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At the Lectern

Why Legal Writers Should Think like Teachers

Laura A. Webb

Introduction

Professors, whether doctrinal-, clinical-, or skills-focused, are frequently asked to provide writing advice to students and recent graduates. And we do, doling out both specific edits and general advice: Create clearer structure! Write short sentences! Provide road maps!

But did you ever wonder *why* these tips lead to better writing, or *how* to help your students remember and understand why they should use them? Here's what I tell my students: Legal writing is fundamentally educative. To be a better writer, you must be a better teacher. To be a better teacher, you must understand the cognitive science behind how your reader learns: how the brain absorbs, accesses, and analyzes information. Then, you can use that science to guide your writing: Teach your reader. This approach helps students see *why* writing advice makes sense and remember *how* to follow it.

At its core, a written document in the legal world conveys information about matters in which the writer has expertise and the reader does not. Whatever additional purposes legal writing may serve (to predict, to persuade, or to advise) and whichever audience the legal writer addresses (colleagues, judges, or clients), the primary purpose of legal writing must be to educate the reader about the subject.

Legal educators are familiar with the frequent complaints from judges and practitioners about poor legal writing skills of law graduates.¹ Often, we too lament the state of our upper-level students' seminar papers and journal

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1. Judges complain that lawyers fail to provide strong legal analysis and to convey that analysis clearly and concisely. See Kristen K. Robbins, *The Inside Scoop: What Federal Judges Really Think About the Way Lawyers Write*, 8 LEGAL WRITING 257, 257 (2002) (noting that only fifty-six percent of the surveyed judges thought lawyers "always" or "usually" made their clients' best arguments). Former Virginia Supreme Court Justice Elizabeth Lacy has noted that "[i]t isn't just the grounding in structural grammar, but also the ability to organize and structure the argument or proposition or theory." Jody Taylor, *Crisis in Legal Writing*, VBA J., Fall 2014,

submissions, even if we remember that complaints about the declining writing ability of “kids today” are as old as the history of writing itself.² This article offers a way to help our students improve their skills by reimagining their role not only as writers, but also as teachers.

Who can benefit from this approach? Primarily, relatively “new” legal writers: our upper-level students and new graduates who have mastered the material about which they are writing and are ready to communicate their analysis. Legal analysis incorporates the highest levels of cognitive skill on Bloom’s Taxonomy of Educational Objectives: analyzing, creating, and evaluating.³ A final written product should be a clear expression of high-level thinking and analysis, which is attainable for our upper-level students.⁴ However, the “thinking like a teacher” approach can also be useful to the very newest of our legal writers—the first-year students. As long as the writer is writing to communicate to others rather than to learn the material herself,⁵ she can be

at 21. Other surveys report that judges “rarely see organized arguments” and read “concise writing less than half the time.” Amy Vorenberg & Margaret Sova McCabe, *Practice Writing: Responding to the Needs of the Bench and Bar in First-Year Writing Programs*, 2 PHOENIX L. REV. 1, 12-13 (2009) (noting that a 2004 survey of law firms, judges, and judicial clerks revealed that “the quality of legal writing needs ‘vast improvement.’” *Id.* at 10.).

2. Steven Pinker, cognitive scientist and Professor of Psychology at Harvard University, asserts that “every generation believes that the kids today are degrading the language and taking civilization down with it.” STEVEN PINKER, *THE SENSE OF STYLE* 4 (2014). In the late fifteenth century, after William Caxton set up the first printing press in England, Mr. Caxton complained that “certainly our langage now vsed veryeth ferre from what whiche was vsed and spoken when I was borne.” *Id.* at 5. Pinker notes that “some of the clay tablets deciphered from ancient Sumerian include complaints about the deteriorating writing skills of the young.” *Id.* at 6.
3. According to Bloom’s Taxonomy of Educational Objectives, learners start with basic ways of learning (simple understanding and retaining or remembering information) before moving to more complex (analyzing information, creating, and evaluating). See Hillary Burgess, *Deepening the Discourse Using the Legal Mind’s Eye: Lessons from Neuroscience and Psychology that Optimize Law School Learning*, 29 QUINNIPIAC L. REV. 1, 11-21 (2011).
4. Writing is the communication of thought; legal writing is the communication of legal thought. Indeed, writing may well be “thought in its purest possible form.” Joel R. Cornwell, *Legal Writing as a Kind of Philosophy*, 48 MERCER L. REV. 1091, 1094-95 (1997). Bret Rappaport notes that the “idea of writing as thought is an established one in the humanities,” but one that has only recently caught on in the world of legal writing. Bret Rappaport, *A Lawyer’s Hidden Persuader: Genre Bias and How It Shapes Legal Texts by Constraining Writers’ Choices and Influencing Readers’ Perceptions*, 22 J.L. & POL’Y 197, 228 (2013). However, thought alone is insufficient; “[a]n idea can have value in itself, but its usefulness diminishes to the extent that you can’t articulate it to someone else.” WILLIAM ZINSSER, *WRITING TO LEARN* 45 (1988) (citing Associate Professor of History Kevin Byrne). New writers should understand that the final product must not simply recount the author’s journey through the materials or report the relevant information discovered, but should lead the reader, step by step, along a logical path from problem identification to problem solution.
5. The writing process itself can help writers think through the issues and refine their own thoughts; for first-year law students, who are still beginning to understand legal analysis generally, it frequently takes several drafts for them to simply understand *what* they want to convey. Once they know that, the teaching approach can help them understand *how* to

helped by understanding how individuals absorb and learn information. Then she can more effectively guide the reader through the document.

In Part I, I will explain the “curse of knowledge” and suggest that the transition to professional school requires the new legal writer to assume a new role as a relative expert on her topic.

In Part II, I will explore three concepts from the science of learning that can help our students become better writers: context, chunking, and connections. For each concept, I provide an illustration of it, an explanation of the science behind it, and an application of the concept to legal writing.

I. The “Curse of Knowledge”

New legal writers often struggle to make their writing clear and concise. Often, what seems obvious to the writer is confusing and unclear to the reader. George D. Gopen describes the problem:

As [the writer] struggles to be his own editor . . . his mind deceives him and robs him of objectivity. The following seems to happen: He looks at the words; he recalls their individual denotations and connotations; he understands the significance of the syntax; and synthesizing all of this he perceives a meaning for the whole sentence. If that meaning corresponds to his intended meaning (and it usually does), he proceeds to the next sentence. Actually, however, the following happens: He recognizes the words and the order they are in; he remembers what he was thinking when he put those words in that order. Since this has brought to mind for him his intended meaning, he believes it will do the same for his reader and therefore proceeds to the next sentence.⁶

Cognitive psychologists identify this phenomenon as “the curse of knowledge,”⁷ a metacognitive error or “a difficulty in imagining what it is like for someone else not to know something that you know.”⁸

We might be tempted to believe that this “curse” can be avoided simply with audience analysis: an assessment of the needs, knowledge, and characteristics of a specific audience for a particular document. Audience analysis is, of course, an essential part of good writing. However, the “curse of knowledge” afflicts even those who can thoroughly assess their readers and those readers’ needs; knowing who the readers are does not guarantee that a writer will effectively guide them through the document in a way calculated to maximize comprehension. It is a necessary, but not sufficient, step. To take the next step

convey it. As an additional benefit, they may accomplish greater mastery of the material; as the saying goes: If you want to truly learn something, teach it.

6. GEORGE D. GOPEN, *WRITING FROM A LEGAL PERSPECTIVE* 18 (1981).
7. PINKER, *supra* note 2, at 59. *See also* PETER C. BROWN, HENRY L. ROEDIGER III & MARK A. MCDANIEL, *MAKE IT STICK: THE SCIENCE OF SUCCESSFUL LEARNING* 115 (2014) (defining the curse as “our tendency to underestimate how long it will take another person to learn something new or perform a task that we have already mastered.”).
8. PINKER, *supra* note 2, at 59. This problem can be even more acute for students, who understand that their audience is often more experienced than they are.

toward excellent legal writing, a writer can better understand the curse by understanding the differences between experts and novices.

Experts and novices approach material differently. Experts quickly recognize appropriate context and background information for a given problem, even if it is not provided to them.⁹ They quickly recognize patterns in knowledge, new information, and new problems. They are able to organize new information based on structures that they have developed, over time, as they learned the material in a subject area. Experts organize around “core concepts” and easily identify the threads that connect different pieces of information to one another.¹⁰ To use a legal example, suppose that a lawyer learns that her client slipped on a banana peel in a grocery store. The client wants to know if the store is liable for his injuries. To solve the problem, the lawyer will need to access relevant background information (stored in her long-term memory). She can easily identify the category of relevant background information (torts generally, and slip-and-fall cases as a specific subset of that general category).

Novices, in contrast, may not immediately identify the background knowledge and structure that can assist them in solving a problem, nor are they able to make the same connections as experts among bits of information. Instead, they see the disparate pieces of information and create their own structure to make sense of the information provided. A first-year fall-semester law student, for example, would not necessarily know to place a slip-and-fall case within the general area of torts, nor know that there is a full subcategory of cases specifically addressing slip-and-fall cases. That student would need a professor’s guidance to place the case within the appropriate body of law, identify important pieces of factual information, and connect the facts to the law to determine the case’s outcome.

Just as an effective professor in the classroom understands and accepts her role as expert in the course topic, the legal writer must realize that for the purposes of her document, she is the expert in the document’s topic. She has studied it, struggled with it, and examined it from every angle. She has considered how each case might affect the legal problem, how each part of each applicable statute might be interpreted, and how different facts could affect the outcome.

The reader of a particular document is a relative novice compared with the writer. This is true for audiences with and without legal training; even readers familiar with a general area of law may not have focused attention on the particular sources of law explored in a seminar paper or the particular approach a writer has taken toward those sources. A law student-writer who has worked diligently with the help of her professor will have a more nuanced understanding of that topic than a more experienced lawyer-reader who has

9. HOW PEOPLE LEARN: BRAIN, MIND, EXPERIENCE, AND SCHOOL 36 (expanded ed., John D. Bransford, Ann L. Brown & Rodney R. Cocking eds., 2000).

10. *Id.* (noting that experts’ organization of knowledge around “big ideas” “affects their abilities to understand and represent problems.”).

not considered the topic as deliberately. Similarly, in a client-specific document such as a memo or brief, the reader may not have fully considered how the law in a particular area applies to the writer's client-specific problem. The reader needs help from the expert: the document's writer.

Unfortunately, mere expertise does not guarantee good instruction. In fact, many experts are poor teachers, because their expertise works against them as they try to remember how they created the underlying structures and took the steps needed to get from the beginning of a problem to the end.¹¹ Similarly, many new legal writers who have attained expertise in a particular legal problem see patterns and structure in the information, and assume the reader will just as easily see those patterns, particularly when the reader has more legal experience generally.

The effective professor educates her students by starting at their level of understanding and guiding them through doctrine and problem-solving steps, using not only her expertise in the topic but her understanding of pedagogy. Similarly, the effective legal writer must not only assess her readers, but also accept the role of expert and act on her audience assessment to educate her readers. Because experts and novices understand and access information in distinctly different ways, the writer must be not only an expert but also a teacher, able to translate the writer's own expertise to a novice reader.

Avoiding the curse by accepting a role as expert can particularly challenging for new legal writers, who are accustomed to writing as novices. Many students have never played either an expert or an educative role in their writing. When they enter law schools, it is often after spending years in educational settings that required them to write only as novices: writing to demonstrate to their teacher that they learned the course material, or to discuss and interpret material in ways already familiar to the teacher. In contrast, law practice and the upper levels of law school require them to explain or discuss materials with which they are fully familiar to readers who may not be as familiar with it or have not explored it in the particular way undertaken in the document. Even after the first year of law school, during which students presumably master the basics of legal analysis, it is a challenge for upper-level students to understand and accept their new role as expert. They tend to assume, often subconsciously, that their readers are already just as familiar with the legal concepts *and* with the writer's particular analysis; they fail to understand that they must clearly communicate the structures they have chosen and the steps they have taken as they attack a legal problem.

While our students cannot realistically expect to achieve the level of expertise now that they will later in their careers, recognizing and understanding the expert/novice distinction can help them write in a way that bridges the gap between reader and writer. If we introduce information about how experts and novices approach material, we can show our students that as they move further along the continuum toward expertise, they must do more to assume the

11. *Id.* at 44.

expert's role and take responsibility for explaining the material to the reader. As the students begin to recognize and appreciate what expertise requires, they can begin to write in a way that explicitly acknowledges and minimizes the curse of knowledge.

To avoid the curse of knowledge, understanding the audience's needs and characteristics is essential, but not sufficient. Understanding that the writer acts as an expert, and must translate her expertise by teaching the reader, is a step in the right direction. And understanding the cognitive science behind how people learn can help that writer do so.

II. Cognitive Science Concepts that Can Help Us Write

Three concepts from the science of learning are critical to effective writing: (a) context; (b) chunking; and (c) connections. The sections that follow provide an illustration of each concept, the cognitive science behind it, and its application to legal writing. If we can share these concepts with our students, and they can use them to teach their readers, they will become more effective writers.

A. Context

The first major problem for new legal writers is the failure to provide an overall framework for the problem their document addresses.¹² Writers need to give readers a structure to build upon and to tell them what, if any, existing knowledge in the audience's mind will help them understand the details that follow. Why? Because when people are faced with new information, they seek to position it within their existing understanding. If the writer knows that, she can understand why context and structure are important and remember to provide them.

An Illustration

Read the following paragraph, assuming you have been provided with no other information, and see if you understand it clearly:

It's important to choose the type carefully, because it will affect your final product. Some types produce a grainy outcome; others are sweeter or tarter. Experiment with different combinations until you find one that suits you. You should also be careful about size; you don't want to create too-small or too-large divisions.

12. Legal readers find the most troubling problems with legal writing include (1) a lack of focus and (2) a failure to develop a coherent structure or theme for the document. Susan Hanley Kosse & David T. ButleRitchie, *How Judges, Practitioners, and Legal Writing Teachers Assess the Writing Skills of New Law Graduates: A Comparative Study*, 53 J. LEGAL EDUC. 80, 86 (2003).

Do you feel confident that you've clearly understood this passage? Probably not. Now read the same paragraph, with a small but significant addition:

How to Make an Apple Pie

It's important to choose the type carefully, because it will affect your final product. Some types produce a grainy outcome; others are sweeter or tarter. Experiment with different combinations until you find one that suits you. You should also be careful about size; you don't want to create too-small or too-large divisions.

The addition of context about the topic (provided here simply by a title) makes the information accessible to your reader.¹³ The reader is now able to understand what background information or knowledge she has that is relevant to the topic. Without that context, the reader may fall into one of two traps. First, she may simply fail to access helpful existing knowledge, and be lost. Alternatively, she may access *incorrect* background knowledge, and be confused.

The Science: Context Helps People Learn

Both possibilities are amply supported by scientific research on how people learn. The National Research Council uses the children's story *Fish Is Fish*, by Leo Lionni, to illustrate this point:

[The book] describes a fish who is keenly interested in learning about what happens on land, but the fish cannot explore land because it can only breathe in water. It befriends a tadpole who grows into a frog and eventually goes out onto the land. The frog returns to the pond a few weeks later and reports on what he has seen. The frog describes all kinds of things like birds, cows, and people. The book shows pictures of the fish's representations of each of these descriptions: each is a fish-like form that is slightly adapted to accommodate the frog's descriptions—people are imagined to be fish who walk on their tailfins, birds are fish with wings, cows are fish with udders. This tale illustrates both the creative opportunities and dangers inherent in the fact that people construct new knowledge based on their current knowledge.¹⁴

Providing an explicit contextual framework is thus essential in the teaching—and writing—process. In the apple example, while the words themselves all

13. Accessing background knowledge improves both a reader's understanding now and retention later. One group of psychological researchers asked subjects to read the following passage: "The procedure is actually quite simple. First you arrange items into different groups. Of course, one pile may be sufficient depending on how much there is to do. If you have to go somewhere else due to lack of facilities that is the next step, otherwise, you are pretty well set. It is important not to overdo things. That is, it is better to do too few things at once than too many." Once readers were told that this passage's title is "Washing Clothes," thus enabling them to identify and apply relevant background knowledge, their memory of the passage improved significantly. John D. Bransford & Marcia K. Johnson, *Contextual Prerequisites for Understanding: Some Investigations of Comprehension and Recall*, 11 J. VERBAL LEARNING & VERBAL BEHAV. 717, 722 (1972).

14. HOW PEOPLE LEARN, *supra* note 9, at 11, box 1.2.

made sense, it wasn't until you had context for them (provided by the title) that the *paragraph* made sense.¹⁵

Background knowledge, or context, is essential to learning new information in an existing area.¹⁶ Cues about what contextual information is needed, or where the new information fits into existing knowledge, help the learner place the information.¹⁷ Critical and logical thought is not possible without the background information that helps a reader determine where new information “fits” in existing organizational structures within her mind.¹⁸

Daniel T. Willingham, a cognitive scientist and professor of psychology at the University of Virginia, points out that “[b]ackground knowledge not only allows you to comprehend the sentences, it also has a powerful effect as you continue to read because it narrows the interpretations of new text that you will entertain.”¹⁹ Willingham notes that if you read a sentence about President Bush filing a complaint with China over copyright infringement and later read the word “piracy,” “you would not think of eye-patched swabbies shouting ‘shiver me timbers!’ The cognitive system gambles that incoming information will be related to what you’ve just been thinking about.”²⁰

15. Willingham argues that the fact that background knowledge makes reading easier may account for the “fourth-grade slump” observed in children’s reading skill development. DANIEL T. WILLINGHAM, *WHY DON’T STUDENTS LIKE SCHOOL? A COGNITIVE SCIENTIST ANSWERS QUESTIONS ABOUT HOW THE MIND WORKS AND WHAT IT MEANS FOR THE CLASSROOM* 36 (2009) [hereinafter WILLINGHAM, *WHY DON’T STUDENTS LIKE SCHOOL?*]. “If you’re unfamiliar with that term, it refers to the fact that students from underprivileged homes often read at grade level through the third grade, but then suddenly in the fourth grade they fall behind, and with each successive year they fall even further behind. The interpretation is that reading instruction through third grade focuses mostly on decoding—figuring out how to sound out words using the printed symbols—so that’s what reading tests emphasize. By the time the fourth grade rolls around, most students are good decoders, so reading tests start to emphasize *comprehension*. As described here, comprehension depends on background knowledge, and that’s where kids from privileged homes have an edge. They come to school with a bigger vocabulary and more knowledge about the world than underprivileged kids. And because knowing things makes it easier to learn new things, . . . the gap between privileged and underprivileged kids widens.” *Id.*
16. *HOW PEOPLE LEARN*, *supra* note 9, at 16-17.
17. “That’s because when you have background knowledge your mind connects the material you’re reading with what you already know about the topic, even if you’re not aware that it’s happening.” WILLINGHAM, *WHY DON’T STUDENTS LIKE SCHOOL?*, *supra* note 15, at 44.
18. “The processes we must hope to engender in our students—thinking critically and logically—are not possible without background knowledge.” *Id.* at 37.
19. Daniel T. Willingham, *Critical Thinking: Why Is It So Hard to Teach?*, *AM. EDUCATOR*, Summer 2007, at 8, 10 [hereinafter Willingham, *Critical Thinking*].
20. *Id.* Similarly, imagine asking an animal lover who is worried about her pet’s medical condition to define the word “vet.” Now imagine asking a member of the armed services returning from a tour of duty to define the same word. Will the answers be the same?

Using the Concept in Legal Writing

What do apple pies and pirates have to do with legal writing? Simply put, understanding the role of context and background knowledge in *learning* makes it perfectly clear why writers conveying (teaching) complex new information must engage in a two-step process to provide structure for their documents.

The process starts with *audience analysis*, the familiar concept mentioned above in our discussion of the curse of knowledge. To use the concept of context, writers should begin their audience analysis with a focus on background knowledge and existing structures in the mind of the reader. Our new writer must assess her audience's existing framework and knowledge of the general topic. Then, she must explicitly show the reader how the new information introduced in the document fits into a structure, *either* one that is already familiar *or* a new one identified and explained by the writer.²¹ These steps enable the effective writer to organize and present the material in a way calculated to maximize reader understanding.

Just as our students benefit from understanding where a particular case “fits” in the doctrine of an area of law, readers need to know where the topic of a document fits into the structure of their current understanding: what field we are discussing, what the point is for the discussion, and why the discussion is important.

Helping the reader to access the correct background knowledge and structure, or even providing the background knowledge and structure, is critical to reader comprehension. However, many legal writers—particularly new legal writers—fail to provide a contextual framework with necessary background knowledge for the analysis. Instead, they “dump a large number of cases in [the readers'] laps without adequately digesting or analyzing them.”²² They provide information, but not education, and hope that the readers will be able to fill in the blanks and educate themselves.

Remember our discussion of experts and novices? As the expert, the writer has both the ability and the responsibility to educate. She must provide a sound foundation so that a novice reader can understand and agree with her reasoning. Because the reader is a novice in this document's specific topic, he does not immediately see the patterns and connections. He needs instruction, not merely information; foundation, not merely facts. Without a strong contextual foundation, the reader cannot follow the conclusions drawn, whether those conclusions focus on how existing law affects, or will affect, a specific situation or how existing or proposed law affects, or should affect,

21. In this case, as usual, the writer should assess the audience's level of knowledge, education, and sophistication. Teachers generally should match extrinsic cognitive load (how easy or hard the presentation of the material is) in inverse proportion to intrinsic cognitive load (how objectively easy or difficult the information is to learn, which differs depending on the learner's familiarity and expertise with the subject matter). See Burgess, *supra* note 3, at 30.

22. JENNIFER K. ROBBENOLT & JEAN R. STERNLIGHT, *PSYCHOLOGY FOR LAWYERS: UNDERSTANDING THE HUMAN FACTORS IN NEGOTIATION, LITIGATION, AND DECISION MAKING* 359 (2012).

a situation. If we imagine the complete written analysis as a building, the provision of context forms the underlying structure: the beams across which drywall will be placed to make walls.²³

It is one step for our new legal writers to understand that audience analysis is helpful in a general sense. It is quite another—and an important one—for them to explicitly consider the reader’s structural understanding and background knowledge, and tailor their document to fit into that context. Understanding the role that context plays in the learning process can help our new writers see exactly *why* this step is important, and *how* to take it.

B. Chunking

So far, we have seen how an effective legal writer can create effective structures by understanding how readers place new information in existing context as they learn. Now we can explore how writers can benefit from scientific contributions regarding working memory and cognitive load.

An Illustration

Let’s return to our apple pie example. Read the passage as amended here:

How to Make an Apple Pie. It’s important to choose the type carefully, because it will affect your final product. Some types produce a grainy outcome; others are sweeter or tarter. Experiment with different combinations until you find one that suits you. You should also be careful about size; you don’t want to create too-small or too-large divisions.

23. Stephen Armstrong and Tim Terrell provide a useful metaphor for the concept of identifying useful structures for written analysis of a problem: a container, to hold the liquid of detailed information you will communicate. They note that inside the writer’s mind, information “stays in place, rather than spilling out formlessly and irretrievably, as liquids tend to do. It is behaving so politely because it is held in place by a container. That container is your understanding of its significance: the point, its importance, the logic that makes all its pieces cohere.” STEPHEN V. ARMSTRONG & TIMOTHY P. TERRELL, *THINKING LIKE A WRITER: A LAWYER’S GUIDE TO EFFECTIVE WRITING AND EDITING* 18 (3d ed. 2008). If you fail to provide a sufficient container—context and foundation—for your reader, the detailed information you wish to provide will simply flow over your readers without being retained. If, however, you are able to provide a container—a structure for your information—the reader will more easily be able to absorb the information. If you can provide a structure that the reader already recognizes as familiar, even better. Structures such as CREAC (Conclusion, Rule, Explanation, Application, Conclusion) continue to be recommended for documents aimed at legally trained audiences because “[a]t the very least, [CREAC is] familiar to [the legally-trained] reader and therefore more easily followed. . . .” CATHERINE J. CAMERON & LANCE N. LONG, *THE SCIENCE BEHIND THE ART OF LEGAL WRITING* 77 (2015) (describing research that supports CREAC as an effective structure for specific types of legal writing).

Was it easier to read when all the information was smushed together, without any breaks? Of course not. But try it like this:

How to Make an Apple Pie

Choosing the Apple Type: It's important to choose the type carefully, because it will affect your final product. Some types produce a grainy outcome; others are sweeter or tarter. Experiment with different combinations until you find one that suits you.

Cutting the Apple: You should also be careful about size; you don't want to create too-small or too-large divisions.

Breaking the paragraph into pieces, and titling those pieces, immediately made the passage easier to read. Professors often tell students to break information up, to use white space, to create shorter sentences and shorter paragraphs. Again, cognitive science helps us understand *why* we should, and *how* we can do so most effectively.

The Science: Chunking Helps People Learn

Cognitive scientists describe the process of learning (and thinking) by focusing on information processing: how the mind processes information from the environment and uses it to solve problems. Willingham explains that thinking requires a person to first receive information about a problem (from the environment), combine that information with relevant contextual and background information (from long-term memory), and then put the pieces of information together in working memory to see how the background knowledge connects to the new information.²⁴ Learning requires a person to encode new information by moving it through the working memory and into long-term memory by organizing the information, integrating it with existing knowledge, and creating new organizational structures to encompass all the information, both old and new, that pertains to a given area.

Working memory is critical to both thinking and learning. But working memory has limited capacity: perhaps only room for about seven pieces of information received verbally.²⁵ Imagine working memory as a parking lot with

24. WILLINGHAM, WHY DON'T STUDENTS LIKE SCHOOL?, *supra* note 15, at 14 ("Thinking occurs when you combine information (from the environment and long-term memory) in new ways. That combining happens in working memory."). See generally Andrew M. Carter, *The Reader's Limited Capacity: A Working-Memory Theory for Legal Writers*, 11 LEGAL COMM. & RHETORIC 31 (2014).

25. See generally George A. Miller, *The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information*, 63 *Psychol. Rev.* 81, 91 ("Everybody knows that there is a finite span of immediate memory and that for a lot of different kinds of test materials this span is about seven items in length."). See also Burgess, *supra* note 3, at 26-27 (noting that "humans can store approximately seven stimuli (plus or minus two) in the verbal function of short-term memory and approximately four stimuli in the visual function of short-term memory").

only seven spaces. When all seven are full, the learner must either move an existing car (bit of information) out of a space to fill it with a different car, or reject the new car. Both cannot fit into the lot.²⁶ Once those spaces are full, a learner must continue to focus on them to keep them in working memory, or they will disappear within about thirty seconds.²⁷ The amount of information within working memory at any given moment is a learner's "cognitive load." If cognitive load is high, people have more difficulty learning information.²⁸

Does an understanding of how working memory functions in learning *generally* translate to understanding how working memory functions in *reading*? Unquestionably. "[A] bounty of research" exists to prove that "reading written text engages the working memory."²⁹ As one reads a sentence, or a paragraph, or a document, the mind is busily sorting and cataloging information, moving it from environment to working memory to long-term memory and back again as the reader works to make sense of the text.³⁰

Thinking is facilitated when the thinker's working memory function is maximized, and working memory can be maximized by reducing cognitive load. How, then, do we reduce cognitive load?

One effective way to maximize cognitive load is by "chunking." The term "chunking" was developed by psychologist George Miller and refers to a learner's act of breaking instructional material into smaller, manageable pieces.³¹ Chunking plays a key role in learning, and indeed is one critical way

26. Burgess, *supra* note 3, at 27 ("Once either function in short-term memory is full, however, the student must continue to focus on the items within the full function to keep them in short-term memory. If the student shifts focus to another stimulus within the same full function, the student forgets one of the previous stimuli within that short-term memory function.")

27. *Id.* at 26.

28. Daniel Kahneman puts it simply: "anything that occupies your working memory reduces your ability to think." DANIEL KAHNEMAN, THINKING, FAST AND SLOW 30 (2011). However, a teacher should not intend to eliminate cognitive strain completely. Slight increases in cognitive strain can activate "System 2," our ability to think carefully. *Id.* at 64-65.

29. Carter, *supra* note 24, at 39.

30. Interestingly, if the reader is reading his own work, the mind is even busier, as it pulls additional information from the long-term memory about what the writer intended to write, considered writing, or thought about while writing. MRI imaging of the brain reveals that when an individual reads, the visual processing and higher-level functioning in language-related areas "light up" and are active. Interestingly, when a writer reads his *own* work, the effect is significantly stronger and more intense; the same areas work, but are working much harder when reading one's own work. See STEVEN JOHNSON, MIND WIDE OPEN: YOUR BRAIN AND THE NEUROSCIENCE OF EVERYDAY LIFE 172-73, 178-79 (2004) ("I think of all the times I've complained that it's hard to get a good feel for your own prose in its published form, because you've been there for all the first drafts and false starts, all the edits and tweaks and substitutions. All those alternative sentences crowd out your present-tense experience of reading."). *Id.* at 178.

31. Miller, *supra* note 25, at 93-95 (explaining how people can group the "bits" of information they receive into "chunks" and thus maximize memory span by remembering chunks of information, with each chunk containing multiple bits of information).

in which the behavior of experts in an area differs from that of novices.³² This concept is best understood using examples. Willingham, in his book *Why Don't Students Like School?*, provides the following one:

Read this list, then look away and see how many letters you are able to remember.

X C N

N P H

D F B

I C I

A N C

A A X³³

Most people can remember about seven letters,³⁴ which supports the theory that there are only about seven slots in working memory.³⁵ If a teacher wanted to maximize cognitive capacity for this information, one way would be to help students “chunk” the information into groups that can be easily remembered. How? Take a look at this list, then look away and see how many letters you can remember:

X

C N N

P H D

F B I

C I A

N C A A

X

32. See HOW PEOPLE LEARN, *supra* note 9, at 32 (“The superior recall ability of experts . . . has been explained in terms of how they ‘chunk’ various elements of a configuration that are related by an underlying function or strategy.”). “Since there are limits on the amount of information that people can hold in working memory, working memory is enhanced when people are able to ‘chunk’ information into smaller pieces and familiar patterns.” *Id.* at 32–33 (internal citation omitted).

33. WILLINGHAM, WHY DON'T STUDENTS LIKE SCHOOL?, *supra* note 15, at 33.

34. *Id.*

35. See also 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, 372–73 (2001) (“Introductory psychology textbooks note the fact that telephone numbers consist of seven digits precisely because studies of short-term memory show that seven bits of information (plus or minus two bits) is the maximum capacity of short-term memory”); Carter, *supra* note 24, at 43 (discussing Miller’s work).

A learner will probably get more letters correct after looking at the second list.³⁶ That task is easier “because the letters form acronyms that are familiar,” allowing the reader to “chunk” three or four letters into a single space of working memory.³⁷ Perhaps the second list was simply easier to remember for some other reason not related to “chunking”? Not likely; both lists contain exactly the same letters in exactly the same order. Only the groupings have changed, to “make the acronyms more apparent” and make chunking easier for the reader.³⁸

Chunking is about more than the size of the pieces. If mere length were the true issue, you would have been able to remember the first list of three-letter words above just as easily as the second. Effective chunking requires grouping related bits of information, and how any given reader groups those bits depends in large part on the reader’s background knowledge. In this way, chunking builds on context. In Willingham’s list of three-letter chunks, a French speaker would chunk the group “ICI,” because it means “here” in French.³⁹ An English-only speaker would find little meaning in that group.

Chunking is more than a fun memory game. It works across fields and helps encode information in long-term memory for retrieval in future situations such as exams. For example, law students studying for a torts exam could try to remember assault, battery, intentional infliction of emotional distress, false imprisonment, interference with property, trespass to land, trespass to chattel, consent, self-defense, recovery, necessity, and negligence.⁴⁰ Alternatively, they could group the information into three “chunks” of information: intentional torts, defenses, and negligence; they could then retrieve numerous items within the groups.⁴¹

Using the Concept in Legal Writing

And what can legal writers learn from “chunking”? To tailor the bits and pieces of information they provide to their readers so that each bit is digestible—thus, the routine advice favoring short sentences and short paragraphs. In the illustration at the start of this section, we saw how simply breaking up text makes a passage easier to read. Professor Andrew Carter has explicitly suggested that cognitive load theory should be applied to legal writing, stating that “[i]n a very real sense, legal writing is an instructional setting; the legal writer is a teacher who aims to maximize learning by the reader. Legal writers, it follows, should care deeply about how their instructional design—the

36. WILLINGHAM, WHY DON’T STUDENTS LIKE SCHOOL?, *supra* note 15, at 33.

37. *Id.*

38. *Id.*

39. *Id.* at 34. Similarly, if a reader were unfamiliar with the acronym “NCAA,” she would be unlikely to chunk those letters and would require four working-memory spaces (one for each letter) for the letters rather than the single space required for the chunk.

40. Burgess, *supra* note 3, at 28.

41. *Id.*

structure of their sentences and paragraphs—manages their readers’ working-memory resources.”⁴² “[L]ong, jam-packed sentences fail because they exhaust the reader’s working-memory capacity.”⁴³

Writers who understand the science behind chunking will also understand that chunking does not entail randomly creating breaks, or editing merely for *short* sentences and *short* paragraphs. It is neither sufficient nor accurate to say that every sentence must include no more than a specific number of words, or that every paragraph must include no more than a specific number of sentences. Instead, writers must combine their understanding of cognitive load with their understanding of context, and will strive to (1) keep *related* pieces together and (2) create chunks that, even if large, help the reader by accessing the reader’s contextual knowledge and showing the *structure* of the document.

First, writers who understand the science will avoid taxing a reader’s working memory with long gaps between words that belong together; they will make careful chunking decisions to associate certain pieces of information with certain other pieces.⁴⁴ Readers want to form associations, and “tend to link a phrase to the words that came just before it.”⁴⁵ Just as unguided readers can access incorrect context, they can make inappropriate chunking associations if not guided to the correct chunks. Consider the press release from Yale student groups that promised a “faculty panel on sex in college with four professors.”⁴⁶ Absent explicit guidance about which words to chunk, a reader could draw a more illicit conclusion about what exactly the event would cover.

Sentences, therefore, must not simply be cut into chunks; they must be cut into “strategic chunks” by putting related concepts together and pulling “unrelated (but mutually attracted) phrases apart.”⁴⁷ Steven Pinker solves the problem of “sex with four professors” by making the appropriate chunks clear in the amended phrasing: “a panel with four professors on sex.”⁴⁸

42. *Id.* at 44.

43. Carter, *supra* note 24, at 39.

44. Steven Pinker points that out long gaps between related words “can be hazardous to writer and reader alike,” even leading to grammatical errors such as subject-verb disagreement. PINKER, *supra* note 2, at 93.

45. *Id.* at 127.

46. *Id.* at 116.

47. *Id.* at 127–28.

48. *Id.* at 128. The writer must choose placement carefully so that chunks are clear. In another example, Pinker achieves clarity by making different chunking placement choices, editing “a panel with four professors on drugs” to “a panel on drugs with four professors.” *Id.*

A writer who receives only the advice to shorten sentences, without understanding the cognitive science behind effective chunking, can create ineffective writing. For example, imagine revising this sentence:

“A claim, which in the case of negligent misconduct shall not exceed \$500, and in the case of intentional misconduct shall not exceed \$1,000, may be filed with the Office of the Administrator by any injured party.”⁴⁹

The sentence includes a twenty-two word gap from subject to verb. A writer who seeks only to make the sentences shorter could create shorter sentences that retained the long gap between related words, thus following the generic advice of shortening sentences and yet not solving the real problem.⁵⁰ A writer who understands the science, however, could close the gap like this:

“Any injured party may file a claim with the Office of the Administrator. A claim must not exceed \$500 for negligent misconduct, or \$1,000 for intentional misconduct.”⁵¹

In addition, appropriate chunking can also make the document’s structure even clearer and more explicit. In the following example, the chunking “clarifies a structure that, though present in the original, was so deeply buried that the reader had to work hard to find it.”⁵²

Before

You have asked me to research whether our client, a corporation seeking to interview a former employee suspected of wrongdoing, has a duty under the penal laws of Ohio or of the United States to report any criminal activity it becomes aware of during the interview. In addition, you have asked me whether, under the penal laws of Ohio or of the United States, the corporation may agree, prior to the interview, not to divulge information regarding criminal activity in exchange for restitution to the corporation.

After

Our client, a corporation, seeks to interview a former employee suspected of wrongdoing. You have asked whether, under the penal laws of Ohio or the United States, our client:

1. has a duty to report any criminal activity it becomes aware of during the interview, and
2. may agree, prior to the interview, not to divulge information regarding criminal activity in exchange for restitution to the corporation.¹

49. RICHARD C. WYDICK, *PLAIN ENGLISH FOR LAWYERS* 41 (5th ed. 2005).

50. For example, a student might revise to the following: “A claim by any injured party in the case of negligent misconduct shall not exceed \$200. A claim by any injured party in the case of intentional misconduct shall not exceed \$1,000. Such claims may be filed with the Office of the Administrator.” While this revision does make the information easier to absorb, it does not yet maximize the gains of chunking. The final revision keeps related information together in each chunk.

51. WYDICK, *supra* note 49, at 42.

52. ARMSTRONG & TERRELL, *supra* note 23, at 127.

A new legal writer could easily understand the idea of “chunking” sentences and paragraphs without fully understanding the psychological role that chunking plays in learning. But a new legal writer who understands the cognitive science of learning—working memory, cognitive load, and how chunks access specific context—can see *why* chunking is desirable and *how* to choose the most effective chunks.

C. Connections

Once the writer has provided an overall structure and context for the document, and has broken the content into manageable “chunks” to enhance that structure, she can make *connections* between the structure and the new information she adds as she goes along. She must do so explicitly, walking slowly step by step through the analysis, without skipping ahead or assuming the reader will follow her thinking.

An Illustration

To understand how explicit connections can help readers, let’s take one final look at our apple pie example. Our first revision to the section (adding a title) provided the reader with clues about context. The context allowed our reader to identify existing knowledge and make sense of the passage. In our second revision, we saw that we could help the reader absorb the information by “chunking” the paragraph in ways that made the structure explicit. Now we can help the reader even more, by adding structural clues to show the reader precisely where and how new information fits into the structure.

How to Make an Apple Pie

Making an apple pie involves three steps: first, making the filling; second, making the pie dough, and third, baking.

1. Making the Filling. A great filling depends both on the type of apple you choose and the way you cut it into slices.

Choosing the Apple Type: It’s important to choose the type carefully, because it will affect your final product. Some types produce a grainy outcome; others are sweeter or tarter. Experiment with different combinations until you find one that suits you.

Cutting the Apple: You should also be careful about size; you don’t want to create too-small or too-large divisions.

The addition of explicit structure (an itemization of the three steps before providing details about the first step, and a road map of the two parts of that first step) helps the reader by showing *where* the new information fits into the structure provided: how it connects to existing knowledge. Now the reader knows not only what background knowledge she should draw upon to make sense of the new information, but also how to fit the new information into the structure and connect it to existing knowledge. The help provided in a small passage is magnified many times over in larger, more complex documents. If we continue to imagine our written document as a building, these connections

hold the “chunks” of drywall together. The drywall pieces cannot stand on their own. However, when attached to the structural beams and to each other, they can become a continuous wall.

The Science: Connections Help People Learn

Again, we can look to the science of learning to understand *why* these explicit steps are necessary. Critical thinking does not come easily.⁵³ According to cognitive scientists, even basic thinking is neither easy nor desirable for most people in most situations. One cognitive scientist posits: “Humans don’t think very often because our brains are designed not for thought but for the avoidance of thought.”⁵⁴ This author adds that human minds “are not especially well-suited to thinking; thinking is slow, effortful, and uncertain. For this reason, deliberate thinking does not guide people’s behavior in most situations. Rather, we rely on our memories, following courses of action that we have taken before.”⁵⁵ Daniel Kahneman, in his book *Thinking, Fast and Slow*, explains in great detail how our mind’s ability to perform “effortful mental activities” involving complex problems is characterized primarily by “laziness, a reluctance to invest more effort than is strictly necessary.”⁵⁶

Teachers know that if even simple thought (an obvious requisite for learning) is difficult, then education cannot be merely a task of *presenting* information known to the teacher and unknown to the student. Instead, teachers must find ways of thoughtfully *preparing* that presentation in a way calculated to encourage absorption, retention, and effective utilization of the information. Teachers must lead the students through the thinking or problem-solving process, offering assistance along the way.⁵⁷

53. Willingham, *Critical Thinking*, *supra* note 19, at 8. See generally KAHNEMAN, *supra* note 28.

54. WILLINGHAM, WHY DON’T STUDENTS LIKE SCHOOL?, *supra* note 15, at 4. He adds that “[c]ompared to your ability to see and move, thinking is slow, effortful, and uncertain.” *Id.* at 5.

55. *Id.* at 18.

56. KAHNEMAN, *supra* note 28, at 31. Kahneman distinguishes between our mind’s quick, intuitive reactions, which operate “automatically and quickly, with little or no effort” and our deliberate attention to solving problems and concentrating. *Id.* at 20. The first he dubs “System 1,” and the second “System 2”. One of the primary themes of his book is that although people believe they rely primarily on System 2 to make decisions, they more often rely on System 1 when making decisions. This is problematic, because System 1 relies on shortcuts and is susceptible to cognitive illusions and biases. Moreover, “[b]ecause System 1 operates automatically and cannot be turned off at will, errors of intuitive thought are often difficult to prevent.” *Id.* at 28. Critical thought requires attention, concentration, and deliberate effort to overcome the instinctive tendency towards System 1.

57. There is an important caveat here for teachers, because learning that is harder may be “stronger and last[] longer.” BROWN, ROEDIGER & MCDANIEL *supra* note 7, at 9. However, much legal writing is focused less on long-term retention of information and more on short-term understanding of each step in the document’s problem-solving process.

Writers must do the same. Information within a document is all connected, hopefully in a way that creates coherence for the reader. Steven Pinker calls these connections “arcs of coherence” and points out:

No sentence is an island; nor is a paragraph, a section, or a chapter. All of them contain links to other chunks of text. A sentence may elaborate, qualify, or generalize the one that came before. A theme or topic may run through a long strength of writing. People, places, and ideas may make repeat appearances, and the reader must keep track of them as they come and go.⁵⁸

But finding these coherent connections, without significant help from the writer, can be a challenge for readers. Not only are readers disinclined to think, they are also impaired in their ability to remember information long enough to make the relevant connections (as discussed in the above section on chunking). The writer must help them.

Using the Concept in Legal Writing

Just as writers have been advised for years to use introductions to provide the reader with a sense of context for the discussion, without explicitly acknowledging that the rationale for doing so could be found in cognitive science’s lessons on learning, writers have traditionally used connecting tools in their writing without necessarily understanding the science explaining why those tools were useful. In writing, connections can be achieved both by linking bits of information to the overall structure and by linking them to each other, thus integrating all the information into a cohesive whole.

Good writers *link* the pieces of information together within a document, so that they flow seamlessly and the reader easily sees the connections between pieces of information. Professors often advise the use of road maps, topic sentences, and transitions to help readers form connections in the document. But effective writers can do much more with connections if they understand the science of thinking and learning. They can use their knowledge of connections to maximize the effectiveness of their analogies and to ease reader comprehension by connecting sentences within paragraphs.

Analogies serve as a form of cognitive linking. They provide the reader with an easy shortcut, a way to avoid some of the difficulties involved in solving a new problem.⁵⁹ Analogies give the reader a “mental model” that is already proven to be the “correct”⁶⁰ way of solving the problem.⁶¹ If readers can make

58. PINKER, *supra* note 2, at 146.

59. *See supra* notes 53–57 and accompanying text (describing how thinking is difficult and how a teacher can facilitate learning by carefully calculating cognitive load).

60. Correct, because a court has decided the prior outcome and our system relies on *stare decisis*.

61. BROWN, ROEDIGER & MCDANIEL, *supra* note 7, at 118–20 (discussing the use of “mental models” to solve new problems by remembering the solution to similar, familiar ones).

the connection that the current problem is like a prior problem, they can more easily solve the current problem in the way the writer proposes.⁶²

Cognitive scientists have shown that familiarity with a problem similar to the one you currently face can make solving the current problem easier. For example, in one experiment, researchers asked both American and Chinese students to solve the following problem:

A treasure hunter is going to explore a cave up on a hill near a beach. He suspected there might be many paths inside the cave so he was afraid he might get lost. Obviously, he did not have a map of the cave; all he had with him were some common items such as a flashlight and a bag. What could he do to make sure he did not get lost trying to get back out of the cave later?⁶³

Only about twenty-five percent of Chinese students solved the problem: The treasure hunter should carry sand in his bag, and leave a trail of sand to mark the way out of the cave as he explores.⁶⁴ In contrast, nearly seventy-five percent of American students arrived at this solution.⁶⁵ Were the Americans smarter than the Chinese? Unlikely: When researchers gave both groups another puzzle, the percentage of solvers from each culture reversed.⁶⁶ What explained the difference? American students' familiarity with the story of Hansel and Gretel, "which includes the idea of leaving a trail as you travel to an unknown place in order to find your way back."⁶⁷ The puzzle that Chinese students solved in greater proportion than American students was based on a common Chinese folk tale.⁶⁸ Knowing the "type" of problem helps thinkers categorize and classify the new problem and quickly solve it. When learners are stumped by a particular problem and then are reminded of a similar problem they found easy to solve, they are more easily able to solve the new problem.⁶⁹ Similarly, analogical reasoning in legal documents helps the reader solve the legal problem in a quick and efficient way.⁷⁰ A writer who understands why

62. *Id.* at 156-57 (noting that students have difficulty finding the solution to new problem until instructed to look for similarities between it and prior problem).

63. Willingham, *Critical Thinking*, *supra* note 19, at 11-12. *See also* WILLINGHAM, WHY DON'T STUDENTS LIKE SCHOOL?, *supra* note 15, at 6 (noting that we rely on memory to solve problems because "[m]ost of the problems we face are ones we've solved before, so we just do what we've done in the past.").

64. Willingham, *Critical Thinking*, *supra* note 19, at 12.

65. *Id.*

66. *Id.*

67. *Id.*

68. *Id.*

69. *Id.* at 17.

70. Of course, analogical reasoning in legal analysis is far more complex than simply pointing out an analogy and expecting the reader to accept it. There are often numerous possibly acceptable analogies, and the reader must be persuaded that the one or ones presented are appropriate for the particular situation. But the basic concept—that people, including readers, absorb information well when they can connect the current problem to an already-

this is so can think even more carefully about how to use analogies in a legal document.

Effective writers also link sentences within paragraphs. One technique is to “begin the next sentence with material that is familiar to the reader, either from the preceding sentence or from general knowledge, reserving new, unfamiliar material for the end of the sentence.”⁷¹ George D. Gopen puts it simply: “Readers expect the material at the beginning of a sentence to provide a connection backward to the previous sentence.”⁷² Stephen Armstrong and Tim Terrell, in *Thinking Like a Writer*, make the same point, and elevate the recommendation to a formal technique (“old” to “new”) with respect both to sentences⁷³ and paragraphs:⁷⁴

Technique 2.1(b):
“Old” to “new”

Write sentences that move from familiar information to new

Once you have set an adequate foundation in the opening sentence, the paragraph should unfold smoothly by linking each new sentence to what precedes it. If this link is to work cognitively as well as logically, your reader should see it where she needs it, at the sentence’s beginning rather than as an afterthought at the sentence’s end.

To create this kind of coherence, you first have to decide the pattern that underlies the paragraph’s unfolding. Coherent paragraphs can follow many patterns, but in expository paragraphs two simple ones are most common: the topic chain and the topic core. In the first, the language at the beginning of each sentence refers back to the preceding sentence. In the second, it refers back to a topic announced at the paragraph’s start.⁷⁵

This technique can be more easily understood with an example. The second version of the following paragraph illustrates an effective topic “chain.” For easy understanding, I have bolded and italicized the connecting concepts from sentence to sentence within the paragraph.

Smith finally received the settlement award in October, 2000. Several months of negotiations led to the release of the funds. But the length of the talks did not reduce the joy of the newly wealthy woman or her attorneys.

solved problem—is worthy of explicit recognition. With that understanding, new writers can more clearly see why analogical reasoning is helpful in legal analysis. This, in turn, helps them more effectively make those analogies clear to their readers.

71. RICHARD C. WYDICK, *PLAIN ENGLISH FOR LAWYERS, TEACHER’S MANUAL* 31-32 (5th ed. 2005) (internal citations omitted).

72. GEORGE D. GOPEN, *THE SENSE OF STRUCTURE: WRITING FROM THE READER’S PERSPECTIVE* 65 (2004).

73. ARMSTRONG & TERRELL, *supra* note 23, at 209 (“Technique 1.3: Precede new information with familiar, transitional information”).

74. *Id.* at 186.

75. *Id.*

Smith finally received the settlement **award** in October, 2000. The **funds** were released only after several *months* of negotiations. But the *length* of the talks did not reduce the joy of the newly wealthy woman or her attorneys.⁷⁶

These authors (and many others⁷⁷) all make the same point that teachers have intuitively understood for years: If you want your student to understand the relevance of new information, demonstrate how it fits into the structure you have provided *and* how it connects to information the student already understands. This may be thinking like a lawyer or thinking like a writer, but it is fundamentally thinking like a teacher.

Conclusion

“The better you know something, the more difficult it becomes to teach it.”⁷⁸

Teaching professors know that our very expertise can work against us in the classroom. Familiarity with a subject makes it hard to remember the difficulties faced in learning it.⁷⁹ We are thus perfectly positioned to understand why our students, even those who have worked hard to analyze their audience and fully understand their topic, still struggle to consistently provide clear, coherent writing. These new legal writers face the same challenge that a teacher does as they try to communicate what they have mastered (the particular document’s analysis) to someone who has not been inside their minds while they mastered the material.

Writing is the communication of thought.⁸⁰ Legal thought and analysis operate at the highest levels of human cognition: beyond mere remembering and understanding, and into applying, analyzing, evaluating, and creating (synthesizing).⁸¹ Thus, the communication of legal thought and analysis requires the very best teaching methods. By using context to create structure, chunking to minimize cognitive load, and connections to link new information to existing structures and knowledge, a writer can maximize her reader’s learning and understanding just as the most effective teachers do. By understanding the science of thinking and learning, a writer will be more easily and effectively able to teach her reader.

76. *Id.* at 187.

77. *See, e.g.*, ALEXA Z. CHEW & KATIE ROSE GUEST PRYAL, *THE COMPLETE LEGAL WRITER* 380-84 (2016) (describing connections at the sentence and paragraph level).

78. BROWN, ROEDIGER & MCDANIEL, *supra* note 7, at 119.

79. “In fact, expertise can sometimes hurt teaching because many experts forget what is easy and what is difficult for students.” HOW PEOPLE LEARN, *supra* note 9, at 44.

80. *See supra* note 4.

81. Legal analysis incorporates the highest levels of cognitive skill, and thus requires more and better teaching methods. *See supra* note 3.

Understanding how readers learn does not negate the traditional writing advice we give to our new legal writers. Instead, it gives these writers a framework to understand more clearly *why* the traditional advice is effective and *how* to take advantage of it. By understanding how readers learn, writers can better understand how to write well. By becoming better teachers, they can become better writers.