 (assuring readers that they are not suggesting "that law schools should be training people who are simply technicians").

thought. Finally, some resist any explicit instruction as spoon-feeding because they believe the law to be inherently unknowable.[67]

D. Is Our Fear of Spoon-Feeding Warranted?

The specter of spoon-feeding casts a shadow over those who opt for more explicit instruction in their classrooms. While the academy knows how frustrated 1Ls get as they struggle to make sense of the myriad new concepts and vocabulary thrown at them in their first semester, the collective belief reflected in our cultural mythology is that the ultimate reward of being able to think like a lawyer cannot be obtained any other way. As Professor McClurg explains, "we genuinely believe that the combination of the Socratic and case methods is the most effective way to train new law students to develop the critical-thinking skills they will need as lawyers."[68] In this regard, we are not unlike parents who believe that the pain of a spanking is for the child's own good, justified by the important lesson conveyed by the punishment.

Importantly, many students do experience a "light-bulb" moment at some point in their 1L years. It is a magical moment, indeed. As described by Professor McClurg, "[e]ven the Socratic-haters would be hard-pressed to deny that they really did arrive at law school with 'skulls full of mush,' yet exited the Socratic arena as facile thinkers and astute legal problem-solvers."[69]

This is an alluring promise—that a law student will enter law school with a mushy brain and exit with a facile mind. Those of us in the academy find the promise mostly rings true. Many of us personally experienced that kind of transformation in law school and continue to witness it with some of our students.

67. *See, e.g.*, James R. Beattie, Jr., *Socratic Ignorance: Once More into the Cave*, 105 W. VA. L. REV. 471, 487–88 (2003) ("Seen in this light, spoon-feeding settled legal content to our students performs a disservice. It presents students with an erroneous conception of the law while at the same time denying them the tools to create answers or solutions out of unsettled legal principles."); Pierre Schlag, *Hiding the Ball*, 71 N.Y.U. L. REV. 1681, 1685–86 (1996).

68. MCCLURG, *supra* note 10, at 104.

69. *Id.* at 105.

It is equally undeniable, however, that not everyone ends their 1L year as "facile thinkers and astute legal problem-solvers."[70] Many students never have a light-bulb moment. They struggle throughout law school, understanding just enough to pass their exams and avoid academic probation or exclusion, but never really understanding the big picture and perhaps not understanding enough to pass a bar exam.

E. Desirable Difficulties

Legal educators' revulsion of spoon-feeding reflects a belief that learning difficult material is necessarily difficult. Many teaching techniques associated with law school are designed to prompt students to practice and develop their higher order thinking skills by challenging them and making them uncomfortable.[71] In other words, our pedagogical goal is not to make things easy for our students. Instead, it is to teach students in a way that recognizes the cognitive characteristics of novices and uses teaching methods that maximize students' learning.

Cognitive psychology supports the academy's collective belief that a certain amount of struggle is necessary to achieve stable learning. Labeled "desirable difficulties," they range from random variations in the conditions of performance to "interleaving" materials so that students never feel fully at ease.[72] A certain amount of cognitive strain, therefore, enhances learning.[73]

Law professors tend to think of desirable difficulties as wrestling with complex concepts until that moment when the light bulb turns on and everything begins to make sense. What they fail to recognize is the cognitive strain a novice experiences in simply trying to understand basic concepts in a new domain. Cognitive strain arises from challenges that force us to exert mental effort. For example, humans are hard-wired to make immediate assessments about human facial

70. *Id.*

71. *See e.g.*, Borman & Haras, *supra* note 9, at 379–89 (discussing the benefits of the Socratic method).

72. The phrase "desirable difficulties" was coined by cognitive psychologist Robert Bjork, of the Bjork Learning and Forgetting Lab at UCLA. Bjork, *supra* note 30, at 190.

73. *Id.* at 189; KAHNEMAN, *supra* note 1, at 65; Catherine M. Christopher, *Normalizing Struggle*, 73 ARK. L. REV. 27 (2020) (encouraging legal educators to accept struggle as a beneficial and productive aspect of law school and lawyering).

expressions, the distance between two points, or the sum of 2+2.[74] In other words, humans make those assessments automatically, without thinking about them.

Effortful thought is required for humans to solve complex problems such as 17x24, or whether a contract satisfies the statute of frauds.[75] For novices who are learning basic concepts and vocabulary in a new domain, such as first-year law students, effortful attention is required simply to follow the discussion in class. Solving complex problems requires significant cognitive effort.[76] In this way, because complex thinking requires attention and effort, it creates "cognitive strain."[77] Familiarity, on the other hand, induces "cognitive ease," which can lead to a heavier reliance on automatic thinking as opposed to effortful thinking.[78]

Some student struggle is not only to be expected, but it is also necessary and should be lauded.[79] But many student struggles are not desirable; they are discouraging and dispiriting.[80] In spite of investing significant time and effort, students spin their wheels, going nowhere.[81]

74. KAHNEMAN, *supra* note 1, at 19–30.

75. *Id.*

76. *See* SWELLER, AYRES, & KALYUGA, *supra* note 1, at 57–66 (discussing cognitive load and the limits of working memory). Kahneman goes a step further and identifies problems that always require effortful attention, such as computing a complex mathematical problem. KAHNEMAN, *supra* note 1, at 21–22.

77. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 59–60.

78. KAHNEMAN, *supra* note 1, at 66–69; *see also* ERICSSON & POOL, *supra* note 33, at 99 ("Deliberate practice takes place outside own's comfort zone and requires a student to constantly try things just beyond his or her current abilities. Thus it demands near-maximal effort, which is generally not enjoyable."). KAHNEMAN, *supra* note 1, at 65.

79. Christopher, *supra* note 73.

80. Elizabeth Ligon Bjork & Robert A. Bjork, *Making Things Hard on Yourself, but in a Good Way: Creating Desirable Difficulties to Enhance Learning*, *in* PSYCHOLOGY AND THE REAL WORLD 56, 58 (Morton A. Gernsbacher, Richard W. Pew, Leaetta M. Hough, & James R. Pomerantz eds., 2011) ("If, however, the learner does not have the background knowledge or skills to respond to [difficulties] successfully, they become undesirable difficulties.").

81. PETER C. BROWN, HENRY L. ROEDIGER III, & MARK A. MCDANIEL, MAKE IT STICK: THE SCIENCE OF SUCCESSFUL LEARNING 141 (2014) ("While some kinds of difficulties that require increased cognitive effort can strengthen learning, not all difficulties we face have that effect. If the additional effort required to overcome the deficit does not contribute to more robust learning, it's not desirable.").

Rather than master their own thought processes, students spiral into deepening confusion and decreasing self-esteem. Their struggles do not inspire, they do not lead to long-term learning, and they offer no intrinsic reward.[82]

F. Thinking About Thinking: Bloom's Taxonomy

In the 1950s, a committee of the American Psychological Association chaired by Benjamin Bloom, an educational psychologist from the University of Chicago, published a framework for thinking about learning.[83] The goal was to assist teachers in creating useful and attainable learning objectives in their classrooms.[84] Known as *Bloom's Taxonomy*, it posits a hierarchical framework for thinking and learning, and consequently for teaching.[85]

According to *Bloom's Taxonomy*, human thought progresses in complexity. When we learn something new, we first gain knowledge and remember it. As we comprehend it, we can begin to apply it, then

82. Researchers strive to understand student motivation and its role in successful learning. In recent years, exhortations to foster students' "growth mindset" and "grit" have dominated educational news. *See generally* CAROL DWECK, MINDSET: THE NEW PSYCHOLOGY OF SUCCESS (2016); ANGELA DUCKWORTH, GRIT: THE POWER OF PASSION AND PERSEVERANCE (2016). It is a bit of a chicken-and-egg problem, though, i.e., do motivated students learn successfully or are successful students motivated to learn? At least one teacher has concluded that success is crucial to motivation. CRAIG BARTON, HOW I WISH I'D TAUGHT MATHS 82–88 (2018) ("We need to teach our students in such a way as to maximise the chance of them learning and understanding.").

83. BLOOM, ENGELHART, FURST, HILL, & KRATHWOHL, *supra* note 34. Over the decades, the Taxonomy has been updated, expanded, and revised. *See* A TAXONOMY FOR LEARNING, TEACHING, AND ASSESSING: A REVISION OF BLOOM'S TAXONOMY OF EDUCATIONAL OBJECTIVES 259 (Lorin W. Anderson, David R. Krathwohl, Peter W. Airasian, Kathleen A. Cruikshank, Richard E. Mayer, Paul R. Pintrich, James Raths, & Merlin C. Wittrock eds., 2001) (describing many modern versions of the Taxonomy). As refinements to the original Taxonomy, they accept the underlying premise, i.e., that human thought can be studied and categorized, and that those categories can inform our teaching.

84. BLOOM, ENGELHART, FURST, HILL, & KRATHWOHL, *supra* note 34, at 18.

85. *Id.*

analyze it, then synthesize it, and finally evaluate it.[86] The higher-order skills of analyzing, synthesizing, and evaluating are the skills we seek to teach our students.[87] However, in our quest to instill expert thinking skills in our students, we often overlook the fundamental building blocks of thinking. From the first day of law school, we assign students complex appellate decisions that present unfamiliar words, phrases, syntax, context, and doctrine. We further immerse them in classroom discussions that range taxonomically from comprehension (Level Two) to synthesis and evaluation (Levels Five and Six). While immersion is an effective way to teach a second language, students in immersion classrooms often have gaps in their language skills unless they are given supplemental instruction in vocabulary and grammar.[88] To the extent legal education is akin to learning a second language,[89] and to the extent legal education relies on implicit instruction, we too may be unintentionally creating gaps in our students' learning that explicit instruction could fill.

Bloom's provides categorical ways to distinguish detrimental spoon-feeding from useful explicit instruction. It first illustrates that knowledge is fundamental to thinking. Without knowledge, students have nothing to comprehend, analyze, synthesize, or evaluate.[90] The idea that knowledge is a necessary precondition for thinking highlights the importance of ensuring that students know, remember, and

86. *See generally* BLOOM, ENGELHART, FURST, HILL, & KRATHWOHL, *supra* note 34. *See also* Michael T. Gibson, *A Critique of Best Practices in Legal Education: Five Things All Law Professors Should Know*, 42 U. BALT. L. REV. 1, 7–8 (2012).

87. Gibson, *supra* note 86, at 10–12.

88. Roy Lyster & Hirohide Mori, *Instructional Counterbalance in Immersion Pedagogy*, *in* PATHWAYS TO MULTILINGUALISM: EVOLVING PERSPECTIVES ON IMMERSION EDUCATION 133 (Tara Williams Fortune & Diane J. Tedick eds., 2008).

89. *See, e.g.*, ELIZABETH MERTZ, THE LANGUAGE OF LAW SCHOOL: LEARNING TO "THINK LIKE A LAWYER" (2007).

90. NATALIE WEXLER, THE KNOWLEDGE GAP: THE HIDDEN CAUSE OF AMERICA'S BROKEN EDUCATION SYSTEM—AND HOW TO FIX IT (2019). The lack of fundamental knowledge reported by Ms. Wexler is shocking. High school teachers report students who "may confuse the Civil War and the civil rights movement." *Id.* at 21. "They may think Frederick Douglass and Martin Luther King Jr. were contemporaries." *Id.* Some "don't understand the difference between a country and a continent, or between a city and a state." *Id.* Ms. Wexler locates the genesis of these gaps in first, second, and third grades, with schools' emphasis on practicing skills at the expense of teaching students substantive knowledge. *Id.*

understand the law we are asking them to apply. Traditional legal education assumes that immersing students in high-level thinking will force them to acquire the knowledge they need to engage in such thinking. *Bloom's* helps to explain why this assumption may be incorrect, at least in the early stages of learning.

Thinking progresses from knowing and remembering to comprehending before moving to application, synthesis, and evaluation.[91] Without stable knowledge, memory, and comprehension of substantive material, students may flail when asked to apply it. We conclude that they are not learning to think like lawyers when in fact they may simply not have achieved sufficient knowledge and comprehension of the foundational law.[92]

In the language of *Bloom's*, the goal of legal education is to help students master higher order thinking within the domain of the law.[93] The initial stages of students' journeys involve learning both the substantive law as well as the process of applying the law to facts. Over time, as students become experts, the substantive knowledge of the law becomes grist for their mental mills, and the process of reasoning eclipses the acquisition of knowledge. But early in their careers, learning the law—what it is, where to find it, how to know which law applies, and how to cite it—is as challenging as learning to apply the law. More

91. "The relationship between fact learning and higher order learning is often speculated, but empirically unknown." Pooja K. Agarwal, *Retrieval Practice & Bloom's Taxonomy: Do Students Need Fact Knowledge Before Higher Order Learning?*, 111 J. EDUC. PSYCH. 189, 193 (2019). Agarwal conducted several experiments to better understand the relationship and found that "building a foundation of factual knowledge via retrieval practice did not enhance students' higher order learning." *Id.* at 202. However, it is not clear that Agarwal's subjects were learning an entirely new subject the way law students are. Law students' prior background knowledge may be influencing their early law school success.

92. Educational researcher Pooja Agarwal's recent research explores whether factual knowledge must precede higher-order thinking and concludes that it does not. *See* Agarwal, *supra* note 91. She concludes, "[w]hether a foundation of factual knowledge promotes higher order learning—and under what conditions—remains to be seen." *Id.* at 203. Agarwal's research did not rest on factual knowledge that was entirely unfamiliar to students the way that legal doctrine is entirely unfamiliar to many 1Ls and does not change the fundamental premise of this article—basic legal doctrine and the process of higher-order legal reasoning are best taught through initial explicit instruction.

93. *See* BLOOM, ENGELHART, FURST, HILL, & KRATHWOHL, *supra* note 34.

importantly, knowing some law is a necessary prerequisite to thinking about it.

Legal educators tend to conflate learning the law with learning to apply the law. Whether a 1L class is a doctrinal or skills class, assessments generally focus on students' ability to use legal reasoning. In other words, students must engage in higher-order thinking by applying law to facts. Rarely do law-school assessments test knowledge, the first level of *Bloom's* Taxonomy. Instead, they test the third, fourth, and fifth levels. Nonetheless, a student who has poor knowledge and comprehension will struggle with analysis, synthesis, and evaluation.

Because some students do very well in law school, it is tempting to assume that something is wrong with those who do not. From a cognitive psychology perspective, though, the students who do well are likely starting off with one or more advantages. They may have prior background knowledge, larger working memories, and faster reading ability.

G. We're Not the Only Ones: The Reading Wars

Legal education is not alone in basking in the reflected glory of students who learn easily while simultaneously throwing its hands up in exasperation with those who do not. Educators and researchers in other disciplines have thought a lot about this very conundrum. The dialogue in reading instruction is particularly robust, with similar discussions occurring in math and science instruction.[94]

Reading instruction has long pitted those who advocate for systematic phonics instruction against those who advocate for whole-language instruction[95]—a century-old dispute commonly referred to as the "reading wars."[96] In the middle of the reading-war spectrum is the

94. *See generally* Greg Ashman, Opinion, "*Inquiry Learning" May Backfire*, EDUCATION NEXT: BLOG, https://www.educationnext.org/inquiry-learning-may-backfire-teaching-math/ (last updated Nov. 5, 2019); BARTON, *supra* note 82; CRAIG BARTON, REFLECT, EXPECT, CHECK, EXPLAIN: SEQUENCES AND BEHAVIOUR TO ENABLE MATHEMATICAL THINKING IN THE CLASSROOM (2020); KIRSCHNER & HENDRICK, *supra* note 21, at 150–51 (discussing the use—and weaknesses—of discovery instruction in science education).

95. *See generally* KEN GOODMAN, ON READING (1996); KEN GOODMAN, WHAT'S WHOLE IN WHOLE LANGUAGE IN THE 21ST CENTURY (2014).

96. Peter Gray, *The Reading Wars: Why Natural Learning Fails in Classrooms*, PSYCH. TODAY (Nov. 19, 2013),

reading instructional approach most often used in the United States today, aptly referred to as "balanced literacy."[97]

Whole-language instruction is rooted in the idea that reading is primarily a process of memorizing what words look like.[98] Whole-language proponents believe that the best way to increase reading skills is to "read" many books.

Conversely, systematic phonics instruction is rooted in the idea that reading requires an understanding of the relationship between sounds and letters.[99] To become a skilled reader, a child must first learn to decode individual words by sounding them out.[100] This fundamental decoding skill enables students to orthographically map letters and words.

Balanced literacy sought to find a happy medium between these two camps. In the late 1990s, it settled into "three-cueing," which teaches beginning readers to sound out the first letter of a word and then look elsewhere to guess the meaning of the word.[101] In other words, three-cueing teaches students to rely on the context of a word to understand the word, rather than relying on the letters making up the word.[102]

Reading research shows unequivocally that initial explicit instruction in decoding words by sounding them out is more effective

https://www.psychologytoday.com/us/blog/freedom-learn/201311/the-reading-wars-why-natural-learning-fails-in-classrooms; Nicholas Lemann, *The Reading Wars*, ATLANTIC (Nov. 1997), https://www.theatlantic.com/magazine/archive/1997/11/the-reading-wars/376990/; Timothy Shanahan, *Have the Reading Wars Become Research Wars?*, READING ROCKETS (May 22, 2019), https://www.readingrockets.org/blogs/shanahan-literacy/have-reading-wars-become-research-wars.

97. "Balanced literacy" was intended to find a middle ground between whole-language proponents and phonics-first proponents. Emily Hanford, *At a Loss for Words: How a Flawed Idea Is Teaching Millions of Kids to Be Poor Readers*, AM. PUB. MEDIA: REPS. (Aug. 22, 2019), https://www.apmreports.org/episode/2019/08/22/whats-wrong-how-schools-teach-reading.

98. *Id.*

99. *Id.*

100. *Id.*

101. *Three Cueing Systems*, READING STRATEGIES, https://edla369readingstrategies.weebly.com/three-cueing-systems.html (last visited Dec. 27, 2021); *see also* Hanford, *supra* note 97.

102. Hanford, *supra* note 97. ("Experiments that force people to use context to predict words show that even skilled readers can correctly guess only a fraction of the words . . . .").

than either whole-language instruction or balanced literacy.[103] It levels the playing field among students who otherwise have significant differences in prior background knowledge, reading ability, and working memories.[104] Importantly, decoding is a skill that must be taught explicitly. As a biologically secondary skill, reading does not develop naturally the way that spoken language does.[105] Learning to guess words or memorize them rather than decode them, moreover, interrupts the progression of reading mastery.[106]

Whole-language instruction is an example of implicit instruction.[107] Implicit instruction relies on immersion—putting students into the deep end of the pool while teachers stand on the side, asking questions and throwing out hints designed to help students figure out how to stay afloat. In contrast, explicit instruction tells students how to float and how to swim before they get in the pool and offers coaching from the sidelines. Thus, whole-language reading instruction at its most extreme gives beginning readers books and trusts that they will figure out how to read them.[108] It does not teach students how to decode words using phonics.[109]

Implicit instruction in legal education is like whole-language reading instruction. It immerses novice law students in complex texts,

103. Hanford, *supra* note 97; Dana Goldstein, *An Old and Contested Solution to Boost Reading Scores: Phonics*, N.Y. TIMES (Feb. 15, 2020), https://www.nytimes.com/2020/02/15/us/reading-phonics.html.

104. Hanford, *supra* note 97; *see also* Peter Dewitz, *Legal Education: A Problem of Learning from Text*, 23 N.Y.U. REV. L. & SOC. CHANGE 225, 226 (1997) ("What readers know determines what they will comprehend.").

105. *See supra* Section I.B (discussing law as biologically secondary knowledge).

106. Hanford, *supra* note 97. Unfortunately, the predominant reading method in the United States for the past few decades is rooted in teaching students to guess words rather than decode them. *Id.*; *Three Cueing Systems*, *supra* note 101.

107. Marilyn Jager Adams, *Why Not Phonics and Whole Language*, *in* ALL LANGUAGE AND THE CREATION OF LITERACY 40 (W. Ellis ed., 1991), *reprinted by* Donald L. Potter (Jan. 21, 2008), https://static1.squarespace.com/static/5cdc8a108dfc8cb0517030e2/t/5d9cecf17dfe444c09fc4973/1570565362757/Why+Not+Phonics+and+Whole+Language_.Moats.pdf.

108. Kenneth S. Goodman, *Reading: A Psycholinguistic Guessing Game*, *in* THEORETICAL MODELS & PROCESSES OF READING 497 (Harry Singer & Robert B. Ruddell eds., 2d ed. 1976).

109. Adams, *supra* note 107, at 4.

confident that their reading coupled with classroom discussion will lead them to enlightenment and understanding. At its most extreme, it does not provide explicit instruction in vocabulary, procedural posture of a case, or legal doctrine.

Importantly, the evidence for ideal reading instruction does not say students should get systematic phonics instruction and nothing else.[110] Instead, it simply says the first step in learning to read is learning to decode individual words rather than guess them. In other words, explicit instruction provides students an essential tool for decoding the meaning of words on the page. Reading complicated texts is one of the pleasures of reading if the reader knows most of the words being used.[111] When readers must spend all their time decoding individual words, "reading is harder, slower, and less fun."[112]

In other words, the goal of explicit instruction—whether in reading or in the law—is to prepare students for greater complexity.[113] Reading is most interesting when you are reading interesting books.

110. *See* Keith Rayner, Barbara R. Foorman, Charles A. Perfetti, David Pesetsky, & Mark S. Seidenberg, *How Psychological Science Informs the Teaching of Reading*, 2 PSYCH. SCI. PUB. INT. 31 (2001), https://www.researchgate.net/publication/2590161_How_psychological_science_informs_the_teaching_of_reading; Anne Castes, Kathleen Rastle, & Kate Nation, *Ending the Reading Wars: Reading Acquisition from Novice to Expert*, 19 PSYCH. SCI. PUB. INT. 5 (2018), https://journals.sagepub.com/doi/pdf/10.1177/1529100618772271.

111. DANIEL T. WILLINGHAM, THE READING MIND: A COGNITIVE APPROACH TO UNDERSTANDING HOW THE MIND READS 89 (2017). "Studies that have measured readers' tolerance of unfamiliar vocabulary estimate that readers need to know about 98% of the words for comfortable comprehension." *Id.* at 90. It is difficult to imagine that any 1L knows 98% of the words in an appellate opinion.

112. WILLINGHAM, *supra* note 111, at 89. Scholars have long observed a connection between law students' reading ability and their academic success. *See, e.g.*, Dewitz, *supra* note 104, at 226; Ian Gallacher, *"Who Are These Guys?": The Results of a Survey Studying the Information Literacy of Incoming Law Students*, 44 CAL. W. L. REV. 151 (2007); Leah Christensen, *Legal Reading and Success in Law School: An Empirical Study*, 30 SEATTLE U. L. REV. 603 (2007); Leah Christensen, *The Paradox of Legal Expertise: A Study of Experts & Novices Reading the Law*, 2008 BYU EDUC. & L.J. 53; Jane B. Grisé, *Good Critical Reading Strategies Can Improve Legal Writing*, 82 BENCH & BAR 30 (2018); Carolyn V. Williams, *#CriticalReading #WickedProblem*, 44 S. ILL. U. L.J. 179 (2020); Patricia Grande Montana, *Bridging the Reading Gap in the Law School Classroom*, 45 CAP. U. L. REV. 433 (2017); *Of Moby Dick & Tartar Sauce*, *supra* note 3, at 136 (discussing declines in reading skills).

113. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 64.

But a reader will never enjoy the rich world of literature if she cannot first learn the secret of unlocking each word, sound by tedious sound.

Just as letters and sounds are the building blocks of all great literature, so are vocabulary and logic the building blocks of great legal thinking. Whenever we wonder whether we are making something too obvious, or spoon-feeding our students, a few guideposts can help us logically consider that question.

First, is what we are showing them akin to teaching beginning readers how to decode words by sounding out individual words? If so, that is not "spoon-feeding" students. That is providing them with basic building blocks and giving them concrete examples with which to practice.

Second, are we respecting the limits of students as novice learners? Tasks that are easy for experts are surprisingly complex for novices. Experts have complex schema that make their understanding richer and deeper than a novice's simple and superficial understanding.[114] If we want novices to build their schemas, we must give them opportunities to practice skills to obtain mastery. Yes, we want to push them out of their comfort zones and into unfamiliar territory—but when they encounter new vocabulary, new concepts, and complex texts, such as appellate decisions with layers of meaning, they are being pushed plenty. It is equally important to help students experience success and build confidence in their ability to learn the law.[115] It is important not to cognitively overwhelm them.

114. *See infra* Section III.A.

115. Students' motivation is tied to their perception that they are learning. *See* KIRSCHNER & HENDRICK, *supra* note 21, at 98–104 (discussing Bernard Weiner, *An Attributional Theory of Achievement Motivation and Emotion*, 92 PSYCH. REV. 548 (1985)).

III. COGNITIVE CHARACTERISTICS OF NOVICES AND EXPERTS

Novices think differently than experts.[116] They also see problems differently than experts.[117] Novices' initial schema are understandably incomplete and shallow and—importantly—may contain errors.[118] Teachers can help students identify and correct errors in their schema so that subsequent knowledge is correctly assimilated. If they do not, novices will build their schema on faulty understanding.[119]

One explanation for why professors may think they are spoon-feeding, while students think professors are hiding the ball, is their difference in expertise. A person's expertise frames how that person identifies and categorizes a problem and influences how that person will attempt to solve the problem.[120] Whereas experts categorize problems based on their structure, novices view them superficially.[121] In other words, students are not being obstinate when they do not see how the problem you are asking them to solve is like the problem you just discussed. Prior knowledge makes deep structure more visible, which necessarily changes one's approach to problem-solving.[122]

116. For a helpful schematic illustrating the relationship between a person's prior knowledge and the problem-solving process they employ, see Timothy Nokes-Malach, Christian D. Schunn, & Michelene T.H. Chi, *Problem Solving and Human Expertise*, *in* 5 INTERNATIONAL ENCYCLOPEDIA OF EDUCATION 265, 266 (Penelope Peterson, Eva Baker, & Barry McGaw eds., 3d ed. 2010).

117. *See* Michelene T.H. Chi, Paul J. Feltovich, & Robert Glaser, *Categorization and Representation of Physics Problems by Experts and Novices*, 5 COGNITIVE SCI. 121, 122 (1979) ("It is well known by now that the quality of a problem representation influences the ease with which a problem can be solved.") (citing Herbert A. Simon & John R. Hayes, *The Understanding Process: Problem Isomorphs*, 8 COGNITIVE PSYCH. 165 (1976); NEWELL & SIMON, *supra* note 26).

118. *Id.*

119. *See id.*

120. *See id.*

121. KIRSCHNER & HENDRICK, *supra* note 21, at 5 (discussing Chi, Feltovich, & Glaser, *supra* note 117).

122. *Id.* at 6.

A. Schemas Are Evidence of Expertise

The cascade of thoughts that springs to one's mind unbidden evidences what cognitive science refers to as "schemas."[123] Experts have richly complex schemas, reflecting the layers of knowledge they have developed over time. Novices do not. When novices hear new information, they either assimilate it into their existing schemas or accommodate their existing schemas to adapt to the new knowledge.[124] Otherwise, it simply goes in one ear and out the other.[125]

As a result of these schemas, experts literally see problems differently than novices do.[126] This difference is attributed in part to the difference in domain-specific knowledge between experts and novices.[127] Additionally, experts' knowledge is contextualized—they recognize when to apply their knowledge—whereas novices' knowledge is inert; "it has been learned but cannot be accessed for problem solving."[128] Finally, experts are able to retrieve their knowledge effortlessly, while novices exert tremendous effort to remember and apply what they have learned.[129]

123. First coined by Jean Piaget in 1952, the term "schema" refers to a mental structure that organizes and categorizes information. *Id.* In discussing chess masters' schema, one researcher wrote, "a schema is defined as a structure which allows problem solvers to recognize a problem state as belonging to a particular category of problem states that normally require particular moves." Sweller, *supra* note 26, at 259.

124. KIRSCHNER & HENDRICK, *supra* note 21, at 8–9 (discussing Piaget and the processes of assimilation and accommodation). The third option is to discard the new information. *Id.*

125. I have long imagined novices' brains as laundry chutes, which are smooth-sided so that nothing gets caught on the way down. Without schema—mental hooks in their brains—students' brains have nothing with which to catch new information. It comes in and sails out.

126. Kirschner, *supra* note 16, at 147. Phillip Kellman of UCLA has used this observation to develop a program to train novice pilots' ability to spot problems on an airplane instrument panel. BENEDICT CAREY, HOW WE LEARN: THE SURPRISING TRUTH ABOUT WHEN, WHERE, AND WHY IT HAPPENS 185–90 (2014).

127. Kirschner, *supra* note 16, at 147. Notice that this observation applies regardless of the domain and explains why a plumber sees your pipes differently than a non-plumber does as fully as it explains why lawyers notice things that non-lawyers do not.

128. *Id.* at 148.

129. *Id.*

These differences reflect the multitude of connections in experts' minds versus the paucity of schema in novices' minds.[130] For civil litigation experts, for example, hearing the phrase "Rule 12(b)(6)" triggers a cascade of related concepts through their brains. For contracts experts, the word "formation" triggers a similar cascade. But for someone who is *not* an expert in a subject, hearing a word or phrase produces more of a thud. To someone who is not an expert in microbiology, for example, "microbial antagonism" may trigger them to pay attention and wait for more or search their brains for other connections that will help them understand. Standing alone, though, the phrase is meaningless.

B. What Happens When Schema Are Incorrectly Formed?

When learning something for the first time, novices have few schemas to which to connect the information. To make sense of new information, they try to connect it to existing knowledge. Importantly, they will do so even if the connection is faulty.[131] When we initially misunderstand information, we build a faulty connection. When we retrieve that memory with its mistaken connection, we strengthen our misunderstanding.[132]

It is difficult to undo faulty learning. To identify errors in our thinking, we must reveal our mistakes and have them quickly corrected so that we can reorganize our schemata. Otherwise, retrieving our misunderstandings from long-term memory strengthens the misunderstandings. Getting the test back a week or a month later will not correct students' misunderstandings unless they are forced to confront their mistakes, grapple with them, and find new understandings to store in long-term memory. Even then, the new connection may be weak, and the old faulty connection may be stronger.

130. *Id.*

131. *See* Chi, Feltovich, & Glaser, *supra* note 117, at 122; WILLINGHAM, *supra* note 2, at 94–95.

132. Memory is not like a file drawer; we do not open it up and look through it to find something. Instead, memory is a constructive process. YANA WEINSTEIN & MEGAN SUMERACKI, UNDERSTANDING HOW WE LEARN: A VISUAL GUIDE 67–68 (2019) (citing Daniel L. Schacter, *Memory: An Adaptive Constructive Process*, *in* MEMORY: A HISTORY 291 (Dmitri Nikulin ed., 2015)).

For example, when I first saw photos of my friend Natalie's new beau, Spencer, he reminded me of Sheldon from *Big Bang Theory*—so I jokingly referred to him by that name. Whenever I texted Natalie about him, I would use the name Sheldon. When I finally met him a few months later, I called him Sheldon. She said he didn't mind, it was a fun joke among all of us, but pretty soon I realized I honestly could not remember whether his name was Spencer or Sheldon. After getting to know him and realizing Natalie really liked him, the joke became old. Basic respect requires remembering someone's name correctly. But every time I tried to retrieve his name from my memory, I struggled. I finally confessed to him, hoping that his acceptance would allow me to openly try out names rather than revert to omitting his name altogether ("Hi! . . . "). Not only did he understand, but he also told me that his name is Princess Diana's family name. That connection worked perfectly for me. Since then, each time I think of him I hesitate—then I remember Princess Diana and know that his name is Spencer.

This is in many ways a silly example, but it is still highly relevant. I really care about Natalie, and I do not want to disrespect her new boyfriend. I'm not sure my students similarly care about Torts or Contracts, although they have varying degrees of motivation to learn and get good grades. My desire to get it right was not enough for me, though. I could not consistently recall Spencer's name until I could call to mind a conscious concrete thought to guide me to the proper answer. Because I had remembered his name incorrectly several times, my brain believed that was the correct name. To override that mistake, I had to consciously think of a guidepost. Having retrieved his name properly for several months, the connection to Spencer is now thankfully stronger than the connection to Sheldon.

According to educational researcher Graham Nuthall, a student must encounter a new concept on at least three different occasions to learn it.[133] Until then, "the new experience is treated as just another

133. GRAHAM NUTHALL, THE HIDDEN LIVES OF LEARNERS 63 (2007). Based on this observation, and with detailed observations of the number of times a teacher discussed a new concept, Nuthall's team could predict with 80–85% accuracy which students would learn the concept and which ones would not. *Id.* at 63–73. Importantly, an "encounter" may involve an inference from other information. *Id.* at 69.

version or aspect of a known concept and is absorbed into it, or simply forgotten."[134]

Imagine, then, how difficult it is to learn a concept in Torts, especially if you misunderstood it initially. Imagine a student whose working memory was severely overloaded at the beginning of the semester, and who never fully grasped the concept of legal duty. The student encountered the word "duty" more than three times, giving her brain sufficient grist to develop a new schema. But duty is an abstract notion. She may have read *Palsgraf* and listened to the discussions in class about the differences between Cardozo's and Andrews's opinions. But she cannot remember which opinion was about duty and which was about proximate cause. She may not remember whether Mrs. Palsgraf won or lost. Her knowledge is fuzzy and unstable, making it unlikely she will be able to properly apply the rules she has been taught to a fact pattern on an exam.

C. Without Developed Schemas, Novices Suffer from Cognitive Overload

When my daughter was learning to drive, a friend asked her, "can you believe people text while they're driving?" My daughter gave my friend a look of disbelief and said, "I can't even roll down the windows while I'm driving." Cognitive psychologists describe that as cognitive overload from a primary task—learning to drive—that interferes with the ability to accomplish a secondary task—rolling down the windows.

Ten years later, my daughter can not only roll down the windows while she drives, but she can also talk to a passenger, listen to a podcast, and mentally plan a route to her destination. From a cognitive psychological point of view, she has become an expert driver. She has developed schemas that allow her to perform most driving tasks automatically, freeing up her conscious attention for secondary tasks.

First-year law students are like novice drivers. It takes all of the attention they can muster to be prepared for class and answer the professor's questions.

134. *Id.* at 73. "In the normal course of events, this processing takes place unconsciously." *Id.*

Because novices have fewer schemas than experts, they must use more of their conscious minds to attend to new information than experts. New information initially flows through working memory, which is finite and limited.[135] When we hear or read something unfamiliar, we must consciously attend to it. If we do not understand unfamiliar information, we either discard it or misunderstand it.[136]

Cognitive load theory differentiates between intrinsic cognitive load, which reflects the complexity of the information being conveyed, and extrinsic cognitive load, which is imposed on the learner by the teacher's instructional methods.[137] The number of elements—things that must be learned or processed—increases or decreases extrinsic and intrinsic cognitive load, as does the interactivity of the elements.[138] Some material can be learned one element at a time, and therefore requires minimal working memory.[139] Other material requires the learner to process several elements in working memory at one time, increasing the cognitive load on the learner's working memory.[140] For example, learning individual words in a new language can be a low-element task, while speaking in complete sentences with proper vocabulary, verb conjugation, and syntax presents high element interactivity.[141]

Because humans' working memories are limited, we can reach a point where we have no more attention to give.[142] If you have ever

135. NELSON COWAN, WORKING MEMORY CAPACITY 3 (Classic ed. 2016). In contrast, long-term memory "never reaches a point at which new experiences can no longer be committed to memory; the brain cannot be full." *Id.* at 1; *see also* Nelson Cowan, *What Are the Differences Between Long-Term, Short-Term, and Working Memory?*, 169 PROGRESS BRAIN RSCH. 323 (2008).

136. *See* KIRSCHNER & HENDRICK, *supra* note 21 and accompanying text (discussing Piaget's theory of assimilation and accommodation). Educational researcher Graham Nuthall believes a student must encounter a new concept on at least three different occasions to learn it. NUTHALL, *supra* note 133, at 63. ("If the information was incomplete, or not experienced on three different occasions, the student did not learn the concept.").

137. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 57.

138. *Id.* at 58.

139. *Id.* at 58–59.

140. *Id.*

141. *Id.*

142. When total cognitive load—intrinsic plus extrinsic—exceeds the limits of a student's working memory, "processing necessary information may become difficult and so learning may cease." *Id.* at 67.

read and reread a paragraph several times, seeing words but not comprehending their meaning, you have experienced cognitive overload. It may happen because you are thinking about something else or because you are unfamiliar with what you are reading. Regardless of the impetus, the words are like tiny bricks on a page, against which you're hitting your head over and over.

The limits of working memory are also observable when you are learning a new language. Because novices must think about words as they hear them, or before they speak, they generally prefer someone who speaks slowly and enunciates clearly.[143]

Law is complicated. Because it has multiple elements that are highly interactive, it has a high intrinsic cognitive load.[144] Novice 1Ls are learning multiple layers of law at once.[145] They are learning vocabulary in the context of appellate decisions that reflect the trial process as well as the appellate process. They are learning law's grammar and syntax by listening to their professors speak and practicing when called upon.[146] Once their working memories are at maximum processing, unfamiliar words, phrases, and syntax become omnipresent noise.

When students' working memories are overloaded, they stop learning.[147] They do not hear what you are saying, they do not

143. One of the most important phrases a new Spanish speaker can learn is, "más despacio, por favor"—"slow down, please." Recognizing this, a podcast gives novice language learners opportunities to practice comprehension by listening to news at slower speeds than regular news broadcasts. *See News in Slow Spanish Live!*, NEWS IN SLOW SPANISH, https://www.newsinslowspanish.com/ (last visited Dec. 28, 2021).

144. Highly interactive material is difficult to learn. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 61. When the elements are also difficult to learn on their own, the material can be "exceptionally difficult to learn." *Id.*

145. Kirschner, *supra* note 16, at 150 (explaining how whether the student is learning law or science, the student first must acquire "a broad, critical knowledge of the particular subject matter through formal learning processes") (citing William C. Kyle, Jr., *The Distinction Between Inquiry and Scientific Inquiry and Why High School Students Should be Cognizant of the Distinction*, 17 J. RSCH. SCI. TEACHING 123 (1980)).

146. MERTZ, *supra* note 89. Mertz studied the acquisition of legal language in law school classrooms from a linguistic anthropological point of view, concluding that learning to speak, write, and think like a lawyer is "an initiation into a particular linguistic and textual tradition found in our society." *Id.* at 3–4.

147. My first introduction to the concept of cognitive overload came at a AALS 2007 workshop for new law teachers. Alison Grey Anderson of UCLA used the image

understand what they are reading, and they cannot follow the classroom conversation. At various times, students' brains essentially check out. They may not leave the classroom, but they are temporarily unable to process new information.

D. Managing Cognitive Overload with Explicit Instruction

Why do some students struggle more than others with cognitive overload? First, although working memory is limited in everyone, some people have more working memory than others.[148] Second, some students have existing knowledge that allows such students to easily and correctly connect new information. Students' background knowledge may reflect their prior education, work experience, or home environments. The more complex an individual's background knowledge, the more schemata a person has to connect to and cement new knowledge.

When a student "understands" a concept, the student can process all the necessary elements related to that concept in working memory.[149] One way this occurs is that the student learns the concept. In the language of cognitive overload theory, she develops schemas that allow her to process a group of interacting elements as a smaller number of elements.[150]

Experts do many tasks automatically, which means they devote few working memory resources to initially processing information. For example, skilled readers decode text automatically, thereby freeing up working memory resources to use for comprehension.[151] Skilled math students do not struggle to remember what three times four is; they can devote their cognitive resources to thinking more deeply about more abstract mathematical concepts.[152] Skilled drivers can both attend to driving and easily roll down their windows.

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of geese who are force-fed to produce paté as a metaphor for law students who are incapable of digesting more information.

148. *See generally* COWAN, *supra* note 135.

149. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 62.

150. *Id.* at 64. "A major function of learning is to dramatically reduce element interactivity and intrinsic cognitive load by incorporating interacting elements into schemas." *Id.* at 65.

151. *See generally* WILLINGHAM, *supra* note 111.

152. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 63–64.

Students can learn by rote, such as learning multiplication tables, or they can learn with understanding.[153] The ultimate goal in teaching, however, is for students to understand the material, not merely to be able to recite it without understanding.[154] This is what we mean when we say we want students to not merely be able to recite legal rules, but also to be able to think like lawyers.

Learning foundational knowledge by rote reduces high element interactivity and cognitive load.[155] Rote learning is insufficient to achieve understanding and transfer that knowledge to novel problems.[156] However, "it may not be possible for very high element interactivity material to be simultaneously processed in working memory because working memory limits may be exceeded."[157] Learning new material element by element, and reducing students' processing of element interactivity can allow students to develop schemas that will eventually lead to deeper learning.[158]

When instructional material has a high intrinsic cognitive load, educators can structure their classes to reduce extrinsic cognitive load.[159] One way to do this is to teach explicitly in small chunks.[160] Additional techniques include checking for understanding through low-stakes quizzes, providing guided practice to promote retrieval and deepen connections to new and existing schemata, and eventually providing independent practice.[161]

The limits of working memory and the privilege of prior knowledge offer strong explanations of why traditional legal education

153. *Id.* at 62.

154. *Id.* at 64.

155. *Id.* at 63.

156. *Id.* A student's ability to apply knowledge to a novel situation is known as "transfer." WILLINGHAM, *supra* note 2, at 97; *see also supra* notes 151–53 and accompanying text.

157. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 64.

158. *Id.*

159. *Id.* at 67–68.

160. *Id.* at 64 (citing Edwina Pollock, Paul Chandler, & John Sweller, *Assimilating Complex Information*, 12 LEARNING & INSTRUCTION 61 (2002)).

161. *See* Dani Brecher Cook & Kevin Michael Klipfel, *How Do Our Students Learn? An Outline of a Cognitive Psychological Model for Information Literacy Instruction*, 55 REFERENCE & USER SERVS. Q. 34 (2015).

works for some students much better than it does for others.[162] Moreover, those students who grew up in homes where one or more parents were lawyers, or who worked as paralegals or legal assistants before law school, have more familiarity with legal words, phrases, and concepts. This advantage has never been directly measured and may last only a few months until other students' background knowledge increases. But given the structure of law school and the importance of 1L grades, small advantages early in law school can lead to substantial advantages over time.

E. The Ultimate Prize: Long-Term Memory

As we become increasingly familiar with information and begin to make sense of it, we develop schemas, which we store in long-term memory.[163] The ability to apply existing knowledge in novel contexts is known in cognitive psychology as "transfer."[164] Transfer describes

162. "Individual differences in [working memory] capacity are associated with variation in several important abilities, including control of attention, non-verbal reasoning ability and academic performance." Christos Constantinidis & Torkel Klingberg, *The Neuroscience of Working Memory Capacity and Training*, 17 NATURE REVS. NEUROSCIENCE 438, 438 (2016) (citing Michael J. Kane, Leslie H. Brown, Jennifer C. McVay, Paul J. Silva, Inez Myin-Germeys, & Thomas R. Kwapil, *For Whom the Mind Wanders, and When: An Experience-Sampling Study of Working Memory and Executive Control in Daily Life*, 18 PSYCH. SCI. 614 (2007); Patrick C. Kyllonen & Raymond E. Christal, *Reasoning Ability is (Little More Than) Working-Memory Capacity?!*, 14 INTELLIGENCE 389 (1990); Susan E. Gathercole, Leanne Brown, & Susan J. Pickering, *Working Memory Assessments at School Entry as Longitudinal Predictors of National Curriculum Attainment Levels*, 20 EDUC. & CHILD PSYCH. 109 (2003)).

163. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 64–65.

164. Susan M. Barnett & Stephen M. Ceci, *When and Where Do We Apply What We Learn? A Taxonomy for Far Transfer*, 128 PSYCH. BULL. 612, 613 (2002). "Near" transfer involves applying learning from one context to a closely related but novel context. JOSE MESTRE, TRANSFER OF LEARNING: ISSUES AND RESEARCH AGENDA 3 (2002). "Far transfer refers both to the ability to use what was learned in one setting to a different one as well as the ability to solve novel problems that share a common structure with the knowledge initially acquired." *Id.* A student's ability to transfer knowledge is evidence of deep learning. Barnett & Ceci, *supra*, at 613; WILLINGHAM, *supra* note 2, at 97.

the essential differences between a novice and an expert.[165] A novice attends to superficial characteristics of a problem and fails to see structural similarities that facilitate problem-solving.[166] An expert does the opposite.[167]

Long-term memory appears to be unlimited.[168] Every time we retrieve information from long-term memory, we strengthen the memory of it and forge new connections to other information in our long-term memories.[169] From a cognitive psychology standpoint, encountering something familiar means a person accessed information stored in long-term memory and used that information to identify something, be it a flower or a legal rule.[170] Long-term memory is a source of substantive and procedural knowledge.[171]

When something is highly familiar, recognition and cognition are almost instant.[172] In other words, experts use knowledge—stored in long-term memory—to identify and respond to external stimuli without having to really think about it.[173] When a person encounters something unfamiliar, though, long-term memory does not produce an instant answer. The person must search her memory for analogous patterns or memories of similar things. She must engage in effortful

165. CAREY, *supra* note 126, at 155 (describing transfer as "the ability to extract the essence of a skill or formula or word problem and apply it in another context, to another problem that may not look the same, at least superficially").

166. Kirschner, *supra* note 16, at 147.

167. *Id.*

168. *See supra* note 135 and accompanying text (discussing Cowan).

169. *See generally* POOJA K. AGARWAL & PATRICE M. BAIN, POWERFUL TEACHING: UNLEASH THE SCIENCE OF LEARNING (2019); WEINSTEIN & SUMERACKI, *supra* note 132, at 118–34; Christopher, *supra* note 73, at 50–51 (discussing retrieval in the context of law school).

170. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 18–19.

171. *See generally* COWAN, *supra* note 135 and accompanying text.

172. Cognitive psychology refers to this as automaticity. WILLINGHAM, *supra* note 2, at 111. Experts' schemas are stored in long-term memory, allowing them to do certain cognitive tasks automatically, i.e., without much conscious thought. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 48–50.

173. Importantly, expertise must be specific to a domain. "You don't train your memory; you train your memory for strings of digits or for collections of words or for people's faces. You don't train to become an athlete; you train to become a gymnast or a sprinter or a marathoner or a swimmer or a basketball player." ERICSSON & POOL, *supra* note 33, at 60.

thinking because she lacks automatic thought. "Indeed, one could define a mental representation as a conceptual structure designed to sidestep the usual restrictions that short-term memory places on mental processing."[174]

The goal of education is to change long-term memory by developing domain-specific schema that allow for automatic thinking.[175] Extensive schema are the definition of expertise. Developing them takes time and practice; simply memorizing rules is insufficient.[176] Over time, experts' long-term memories give them the ability to recognize underlying patterns and not be distracted by superficial characteristics.[177]

The goal of explicit instruction is to prepare students for more complex thinking.[178] It is not intended to be an end in itself.[179] Legal education's familiar pedagogical tools are well-designed to press students into higher order thinking and hone their legal reasoning skills.[180]

174. *Id.* at 61.

175. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 24. The expert's automatic thinking allows her to get to the heart of solving the problem more quickly. Solving the problem is not automatic; recognizing and evaluating the problem are.

176. *Id.* at 20–24 (discussing chess grandmasters' expertise in recognizing a chess board within a few seconds).

177. It is worth noting the importance of time in developing expertise. Psychologist K. Anders Ericsson first posited the notion that to be an expert, one must put in 10,000 hours of practice. K. Anders Ericsson, Ralf Th. Krampe, & Clemens Tesch-Romber, *The Role of Deliberate Practice in the Acquisition of Expert Performance*, 100 PSYCH. REV. 363 (1993). Ericsson has clarified that practice must be purposeful if it is to lead to expertise; "naïve" practice is insufficient. ERICSSON & POOL, *supra* note 33, at 14–22. Almost by definition, law students will not become experts while in law school. Our goal instead is to help them develop a foundation of accurate knowledge to prepare them to develop the initial schema and habits of deliberate practice that will sustain their evolution from novice law student to expert lawyer.

178. SWELLER, AYRES, & KALYUGA, *supra* note 1, at 64.

179. This is true whether explicit instruction is being used in a 1L classroom or in bar review. All parts of the academy strive to teach students how to engage in legal analysis—whether in a doctrinal course, a legal writing course, a clinic, or a bar prep course. We generally agree on the ultimate destination; it is the various methods for getting there that are being considered here.

180. Whereas some disciplines struggle to deepen students' learning, legal education excels at pedagogical techniques aimed at intermediate and advanced learners. It is less assured in the initial stages of learning.

IV. COGNITIVE OBSTACLES TO INTENTIONAL PEDAGOGY

Understanding students' cognitive structures informs instructional design by reminding educators to respect the limits of novices' working memories. Additionally, cognitive psychology reveals ways in which legal educators' expertise can hamper our effectiveness as teachers. First, expertise in any domain leads to an inability to remember what it was like to be a novice in that domain. This is a cognitive bias known as "the curse of knowledge." Second, the desire to teach students to be experts frequently leads educators to teach students as though they are already experts. Developing awareness of such cognitive biases empowers experts to learn how to teach more effectively.

A. The Curse of Knowledge

Given legal educators' significant expertise, it seems that teaching novice learners should be straightforward and uncomplicated.[181] This is not true primarily due to the difficulty experts have in remembering what it was like to be a novice, and their inability to recognize that difficulty. This chasm between experts' predictions of how well they will communicate their knowledge to a novice and novices' actual understanding is known as the "curse of knowledge."[182] It is a recognized cognitive bias in which the expert's knowledge makes it difficult to remember what it is like not to have the expert's knowledge. [183]

181. Legal educators are hired primarily because of their expertise in the law. Recognizing this, the Association of American Law Schools offers an annual workshop for new law professors.

182. CHIP HEATH & DAN HEATH, MADE TO STICK: WHY SOME IDEAS SURVIVE AND OTHERS DIE 114–15 (Hardcover ed. 2008).

183. *See, e.g.*, DeAnna Myers, *Problem Solving Knowledge Transfer: An Expert's Perspective*, NW. SCH. EDUC. & SOC. POL'Y (Dec. 2012) https://www.sesp.northwestern.edu/masters-learning-and-organizational-change/knowledge-lens/stories/2013/problem-solving-knowledge-transfer-an-experts-perspective.html. Myers surveyed engineers with more than 10 years' experience (experts) and less than four years' experience (novices) at an engineering firm. Experts had developed or taught at least one class for in-house novice engineers, and novices had completed at least one such class. 75% of the experts believed it was not difficult to predict novice learning needs and adjust class instruction accordingly, and 95% believed they had done so successfully, although most would have made more adjustments had they had more time. *Id.* 82.5% of the experts reported that novices in their courses learned the material and could apply it. *Id.*

A 1990 research study illustrated this elegantly. Doctoral candidate Elizabeth Newton assigned subjects to be either tappers or listeners.[184] Tappers were given a list of twenty-five well-known songs and instructed to tap out the song to a listener. Tappers tapped out songs 120 times; listeners correctly guessed the song a mere three times.[185]

Newton asked the tappers to predict the likelihood that their listeners would correctly guess the song before they began tapping. Tappers predicted listeners would correctly guess the song 50% of the time.[186] In fact, listeners correctly guessed the song 2.5% of the time, a dramatically different result than the tappers anticipated. Because the tappers heard the songs in their heads as they tapped, they were "flabbergasted" at how few listeners could hear the tune.[187]

Like the tappers who misgauge their listeners' ability to discern a tune the tappers clearly hear in their own heads, professors overestimate students' prior knowledge and expect students to be able to understand more than students are capable of comprehending. Students often criticize professors for being opaque in their teaching, while professors criticize students for not paying sufficient attention.[188] Although law professors were once novices, it is difficult to remember what it was like to not know what we now know.[189] We hear the music in our heads, certain that we need only tap out the tune and at least half of our students will hear it.[190]

184. Newton's study was apparently not published but has been discussed extensively in subsequent literature. *See, e.g.*, HEATH & HEATH, supra note 182, at 19–21.

185. *Id.*

186. *Id.*

187. *Id.* at 20.

188. Myers, *supra* note 183. Novices and experts disagreed about how well the novices learned, whether the order of presentation was logical, whether technical terms were understandable, and whether the experts provided sufficient detail for novices to apply. *Id.* The two groups agreed only on whether the complexity of the class material was appropriate for novice learners. *Id.*

189. HEATH & HEATH, *supra* note 182, at 278 ("If you're a biology teacher, you simply can't imagine anymore what it's like to hear the word 'mitosis' for the first time, or to lack the knowledge that the body is composed of cells.")

190. Chip and Dan Heath suggest the remedy for the curse of knowledge is to make the abstract more concrete. *Id.* at 114–15. Their advice is aimed primarily at business owners and is especially apt for lawyers who are preparing for trial or writing

The curse of knowledge shows up in many ways in the law school classroom. A professor may use a legal term without pausing to make sure students know what it means. A professor may casually refer to a concept from another doctrinal discipline without checking to ensure students remember that concept—such as mentioning a motion to dismiss while teaching Torts, or casually referring to the elements of contract formation in a business organizations class.

Perhaps even more commonly, professors teaching 2L or 3L students assume students learned and retain their understanding of certain fundamental concepts in their 1L classes. Professors teach from that assumption rather than revisiting those concepts and shoring them up. Like the tappers, professors are often flabbergasted that their students cannot hear that which the professor is teaching.

B. Conflating Expertise with Pedagogy

Experts often mistake an educational objective for a pedagogical method.[191] Legal education's version of this error puts students in situations akin to those that lawyers face, causing professors to expect students to discern the law.[192] Performing in a domain is not the same as teaching or learning that domain.[193] This is the challenge of apprenticeships. If a student has developed sufficient understanding of a domain, watching an expert perform in that domain is instructive and

briefs about cases with which they are deeply familiar. For law professors, however, being advised to teach more concretely is not necessarily as useful as being advised to teach more explicitly.

191. Kirschner, *supra* note 16, at 149 ("The error here is that no distinction is made between the behaviors and methods of the scientist—who is an expert practicing her or his profession—and those of a student who is essentially a novice.").

192. This criticism is directed at using practice scenarios to teach novices the underlying structure and knowledge of the law. However, there are other sound pedagogical reasons for putting 1L students in practice simulations. *See, e.g.*, Eduardo R.C. Capulong, *Client as Subject: Humanizing the Legal Curriculum*, 23 CLINICAL L. REV. 37 (2016); David I.C. Thomson & Stephen Daniels, *If You Build It, They Will Come: What Students Say About Experiential Learning*, 13 FLA. A&M L. REV. 203, 223–27 (reporting survey responses of 1Ls who wanted experiential learning as a cornerstone of their law school experiences); Drew Coursin, Comment, *Acting Like Lawyers*, 2010 WIS. L. REV. 1461; Rachel Croskery-Roberts, *Ten Years In: A Critical View of the Past, Present, and Future of Skills Education at UC Irvine Law School*, 10 U.C. IRVINE L. REV. 469 (2020).

193. Kirschner, *supra* note 16, at 152.

illuminating. But what the apprentice *sees* is informed by the apprentice's cognitive development in the domain. The less the apprentice knows, the less the apprentice will see and learn.[194]

When professors explicitly connect a word or phrase to concepts already covered in class, they ensure students are making correct associations between new and existing knowledge. In other words, they are overriding their curse of knowledge and helping students create a stable foundation of knowledge and understanding. They are using explicit instruction to assist their students' learning.

In contrast, a professor using implicit instruction waits for students to figure out the answer, using questions to guide them. In explicit instruction, students' cognitive resources are directed toward doing the task, not trying to understand the task. The goal of explicit instruction is to provide students the fundamental knowledge they need so that they can then learn to apply that knowledge to solve legal problems.[195]

The phrase "spoon-feeding" implies that students are babies whose only function is to open their mouths so that teachers can fill them up with knowledge, invoking an image of complete passivity.[196] The spoon-feeding metaphor is often misconstrued, however. On the one hand, a passive student is not likely to learn or develop expertise. On the other hand, novice learners must expend tremendous cognitive

194. One of the most common complaints of new associates is that their senior partners do not give them enough feedback. Novices are starved for specific feedback on their work—not because they are emotionally insecure, but because the practice of law is highly sophisticated from a cognitive viewpoint and quickly reveals to new associates instability and gaps in their foundational knowledge.

195. For an excellent discussion of the disconnect between first-year legal pedagogy and first-year assessments, see Debora L. Threedy & Aaron Dewald, *Re-Conceptualizing Doctrinal Teaching: Blending Online Videos with In-Class Problem-Solving*, 64 J. LEGAL EDUC. 605 (2015). Unintentionally anticipating the academy's move to online learning because of the Covid-19 pandemic, Professor Threedy advises assigning 10-minute videos as homework to cover black-letter law, thereby freeing up class time to practice problem-solving.

196. Professor Shimamura call this "the sponge metaphor of education," where the teacher pours out knowledge and the students soak it up. ARTHUR SHIMAMURA, MARGE: A WHOLE-BRAIN LEARNING APPROACH FOR STUDENTS AND TEACHERS 2 (2018).

energy to process new information.[197] Educators who see law students as passive learners incorrectly understand cognitive learning theory.

Human brains are constantly seeking patterns to help them make sense of their world.[198] When they do so unconsciously, without monitoring, they invariably make mistakes. Explicit instruction anticipates those mistakes, monitors students' understanding for them, and intervenes quickly and repeatedly to correct them.

The uniformity of 1L doctrinal pedagogy across law schools reflects a belief that implicit instruction is essential to fostering students' ability to reason and solve legal problems. Professor McClurg's suggestion that explicit doctrinal instruction inhibits student learning is integral to the academy's pedagogical narrative. But these notions of how students learn law, which inform how the academy teaches law, are rooted in ideas of law as a science,[199] not in science.

According to the prevailing mythology of legal pedagogy, being confused is good and natural. "Just be patient," we say to our students. "One day—we're not sure when, or why, or how—the light will go on and the fog will lift!" If a student never has that experience, he is by definition an outsider, relegated to a role that has no name and no identity.

Explicit instruction in the early stages of learning promotes accurate, thorough understanding of foundational legal knowledge. When students have a solid foundation of knowledge, they are ready to engage in higher-order thinking.[200] If we require students to think about topics without first acquiring knowledge about that topic, we

197. *See* WILLINGHAM, *supra* note 2, at 72 ("The fear that students will end up with no more than rote knowledge has been almost a phobia in the United States, but the truth is that rote knowledge is probably relatively rare."). However, Willingham goes on to note that "shallow knowledge" is much more common, i.e., "students have some understanding of the material but their understanding is limited." *Id.* Willingham describes shallow knowledge as being context-specific, i.e., students remember the material in the context in which it was taught but are not able to apply the material to a novel context. *Id.* at 72–73.

198. KAHNEMAN, *supra* note 1, at 117 ("The tendency to see patterns in randomness is overwhelming . . . .").

199. Ho, *supra* note 15, at 131.

200. This statement reflects Bloom's Taxonomy, which illustrates and explains numerous concepts in learning. BLOOM, ENGELHART, FURST, HILL, & KRATHWOHL, *supra* note 34, at 18.

must be prepared for superficial thinking.[201] If we want students to engage in deeper thinking, we must ensure they have sufficient knowledge to do so.

Intentional explicit instruction is not, therefore, a matter of giving students the right answer.

At its best, explicit instruction models for students how to engage in relevant procedures, gives students multiple opportunities to practice those procedures with immediate feedback, and gradually cedes control over the procedure to students.[202] Some students will learn more quickly than others, and some students will learn more deeply than others—just as in implicit instruction. But the available evidence suggests that more students will learn with initial explicit instruction than without. Rather than talk to students as mini-experts, explicit instruction shows students the path, provides them tools, and allows them to practice using those tools.

V. PRACTICING INITIAL EXPLICIT INSTRUCTION

Legal education that relies on implicit instruction excels at teaching certain students the essential skills of lawyering. Explicit instruction used intentionally throughout the curriculum can, however, serve to reach more students early in law school to help their schema form correctly and provide a solid base for them for the rest of their careers. Explicit instruction is designed to assist novice learners construct accurate schema. Explicit instruction is not meant to replace implicit instruction, but rather is intended to precede it and periodically appear when a student reveals a foundational misunderstanding of legal doctrine or procedure. Below are some examples of how explicit instruction can be deployed in the law school classroom.

201. *See generally* DAVID DIDAU, MAKING KIDS CLEVERER: A MANIFESTO FOR CLOSING THE ADVANTAGE GAP (Peter Young ed., 2019); WEXLER, *supra* note 90; E.D. Hirsch, Jr., *Reading Comprehension Requires Knowledge—of Words and the World: Scientific Insights into the Fourth-Grade Slump and the Nation's Stagnant Comprehension Scores*, AM. EDUCATOR, Spring 2003, at 10.

202. *See* KIRSCHNER & HENDRICK, *supra* note 21, at 208–18 (discussing John Dunlosky, Katherine A. Rawson, Elizabeth J. Marsh, Mitchell J. Nathan, & Daniel T. Willingham, *Improving Students' Learning with Effective Learning Techniques: Promising Directions from Cognitive and Educational Psychology*, 14 PSYCH. SCI. PUB. INT. 4 (2013)); *id.* at 176–85 (discussing *Principles of Instruction*, supra note 22, at 12); *The Empirical Support for Direct Instruction*, *supra* note 22, at 201–20.

A. Theory in Action: An Example

A recent article about teaching legal analysis provides an example of explicit instruction as well as the academy's ambivalence toward it. Before sharing with readers his detailed pedagogical approach to teaching legal analysis, Charles Splawn asks "whether it is advisable for law teachers to decode law school learning at all."[203] Splawn explains, "[c]ertainly one camp of faculty would argue that the onus should be on the students to figure out how to learn law largely on their own."[204] Splawn further observes that a lawyer's role is to problem-solve for others and concedes that "many of today's students need to improve their resourcefulness and become more self-reliant."[205] Still, he concludes that although explicit instruction may not be ideal, it is essential. According to Splawn, "for whatever reasons (hello high schools and universities), too many law students falter at deep doctrinal learning unless we in the academy proactively instill in them the foundational thought process of legal analysis."[206]

Splawn demonstrates several facets of the academy's ambivalence toward explicit instruction. He begins by asking whether it is appropriate to teach law students the process of legal reasoning explicitly. He acknowledges the overriding cultural myth that students should learn on their own, ascribing it to "one camp" of faculty.[207] He

203. Charles R. Splawn, *Teaching Legal Analysis: A Tale from the Front*, 27 PERSPS. 70, 71 (2019).

204. *Id.* at 71–72.

205. *Id.* at 72.

206. *Id.*

207. "Cultural myths" are stories reflecting accepted beliefs about the behavior of certain categories of people. Evan Rock, Note, *Mindfulness Meditation, the Cultivation of Awareness, Mediator Neutrality, and the Possibility of Justice*, 6 CARDOZO J. CONFLICT RESOL. 347, 361 (2006). The belief that students best learn law by discovering it in casebooks reflects larger cultural beliefs from the late 19th and early 20th centuries. "As the legal academy sought to establish its academic credentials through the casebook method, it turned a cold shoulder on the profession it exists to perpetuate." *See* Margaret Martin Barry, Jon C. Dubin, & Peter A. Joy, *Clinical Education for This Millennium: The Third Wave*, 7 CLINICAL L. REV. 1, 32 (2000). Cultural mythology "provides a kind of glue that simultaneously helps to bond disparate people together into a unified whole and also helps explain and give order to a sometimes chaotic and confusing world." Lane Wallace, *Changing Our Cultural Myths*, ATLANTIC (Apr. 27, 2010), https://www.theatlantic.com/national/archive/2010/04/changing-our-cultural-myths/39537/. As our individual belief system

concludes that explicit instruction is appropriate primarily based on his own experience—his students learn more when he teaches them explicitly. His article reflects deeply considered pedagogy that could be a model for all in the academy. Why does he believe it necessary to engage in this soliloquy? I believe it is because his pedagogical approach subverts the dominant paradigm.

Splawn teaches students the process of legal analysis, itself a deconstructive process, by explicitly deconstructing the process into discrete steps.[208] He models this process in "every single class."[209] Specifically, he teaches students to (1) deconstruct governing rules into their elements, (2) match facts to rule elements, (3) identify facts that tend to prove or disprove each element, (4) assess the strengths and weaknesses of each argument and counterargument, and (5) communicate one's reasoning in writing.[210] Half of each class is devoted to working through this process for a hypothetical problem students read before class.[211] He works with students to build a chart of each analytical step on a whiteboard.[212] Over the course of the semester, students begin taking over the professor's role as facilitator in class—a pedagogical step known as "scaffolding."[213]

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evolves away from the primary beliefs of the community, we become aware of "us v. them." *Id.* Cultural myths often provide a sense of comfort, making many people "loath to let them go." *Id.* But "the downside of clinging so fiercely to old myths is that we can lose sight of a more compelling and timely ideal." *Id.*

208. Splawn, *supra* note 203, at 72.

209. *Id.*

210. *Id.*

211. *Id.* at 74.

212. *Id.*

213. *Id.; see infra* Part V.D.; *see also* JEROEN J.G. VAN MERRIËNBOER & PAUL A. KIRSCHNER, TEN STEPS TO COMPLEX LEARNING: A SYSTEMATIC APPROACH TO FOUR-COMPONENT INSTRUCTIONAL DESIGN 79–81 (3d ed. 2018) ("Scaffolding is typically seen as providing an optimal level of support and guidance and *fading* of that support and guidance when this is appropriate . . . .") (citing Brian J. Reiser, *Scaffolding Complex Learning: The Mechanisms of Structuring and Problematizing Student Work*, 13 J. LEARNING SCIS. 273, 288 (2004)); Jeroen J.G. van Merriënboer, Paul A. Kirschner, & Liesbeth Kester, *Taking the Load Off a Learner's Mind: Instructional Design for Complex Learning*, 38 EDUC. PSYCH. 5 (2003); Nellie Ismail, Khaidzir Ismail, & Nur Saadah Mohamad Aun, *The Role of Scaffolding in Problem Solving Skills Among Children*, 85 INT'L PROC. ECON, DEV. & RSCH. 154, 154 (2015) ("Scaffolding is a temporary support that is removed as children learn more skills and solve problems independently.").

Despite his methodical and thoughtful teaching, Splawn is uncertain enough in his belief that explicit instruction is an effective way to teach law that he feels compelled to acknowledge those who advocate for implicit learning. A professor who pulls back the curtain to reveal fundamental concepts and processes to students levels the playing field and increases the "stickiness" of his students' brains, making it more likely they will learn more in every class they take thereafter.[214]

As a practical matter, many professors use explicit instruction in their classrooms for the simple reason that discovery approaches either do not work or take too long.[215] For many professors, their version of explicit instruction means asking a question and waiting—and when no answer is forthcoming, giving the answer. Students quickly learn to just wait long enough. This approach is aptly described as "spoon-feeding." Students did not have to practice any analytical steps to reach that answer or in any way engage their effortful brains. This is not what properly delivered explicit instruction looks like.

B. Teach in Small Steps

In recognition of students' limited working memories, effective teachers present new material in small steps.[216] Cognitive research, moreover, tells us that students remember what they pay attention to. When novice learners are being taught new material, it is imperative that the professor do all she can to control the students' attention. Attention is a limited resource. It is the gateway to students' working memories, which are fragile and finite. Giving students bite-sized chunks of information followed by adequate time to process that information into long-term memory can reduce cognitive overload and deepen student learning.

Effective teachers have a tightly planned and short lesson with a clear idea of what they want students to learn. Effective teachers may then ask students to break into pairs to tell each other, for example, three things the teacher just said that are important to the topic being taught. Alternatively, students can summarize for the other student the

214. Abigail A. Baird, *Sticky Teaching*, 25 OBSERVER (Feb. 29, 2012), https://www.psychologicalscience.org/observer/sticky-teaching.

215. Kirschner, Sweller, & Clark, *supra* note 21.

216. *See* TOM SHERRINGTON, ROSENSHINE'S PRINCIPLES IN ACTION 15–17 (2019).

main points they just heard, giving them each no more than two minutes. Following this period of sharing, students can then come back to the larger classroom discussion and various pairs can report their summaries.

C. Provide Necessary Background Knowledge

In recognition of the variability among students' background knowledge, effective teachers provide necessary background knowledge to ensure proper schemata formation. This can range from providing a big-picture understanding of the overall subject to slowly reviewing new vocabulary and checking for students' understanding of key words and phrases. For example, if you use your own course materials rather than a textbook, make sure you include a table of contents. Refer to the table of contents throughout the semester to remind students of where in the larger picture the day's lesson fits.

It can also be helpful to preview assigned readings.[217] A brief oral preview can give students the necessary background to help them better comprehend the reading.[218] If the reading introduces new concepts, tell them what those concepts are, and, if possible, provide both an example of each concept as well as a counterexample.[219] Being explicit in what students will encounter, how to prepare, what to look for, and even what questions to ask or answer can assist students in their learning.[220]

217. Dewitz, *supra* note 104, at 236–37 ("While previewing a text may seem to some like spoon feeding, the actual benefits to the students are significant."); Janice A. Dole, Shelia W. Valencia, Eunice Ann Greer, James L. Wardrop, *Effects of Two Types of Prereading Instruction on the Comprehension of Narrative and Expository Text*, 26 READING RSCH. Q. 142, 154 (l991).

218. Rogelio Lasso, *A Blueprint for Using Assessments to Achieve Learning Outcomes and Improve Students' Learning*, 12 ELON L. REV. 1, 7–8 (2020) (discussing the author's use of handouts that focused students' attention prior to reading assigned cases); Dewitz, *supra* note 104, at 237 (citing Michael. F. Graves & Maureen Prenn, *Effects of Previewing Expository Passages on Junior High Students' Comprehension and Attitudes*, *in* CHANGING PERSPECTIVES ON RESEARCH IN READING/LANGUAGE: PROCESSING AND INSTRUCTION 173–77 (Jerome A. Niles & Larry A. Harris eds., 1984).

219. Dewitz, *supra* note 104, at 237.

220. *See id.* at 239 ("[R]esearch by cognitive psychologists suggests that novices in a field show greater growth in learning when knowledge and strategies are

Finally, it can also be helpful to include a list of vocabulary words for any given day or week. This focuses students' attention on the words they know they will learn, priming their attention before they read, and signaling to them that these are important words to review when studying.

D. Provide Scaffolding and Withdraw it Gradually

One type of scaffolded instruction is a teaching strategy sometimes referred to as "I do—we do—you do."[221] Scaffolds can also refer to diagrams, graphs, or other visual organizers that support students' developing knowledge.[222] Importantly, if scaffolds are taken away too quickly, "learning does not occur and the learner becomes frustrated in the process."[223]

In "I do" instruction, the professor explicitly models for students what she wants the students to do. For example, at the beginning of the semester the professor explains the day's cases to the class the way she wants students to explain them when called upon to brief a case. Throughout the semester, moreover, the professor gives students practice problems that are similar in structure and content to the questions she will use on the midterm or final exam.

"We do" instruction is an easy step to overlook, yet it is one of the simplest to implement and the most useful to students. Doing a problem together as a class is an example of "we do." Bar prep courses

directly taught rather than when students are encouraged to discover them on their own.").

221. *See supra* note 213 and accompanying text. The term "scaffold" in the context of learning was first coined in 1976. David Wood, Jerome S. Bruner, & Gail Ross, *The Role of Tutoring in Problem Solving*, 17 J. CHILD PSYCH. & PSYCHIATRY 89 (1976). The term has roots in psychologist Lev Vygotsky's theory of the "zone of proximal development," which is "described as the difference between what a learner can do independently and what can be accomplished with the help of a "more knowledgeable other." DOUGLAS FISHER & NANCY FREY, GUIDED INSTRUCTION: HOW TO DEVELOP CONFIDENT AND SUCCESSFUL LEARNERS 1 (2010).

222. Dewitz, *supra* note 104, at 237 ("At the simplest level are charts and matrices which transform the textual information into a series of columns and rows allowing the reader to compare and contrast variables. At a more complex level are diagrams which depict the interrelationship among a set of ideas or variables . . . . Finally, flow charts can be used to depict a decisionmaking process.").

223. FISHER & FREY, *supra* note 221, at 2.

that provide lecture notes with blanks to be filled in by students are using "we do" instruction. Similarly, giving students the skeleton of a case brief and filling it out together in class allows them a safe way to practice the skill being asked of them and ensures that their misunderstandings do not remain uncorrected.

"You do" instruction is the part of the spectrum with which we are most familiar. Midterms and exams are an example of "you do" instruction. During this step, we give students an exam and expect them to use the knowledge they've gained in class to perform with mastery. Unfortunately, it doesn't always work out that way.

Scaffolding is also evidenced in "worked problems."[224] Other examples include providing students an outline of your lecture with only the headings and subheadings filled in.[225] Essentially, anything you provide your students to assist them in focusing their attention where you want them to focus it is a scaffold.[226]

Splawn outlines a common classroom approach to scaffolding.[227] He deconstructs the process of legal reasoning for students and makes explicit each step of the process so that students can practice methodically. He does not expect students to glean underlying structure from superficial details—something novice learners are notoriously poor at doing.[228] Instead, he makes fundamental concepts and procedures explicit so that students can learn the skill of legal analysis and practice it consistently. He does not expect students to hear something once and learn it.[229] He provides time and space for his students

224. SHIMAMURA, *supra* note 196. Although Dr. Shimamura uses the phrases "top-down" and "bottom-up" differently than I do, we both advocate for more explicit instruction.

225. *Id.* at 26.

226. *See, e.g.*, Lasso, *supra* note 218, at 7–9. After reading Peter Dewitz's work, Professor Lasso began giving students handouts to guide their reading of cases. The handouts "were bare-bones guides containing little more than the case names followed by a question or two designed to help students focus on the concepts that would be discussed in class." *Id.* at 8. Professor Lasso observed that students not only were better prepared for class, but they also felt "more confident and willing to participate in the class discussion." *Id.*

227. Splawn, *supra* note 203.

228. KIRSCHNER & HENDRICK, *supra* note 21, at 177–84.

229. "Mastery in any field, from cooking to chess to brain surgery, is a gradual accretion of knowledge, conceptual understanding, judgment, and skill." BROWN, ROEDIGER III, & MCDANIEL, *supra* note 81, at 18.

to watch him deconstruct legal analysis ("I do"), practice the process in class several times ("we do"), and finally complete an assignment on their own ("you do").

E. Provide Low-Stakes Retrieval Practice

If our goal is to ensure students are learning what we are teaching, we must understand where their understanding goes astray. A significant disadvantage of traditional implicit instruction is that it rarely includes regular monitoring of students' misunderstandings and mistakes.[230] Because of that, professors may proceed through a semester blithely believing that students have a more solid understanding of the foundational material than they really do.

One of the most useful ways to check for students' understanding, also familiar to law professors, is to ask questions. Questions are tools with which professors can probe and correct students' developing schemas. Another useful tool is "retrieval practice," otherwise known as quizzes or tests. Retrieving information from memory is one of the most effective ways to learn.[231] Whenever we give students an answer without first giving them time to come up with the answer on their own, we rob them of an opportunity to learn.[232] This is the "spoon-feeding" disparaged by the academy.

Retrieval practice refers generally to the act of retrieving information from memory, which strengthens the memory and deepens the learning.[233] Of course, if the information that is retrieved is incorrect, the misunderstanding will be strengthened. For that reason, retrieval practice operates most effectively when professors can check students' understanding and either fill in gaps or correct misunderstandings. Retrieval practice also complements explicit instruction by allowing a

230. Using formative assessments without placing them in the larger pedagogical context threatens to overwhelm professors by merely increasing their workloads. Because formative assessments are embedded into the principles of explicit instruction, a professor who embraces explicit instruction has a theoretical framework within which to operate and prioritize.

231. Bjork & Bjork, *supra* note 80, at 61–62; AGARWAL & BAIN, *supra* note 169; BROWN, ROEDIGER III, & MCDANIEL, *supra* note 81.

232. Bjork & Bjork, *supra* note 80, at 61.

233. Robert A. Bjork, *Retrieval as a Memory Modifier*, *in* INFORMATION PROCESSING AND COGNITION: THE LOYOLA SYMPOSIUM 123 (Robert L. Solso, ed., 1975); Bjork & Bjork, *supra* note 80, at 61; CAREY, *supra* note 126, at 38–41.

professor to check for student understanding.[234] It creates opportunities for immediate explicit intervention to correct misunderstandings as well as elaborate on topics that have been introduced but not yet deeply explored.

Retrieval practice is also useful for professors' understanding of their students learning. Making explicit connections between new concepts and old concepts ensures that students are learning what you want them to learn. Giving them opportunities to retrieve those connections from their brains strengthens their learning and makes their understanding (or misunderstanding) visible to you for immediate correction. This combination of initial explicit instruction and retrieval practice is a concrete, evidence-supported approach to ensuring that students are learning that which you are teaching them.[235] Further, while students who engage orally in class reveal their understanding to a professor, quieter students stay under a professor's radar. It is far too easy to look around the classroom after explaining a concept and conclude from the smiles and nods that students followed your explanation or the class discussion, and now share your understanding. Until you test their understanding, you cannot know whether students learned what you think you taught them.

Low-stakes retrieval practice refers to assessments that are either ungraded or comprise a very small portion of students' grades.[236] Quizzes are one example of low-stakes retrieval practice. For example, I use quizzes to ensure students read before class and to focus their attention on the important points from the reading. I usually include 10 questions—multiple choice, fill-in-the-blank, and short-answer essay questions.[237]

234. AGARWAL & BAIN, *supra* note 169; WEINSTEIN & SUMERACKI, *supra* note 132, at 118–34; *see also Unleash the Science of Learning*, RETRIEVAL PRAC., https://www.retrievalpractice.org/ (last visited Dec. 28, 2021).

235. AGARWAL & BAIN, *supra* note 169; WEINSTEIN & SUMERACKI, *supra* note 132, at 118–34.

236. WEINSTEIN & SUMERACKI, *supra* note 132, at 124–25.

237. Professor Lasso reports that the 2012 experiment conducted at John Marshall results in "significantly higher" bar passage rates for students in the MATA sections than for those who were not. Lasso, *supra* note 218, at 15. Moreover, "most" of the MATA students with LSAT scores lower than 149 passed the bar. *Id.*

I often begin class with a "minute memo" in which I ask students to write down three things they remember from our last class.[238] I encourage them not to look at their notes and remind them that the act of retrieving something from memory strengthens learning. After giving them about three minutes to complete the minute memo, I ask them to share what they remembered. We spend 15–20 minutes reviewing and clarifying the previous day's material. Sometimes I ask them to turn in their minute memos, but just as often I do not.

In this way, I leverage student engagement to deepen their learning. I use to begin class by reviewing the previous class. The difference with the minute memo is that students engage in retrieval practice, and the subsequent review reveals gaps in their understanding. It is driven by the students rather than by me.[239]

F. Create a "Culture of Error"

Underlying all of these ideas is what one educational researcher calls a "culture of error" in the classroom—making the classroom a safe environment where students know that they can and will make mistakes and that they will never by shamed or criticized for those mistakes.[240] Much has been written about modifying traditional Socratic technique to reduce student anxiety and increase the technique's usefulness.[241] Examples include allowing students to notify you ahead of

238. I learned about minute memos at a conference several years ago but cannot remember who presented the idea.

239. Sometimes I begin class with a short quiz instead of a minute memo. I ask students to turn these in so that I can review them before our next class. These achieve the same goal of low-stakes retrieval practice while allowing me to review students' answers and provide immediate feedback.

240. *See generally* DOUG LEMOV, TEACH LIKE A CHAMPION 3.0: 63 TECHNIQUES THAT PUT STUDENTS ON THE PATH TO COLLEGE 111–19 (2021) (describing the "culture of error" technique as one that can be used to check student's understanding).

241. *See, e.g.*, Jennifer L. Rosato, *The Socratic Method and Women Law Students: Humanize, Don't Feminize*, 7 S. CAL. REV. L & WOMEN'S STUD. 37 (1997); Heidi K. Brown, *The "Silent But Gifted" Law Student: Transforming Anxious Public Speakers into Well-Rounded Advocates*, 18 LEGAL WRITING: J. LEGAL WRITING INST. 291 (2012); Amy R. Mashburn, *Can Xenophon Save the Socratic Method?*, 30 T. JEFFERSON L. REV. 597 (2008). *But see* Michael Vitiello, *Professor Kingsfield: The Most Misunderstood Character in Literature*, 33 HOFSTRA L. REV. 955 (2005) (arguing for a return to stricter Socratic methods).

class that they had a bad night, are not feeling well, or have some other reason for not wanting to be called on that day and allowing students to ask for help from co-counsel.

G. Provide Problems After Basic Knowledge Is Established

Once students have the basic building blocks of a concept—the professor has provided direct instruction in relevant background knowledge, taught students the key elements of the lesson, and checked for student understanding—the students are ready to apply what they are learning. Professors can then give students a problem, allow them three to four minutes to work on it themselves, and then ask students to pair with a classmate and discuss before coming back for a full class discussion. Professors can then call on pairs to report their answers, being sure to ask how they arrived at those answers.

When students work problems, they are applying knowledge. This is not only a prized skill in the law, it deepens learning by assisting students in creating connections to new and existing knowledge. Because the problems are being done one at a time, professors can check student understanding and correct misunderstandings before moving on to another problem with similar structure.

At this stage of learning, the goal is to cement students' understanding of key concepts and ensure those concepts are accurately understood so that students are building a strong foundation of basic knowledge that will enable them to engage in more sophisticated analysis down the road.

H. Renounce Your Coverage Obsession

When teaching a doctrinal subject, many professors feel compelled to cover a multitude of concepts. There are so many good reasons for this: we want to provide an accurate understanding of a particular area of law (how can they understand negligence if they don't understand intentional torts?); certain concepts are essential to understanding the overall doctrine (how can students understand Contracts if they don't understand formation?); or certain concepts are likely to show up on the bar exam or in practice, and we want to prepare our students. As laudable as our concerns are, they are undermined by the

fact that students who are experiencing cognitive overload will remember very little of what we cover.[242]

If we are committed to deepening student learning, we must acknowledge that we are lawyers, not cognitive psychologists. We are probably unfamiliar with evidence-based pedagogy. We are experts in many things—including classroom teaching—but our subjective experiences may be blinding us to research-based pedagogical techniques.[243] Worse, the cultural mythology of implicit instruction may make us feel ashamed for using more explicit instructional techniques. Although our expertise may be primarily in the doctrinal areas in which we teach and do scholarship, and not in cognitive psychology or the science of learning, we can learn teaching techniques that will improve our students' learning.

VI. CONCLUSION

Legal education too often teaches students how to be lawyers by teaching them as though they already are lawyers. Like other disciplines, legal education fails to consistently recognize the meaningful cognitive differences between novices and experts. Novice learners use their existing schema to make sense of what happens in the classroom. Blinded by the curse of knowledge and loathe to ruin students' future as creative thinkers, law professors frequently teach novice learners as though they are mini-experts—assuming, omitting, and rushing.

Explicit instruction is an important pedagogical tool that should be used intentionally and thoughtfully in the law school classroom. Law is not so special that it has its own pedagogical rules. Cognitive psychology research supports initial explicit instruction in new domains—even law.

To the extent law schools expect students' background knowledge and skills to buoy them through their first year of law school, they are allowing students' privilege to leverage them into higher grades and more prestigious jobs. Consciously integrating explicit instruction into doctrinal classes can make our pedagogy more intentional and our law schools more inclusive.

242. *See supra* notes 60 and 143 and accompanying text.

243. *See* AGARWAL & BAIN, *supra* note 169.