

Impact Beyond the Classroom: Teaching for Transfer

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Several years ago, after more than a decade of teaching Legal Research and Writing (LRW), I had the opportunity to create a comprehensive academic support program at the University of Oregon. In this role, I often met with students one-on-one, and they opened up in ways that they hadn't when I was their professor. They were candid about their study habits and their frustrations that their performance often didn't reflect their effort. Their professors were similarly frustrated, sharing that in exam after exam and paper after paper, their students were unable to demonstrate mastery of the material.¹

Meeting with students who, after their first semester of law school, had not performed as well as they had expected on exams was both illuminating and puzzling. These students would often begin our meetings with a desperate desire to convince me that they had worked hard and knew the material. They would recite the elements of false imprisonment or the factors for determining domicile. They would describe to me, in detail, the cases they had read and briefed about promissory estoppel. After I assured them that I believed that they had worked hard, we would review their exams together. Surprised, I would ask them why they hadn't done an analysis of false imprisonment. After all, they had just recited the elements to me. And I would ask why they didn't discuss promissory estoppel, remembering that they had shown me the detailed brief of the case they'd read in Contracts. And then, most of the time, the student and I would sit in puzzled silence.

Why *hadn't* the student demonstrated their learning on the exam? Was it possible that they hadn't actually learned the material at all?² Or maybe

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1 Michael Hunter Schwartz describes this phenomenon in *Teaching Law Students to Be Self-Regulated Learners*: "According to every colleague with whom I have ever spoken, the cause of our bar passage and attrition issues is the failure of our students to learn what we try to teach them. In other words, it is not that we fail to provide instruction to our students that addresses the skills and knowledge they need to become competent novice lawyers, to pass the bar exam, and to avoid being academically dismissed. Rather, the problem is that the students do not learn what we wish them to learn." Michael Hunter Schwartz, *Teaching Law Students to Be Self-Regulated Learners*, 2003 MICH. ST. DCL L. REV. 447, 449 (2003) [hereinafter Schwartz, *Teaching Law Students*].

2 When I question whether a student learned material, I am questioning not whether the

their learning was shallow and thus they had been unable to move from understanding to application?³ Or maybe they had learned the material but had been unable to transfer that learning to the exam?

I had a similar experience when working with students as they prepared for the bar exam. I was confident that our students would write strong essays. I knew, of course, that the time crunch would mean their writing would not be polished, but I was confident that they would use the fundamentals they'd learned in legal writing. At the very least, I knew they would use IRAC.⁴ And then they didn't use IRAC.

Why *hadn't* the students used IRAC? Well, this time, I asked. Of course, there wasn't a single reason that these students hadn't used IRAC when writing their essays.⁵ But some students shared that it simply hadn't occurred to them that the legal writing they'd learned in LRW had anything at all to do with the essays they were writing on the bar exam. They had learned the organizational paradigm that lawyers use but had relegated that paradigm to

student was capable of learning the material but whether they learned specific material in a specific context. I want to acknowledge, though, that there are at least some law professors who hold the belief that there are students who are incapable of mastering the material: "Traditional legal educators regard our goal of uniform excellence as illusory because it is inconsistent with their fundamental beliefs about the different capacities of students and the nature of legal education This concept of legal education . . . assumes that intelligence and talent are normally distributed amongst the population and that the intelligence and talent possessed by an individual are relatively immutable [But this conception of] intelligence is evil and false. It is evil because it supports social institutions that prevent the full development of human potential and freedom by convincing people of their own inadequacy. It is false because it is inconsistent with mountains of research and years of experience demonstrating that widely distributed learning outcomes are more a product of ineffective schooling than of the abilities of the students." See Jay Feinman & Marc Feldman, *Pedagogy and Politics*, 73 *GEO. L.J.* 875, 896-97 (1985).

- 3 Bloom's Revised Taxonomy categorizes learning from the foundational "remember" up through five additional categories, "understand," "apply," "analyze," "evaluate," and, finally, "create." Often drawn as a pyramid, this taxonomy demonstrates how "remembering" is foundational to "understanding," and "understanding," in turn, is foundational to "applying," and so on. With some frequency, when I was working with a student, we would discover that the student had worked hard to remember and maybe even to understand concepts taught in the class but that the exam called for the more sophisticated skills of applying, analyzing, and evaluating. BLOOM'S TAXONOMY, <https://bloomstaxonomy.net/> (last visited Sept. 24, 2024).
- 4 In this article, I use the acronym IRAC for the organizational paradigm that lawyers expect in written work. Other acronyms, including CREAC, CRAC, and IREAC, are also common and all refer to essentially the same organizational paradigm. In teaching LRW, I use the acronym CREAC, which stands for conclusion, rule, explanation, application, and conclusion.
- 5 Saying that the students were not using IRAC is a simplification of the problem. Most often, students were using a single IRAC to address a multi-issue problem. One student shared with me that he believed exams were always to be written using a single IRAC, regardless of the number of issues addressed, and that using multiple IRACs connected with a roadmap paragraph was a uniquely LRW requirement.

certain kinds of documents—memos and briefs—and so had not transferred that learning from their 1L legal writing course to the bar exam.

Transfer of learning occurs when learning in one situation affects how a person learns or performs in another situation.⁶ However, that deceptively simple definition belies how complex the phenomenon of transfer really is. For transfer to occur, at least three things must happen.⁷ First, a student must recognize that some previously learned knowledge or skill would be helpful to her in the new learning situation.⁸ Once she has recognized the specific learning that would be helpful to her, she must “successfully recall” that learning.⁹ Finally, she must “use or apply that knowledge to successfully execute the transfer task.”¹⁰

Those frustrated 1Ls never stood a chance of transferring their learning from the classroom to the exam because they simply had not recognized that what they knew about false imprisonment would be helpful on the exam that they were writing.¹¹ Similarly, those 3Ls who had previously used a skill only in the context of memo writing failed to recognize how that skill would also serve them on an essay exam.

Now, four years later, I have returned to my home in the legal writing classroom. And I’ve brought with me many lessons learned from my time working one-on-one with students in academic support. While much of my work in academic support was focused on empowering students with new tools

6 JEANNE ELLIS ORMROD, HUMAN LEARNING 418 (8th ed. 2020). In her article *True North: Navigating for the Transfer of Learning in Legal Education*, Tonya Kowalski helpfully collects several different definitions of transfer: “Anthony Marini and Randy Genereaux broadly define transfer as involving ‘prior learning affecting new learning or performance.’ Others describe it as a situation in which ‘information learned at one time comes to influence learning and performance at a later time.’ Transfer is also referred to as the ‘carrying over’ of learning from one domain to another. Similarly, Gagne, Vekovich, and Vekovich define it as ‘the application of knowledge learned in one setting or for one purpose to another setting and/or purpose.’” Tonya Kowalski, *True North: Navigating for the Transfer of Learning in Legal Education*, 34 SEATTLE U. L. REV. 51, 60 (2010).

7 Andrew C. Butler, *Repeated Testing Produces Superior Transfer of Learning Relative to Repeated Studying*, 36 J. EXPERIMENTAL PSYCH.: LEARNING, MEMORY & COGNITION 1118, 1129 (2010) (citing Susan M. Barnett & Stephen J. Ceci, *When and Where Do We Apply What We Learn?: A Taxonomy for Far Transfer*, 128 PSYCH. BULL. 612 (2002)).

8 *Id.*

9 *Id.*

10 *Id.*

11 People and learning are complex. Thus, a more realistic view is that only some of the students failed to see that their previously learned knowledge would be useful. We often think of this as a failure to spot issues. Other students recognized the learning that would help but failed to successfully recall that learning. This failure is most often related to memory. And still other students recognized what learning would be useful and successfully recalled that learning but failed to successfully execute the transfer task. This most often looks like a failure to fully apply the law.

for their own learning,¹² the insights I gained from working with them have also made me think differently about my classroom teaching. Most importantly, I have learned from both my work with students and my research that we must better understand how transfer occurs and adopt teaching strategies that promote transfer if we want our teaching and our students' learning to have impact beyond our classrooms.

Understanding the science behind learning and transfer can be an important first step in adopting teaching strategies that promote transfer. To that end, Part I of this article will briefly touch on the difference between ordinary learning and transfer of learning. Part II will explore the different theories of transfer. This part of the article will focus on transfer from a student perspective, explaining how transfer occurs and sharing stories of both successful and unsuccessful attempts at transfer. Finally, Part III will turn its focus from student learning to teaching, drawing on learning theory to explore teaching techniques that promote the successful transfer of learning and sharing concrete ideas for teaching for transfer.

I. The Difference Between Ordinary Learning and Transfer

The first step in the successful transfer of learning is for a student to recognize that some previously learned knowledge or skill would be helpful to them.¹³ In other words, "a prerequisite for successful transfer and problem solving is a solid understanding of the topic in question."¹⁴ Thus for law students to *do* anything with the law, they must *know* something about the law; core instruction in domain knowledge is foundational.¹⁵ However, ordinary learning, while a prerequisite for transfer, is not sufficient for transfer to occur.

Two leaders in the field of transfer, David Perkins and Gavriel Salomon, explain the significance of the difference between transfer and ordinary learning:

[T]ransfer only becomes interesting as a psychological and educational phenomenon in situations where the transfer would not be thought of as ordinary learning. For example, a student may show certain grammar skills on the English test (ordinary learning) but not in everyday speech (the hoped-for transfer).¹⁶ The student

12 I am so grateful for the work of the Association of Academic Support Educators (AASE). The conferences AASE hosts and the work of its members made it possible for me to create and then implement a vision for academic support at the University of Oregon.

13 Butler, *supra* note 7, at 1129.

14 ORMROD, *supra* note 6, at 445.

15 Larry O. Natt Gantt, II, *The Pedagogy of Problem Solving: Applying Cognitive Science to Teaching Legal Problem Solving*, 45 CREIGHTON L. REV. 699, 747 (2012); Kowalski, *supra* note 6, at 80.

16 While this example is helpful, I would need to know more before I agreed that this is an example of failure to transfer. Did the student fail to use the learned grammar in spoken word because she didn't recognize that it was useful in spoken language? Or did the student fail to use the learned grammar because the formal grammar being taught was not

may solve the problems at the end of the chapter (ordinary learning) but not similar problems when they occur mixed with others at the end of the course (the hoped-for transfer). In other words, talk of transfer is always at least implicitly contrastive: it assumes learning within a certain context and asks about impact beyond that context.¹⁷

Thus, while ordinary learning is essential for student success,¹⁸ it does not guarantee that the student will be able to use that learning in the contexts—exams, future courses, law practice—that we might expect. The 3Ls writing bar exam essays had undoubtedly engaged in ordinary learning. They had performed well as 1Ls in legal writing, demonstrating their knowledge of IRAC on the memos they wrote for the course (ordinary learning) but not in writing bar exam essays (the hoped-for transfer). Similarly, the frustrated 1Ls had been able to discuss false imprisonment with their professor during Socratic questioning on that topic (ordinary learning) but had not been able to spot the issue of false imprisonment on their exam (the hoped-for transfer).

If ordinary learning is foundational to but not sufficient for transfer to occur, the question becomes what, beyond ordinary learning, is necessary for transfer to occur.

II. The Types of Transfer

As I began working one-on-one with students and identified that they were often failing to transfer their learning, I became interested in understanding transfer and exactly how it occurs. Yet even learning theorists do not seem to agree on what transfer is, how to measure it, or how it occurs.¹⁹ Defining and identifying transfer is difficult, in part, because it is “not a unitary phenomenon but rather is complex.”²⁰ Learning theorists do not agree on “the nature of transfer, the extent to which it occurs, and the nature of its underlying

appropriate to her spoken dialect?

- 17 David N. Perkins & Gavriel Salomon, *Transfer of Learning*, in INTERNATIONAL ENCYCLOPEDIA OF EDUCATION 3 (T.N. Postlethwaite & Torsten Husen eds., 2d ed. 1994), <https://jaymctighe.com/wp-content/uploads/2011/04/Transfer-of-Learning-Perkins-and-Salomon.pdf>.
- 18 Students struggle in law school for a whole myriad of reasons. While this article focuses on students who engaged in ordinary learning but failed to transfer that learning, many law students struggle with the prerequisite “ordinary learning.” In other words, while some 1Ls knew the elements of false imprisonment and were simply unable to apply that knowledge on the exam, there are certainly other students who failed to learn the elements of false imprisonment.
- 19 Nate Furman & Jim Sibthorp, *Leveraging Experiential Learning Techniques for Transfer*, in LEARNING TRANSFER IN ADULT EDUCATION 15, 24 (Leann M.R. Kaiser, Karen Kaminski & Jeffrey M. Foley eds., 2013); Barnett & Cecil, *supra* note 7, at 612).
- 20 DALE SCHUNK, LEARNING THEORIES: AN EDUCATIONAL PERSPECTIVE 319 (2012); Gavriel Salomon & David N. Perkins, *Rocky Roads to Transfer: Rethinking Mechanisms of a Neglected Phenomenon*, 24 EDU. PSYCH. 113, 115 (1989).

mechanisms.”²¹ This disagreement is reflected in the literature, with theorists categorizing the types of transfer in different ways, including near and far transfer, literal and figural transfer, low-road and high-road transfer, forward-reaching and backward-reaching transfer, positive and negative transfer, vertical and lateral transfer, specific and general transfer, simple and complex transfer, and applied and contextual transfer.²²

However, while there may be no unified theory of transfer, that does not mean that we can or should dismiss the transfer literature. There does not need to be a single correct theory of transfer for us to find what is useful in the different theories.²³ Theories of learning, like the law, change over time with new research and new research findings, even as the fundamental principles of learning remain the same.²⁴ Thus, as educators, we can pull from these different theories to meet the needs of our particular students in our particular courses.²⁵

21 “[T]ransfer has proven hard to define, difficult to investigate, and perplexingly controversial’ ‘There is little agreement in the scholarly community about the nature of transfer, the extent to which it occurs, and the nature of its underlying mechanisms.’” Furman & Sibthorp, *supra* note 19, at 15, 24 (quoting Martin Packer, *The Problem of Transfer, and the Sociocultural Critique of Schooling*, 10 J. LEARNING SCIS., 493, 493 (2001); Barnett & Ceci, *supra* note 7, at 612).

22 SCHUNK, *supra* note 20, at 319 (describing near and far transfer, literal and figural transfer, low-road and high-road transfer, forward-reaching and backward-reaching transfer); ORMROD, *supra* note 6, at 419 (describing positive and negative transfer, vertical and lateral transfer, near and far transfer, and specific and general transfer); Jeffrey M. Foley & Leann M.R. Kaiser, *Learning Transfer and Its Intentionality in Adult and Continuing Education*, in LEARNING TRANSFER IN ADULT EDUCATION, *supra* note 19, at 7 (describing near and far transfer, high- and low-road transfer, positive and negative transfer, and describing Haskell’s Taxonomies for Transfer of Learning this way: “[In Haskell’s taxonomies of transfer of learning: Implications for classroom instruction, Gerald J. Calais] described a slightly different way of categorizing learning transfer rather than the dual classifications previously used. Calais used Haskell’s Taxonomy which includes six progressive levels of learning transfer: nonspecific, application, context, near, far, and displacement/creative. Calais argued that only the near, far, and displacement/creative levels require something new to be learned, and thus may result in transfer. Calais continued by stating that there are not only levels of transfer but different kinds of transfer. The first kind is based on types of knowledge (for example, declarative, procedural, and theoretical). The second kind is based on types of transfer, including content-to-content transfer, vertical transfer, and relational transfer.”).

23 Professor Ormrod, in introducing learning theories generally, provides this insight: “Because different theoretical orientations approach human learning in distinctly different ways, they can also prescribe somewhat different strategies for enhancing people’s learning and achievement in instructional settings [R]esist[] the temptation to choose one approach over others as being the ‘right’ one. All of the strategies . . . are applicable in certain situations, depending on the environmental conditions at hand, the specific subject matter being learned, and the goals of the instruction.” ORMROD, *supra* note 6, at 12–13.

24 *Id.* at 6–7. In HUMAN LEARNING, Professor Ormrod explains that “principles tell us *what* factors are important for learning, theories tell us *why* these factors are important.”

25 Michael Hunter Schwartz explained a similar approach taken by instructional designers: “Instructional designers strive to engage in ‘cherry-picking,’ not selecting which theory is ‘right,’ but, rather, selecting the best approach under the particular design circumstances.”

A. General Transfer Is a Myth

While there are many often conflicting and competing theories of transfer, most learning theorists seem to agree: General transfer—“the idea that learning in one situation improves learning and performance in another situation regardless of how different the two situations might be”—probably does not occur.²⁶

The idea of general transfer is an attractive one. It would suggest that “as long as students immerse themselves in the ‘formal disciplines’ of Contracts, Torts, and Criminal Procedure, they will later intuit how to apply that knowledge to solve complex problems in practice.”²⁷ And the law school reliance on immersing students in the formal disciplines is built upon long-standing tradition:

In days of yore, serious scholars often studied rigorous, difficult topics—for instance, Latin, classical Greek, and formal logic—that aren’t as frequently studied today. Although these subject areas may have had no specific applicability to everyday tasks, scholars believed that mastering them would improve performance in many aspects of daily life. As recently as the middle of the twentieth century, students had frequent practice in memorizing things—poems for example—apparently as a presumed means of improving their general learning capabilities. Such practices reflect the notion of formal discipline: Just as you exercise muscles to develop strength, you exercise your mind to learn more quickly and deal with new situations more effectively.²⁸

The problem, of course, is that it is not enough for us to immerse our students in torts, civil procedure, evidence, and legal writing and expect that that immersion will transfer to complex problem-solving in future contexts.²⁹ In other words, learning torts and civil procedure isn’t an exercise of the mind enabling students to learn more effectively in all other contexts.

Recall, however, the difference between ordinary learning and transfer. Just because the mind-as-muscle analogy doesn’t work doesn’t mean that our students don’t need domain knowledge in torts, civil procedure, evidence, and legal writing. They do. However, if all we achieve is helping our students

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, 365 (2001) [hereinafter Schwartz, *Law by Design*].

26 ORMROD, *supra* note 6, at 422.

27 Kowalski, *supra* note 6, at 67.

28 ORMROD, *supra* note 6, at 422.

29 Kowalski, *supra* note 6, at 67.

acquire domain knowledge, there is very little chance that they will transfer that knowledge to future contexts.³⁰

B. Positive and Negative Transfer

i. Positive Transfer

The first conceptualization of transfer that is useful to how we think about teaching in law school is positive and negative transfer. Positive transfer occurs when a student's learning in one setting helps her to better learn or perform in another setting.³¹

In working with 1Ls, when I saw positive transfer, it was often of fundamental study skills. Their knowledge of how to create an outline, for example, served them well as they were trying to understand the relationships that the rules in their civil procedure course had to one another. Upper-level students, on the other hand, were often able to use their learning from 1L courses to help them learn in their upper-level courses. One semester a student who was struggling in her sales course made an appointment to meet with me. As we discussed where she was struggling, we realized that she was not using the foundational concepts she had learned in contracts to help as she was learning the Uniform Commercial Code.³² With a change to her approach, the student was able to build on what she already knew, which made her learning in sales more efficient and effective.

ii. Negative Transfer

On the other hand, when a student's learning in one setting actually makes learning or performing in another setting more difficult, negative transfer has occurred.³³ Perkins and Salomon have said that negative transfer is generally much less of a concern in education than positive transfer because negative transfer typically "causes trouble only in the early stages of learning a new domain."³⁴ Of course, law students, particularly first-year law students, are in

30 None of this, of course, is to suggest that any law professor is only helping their students acquire domain knowledge. We are all teaching lawyering skills like reading cases, thinking critically, problem solving and more. The challenge for most law faculty is to help students acquire both the necessary domain knowledge and the necessary lawyering skills. This, of course, is part of the reason for the tension between law students, who sometimes grumble that their professors are refusing to "just tell me what the law is," and law professors who insist that law students not shortcut their learning with commercial outlines or commercial case briefs. We *know* that domain knowledge is necessary but not sufficient.

31 Sarah Leberman, Lex McDonald & Stephanie Doyle, *THE TRANSFER OF LEARNING: PARTICIPANTS' PERSPECTIVES OF ADULT EDUCATION AND TRAINING* 4 (2006); Perkins & Salomon, *supra* note 17, at 3.

32 In initially failing to see that her learning in contracts could help her in her sales course, this student was experiencing a failure to transfer. When we met, I provided retrieval cues, which I'll discuss later in this paper, that allowed her to access the information she needed and use it to support positive transfer.

33 ORMROD, *supra* note 6, at 420.

34 Perkins & Salomon, *supra* note 17, at 3.

the early stages of learning a new domain. So negative transfer can cause a lot of trouble.

For example, one summer, a colleague and I worked with a group of undergraduate students who were exploring the possibility of attending law school. Their assignment was to write a straightforward analysis of social host liability. We set the problem in a jurisdiction in which a social host would be liable for the damages caused by any guest, whether the guest was a minor or not, if the host provided the alcohol and knew the guest was drunk and planning to drive. The goal of the assignment was to introduce students to reading case law and to the basics of legal analysis and writing. They were, of course, in the very early stages of learning a new domain, so the idea that a host could be responsible for damages caused by an intoxicated guest was completely new to them. My colleague and I had anticipated that. We hadn't, however, anticipated that this idea would be so inconsistent with the way these college students saw the world. They looked at us horrified as it began to dawn on them that many of them had hosted at least one house party and that, had one of their guests driven drunk, they could have been responsible. Their view that the drunken driver should be solely responsible for any harm caused made it almost impossible for them to do an objective analysis. This was negative transfer at work.

C. *Near and Far Transfer*

While positive and negative transfer are ways of conceptualizing whether transfer is promoting or preventing learning in a new situation, near and far transfer are ways of conceptualizing transfer distance. Near transfer occurs when a student uses information or skills that she has learned in one setting and successfully applies the information or skills in a similar setting.³⁵ Far transfer, on the other hand, occurs when a student uses information or skills and applies them in a very different setting.³⁶

The obvious question, of course, is how different two situations must be for transfer to be far transfer. The experts do not agree on the answer to this question: “[D]efining the terms *near* and *far* is no simple matter, as they are usually based on the intuitive notion of *similarity*, which itself is ill-defined.”³⁷ When describing near and far transfer, experts tend to focus on the surface features of the different contexts. For near transfer to occur, the two situations must be similar “in both superficial characteristics and underlying

35 SCHUNK, *supra* note 20, at 320. However, theorists often disagree about what exactly constitutes near transfer and how similar the two situations must be to test for near transfer.

36 *Id.*

37 Barnett & Ceci, *supra* note 7, at 619.

relationships.”³⁸ However, if the two situations are different “in their surface features,” then to the extent transfer occurs, it is far transfer.³⁹

Again, Perkins and Salomon provide helpful insight:

Near transfer refers to transfer between very similar contexts, as for instance when students taking an exam face a mix of problems of the same kinds that they have practiced separately in their homework, or when a garage mechanic repairs an engine in a new model of car, but with a design much the same as in prior models. Far transfer refers to transfer between contexts that, on appearance, seem remote and alien to one another. For instance, a chess player might apply basic strategic principles such as “take control of the center” to investment practices, politics, or military campaigns.⁴⁰

In law school, we ask students to engage almost exclusively in far transfer. Even in their first days in law school, law students are asked to solve problems; they must decide how to use the principles (or the underlying relationships) of one case to predict the outcome of a different case, often with very different facts (or surface features).⁴¹

For example, the frustrated 1L who had a detailed case brief for the case he’d read about promissory estoppel likely thought of promissory estoppel only in terms of the surface features of that case. When he thought about promissory estoppel, he recalled the specific facts of the case he had read for class rather than the principle the case stood for. Thus, when faced with different facts on the exam, he was not able to see how those underlying principles might apply despite the very different facts. While he likely would have been able to engage in near transfer—answering questions related to the case—his struggles on the exam were related to a failure of far transfer. And, of course, if a student is focused on surface features, he will not only fail to learn and therefore transfer a principle of law to the exam, but he will also be unable to use that principle to solve other problems in other courses or in practice.

D. Low-Road and High-Road Transfer

i. Low-Road Transfer

Two other major concepts in the transfer literature are low-road transfer and high-road transfer. Low-road transfer occurs when a learner automatically uses a well-learned skill or behavior in a new context.⁴² In other words, low-road transfer is automatic. In the paper in which Solomon and Perkins introduced the idea of low-road transfer, they offered as an example a driver applying the

38 ORMROD, *supra* note 6, at 421.

39 SCHUNK, *supra* note 20, at 320.

40 Perkins & Salomon, *supra* note 17, at 4.

41 Laurel Currie Oates, *I Know That I Taught Them How to Do That*, 7 LEGAL WRITING 1, 3 (2001).

42 Salomon & Perkins, *supra* note 20, at 113.

skills she learned in driving a car to driving a truck for the first time. They explained, “You do not have to do anything special; you simply drive as you always have.”⁴³ But low-road transfer will occur only when the “cognitive element” is practiced so extensively in such a variety of contexts that it is automatic and flexible.⁴⁴ In other words, low-road transfer is accomplished without the learner’s giving it any conscious thought.

One of the reasons I was so surprised that the 3Ls in my bar prep class failed to use IRAC is likely that, after years of law school, law practice, and teaching legal writing, I automatically use a version of IRAC anytime that I’m engaging in any kind of legal analysis. The students who failed to use IRAC simply had not practiced this skill to the point that it was automatic.⁴⁵ While they will likely eventually reach the point that using IRAC will be a matter of low-road transfer, for now, they are likely to use IRAC for legal analysis only as a matter of high-road transfer.

ii. High-Road Transfer

High-road transfer, unlike the very automatic low-road transfer, occurs when a student “mindfully abstracts a principle from one context and applies it in a new context.”⁴⁶ High-road transfer can be forward-reaching; this occurs when the student mindfully abstracts a principle from the original learning situation for use in a future transfer situation.⁴⁷ Those frustrated 1Ls were working hard but they weren’t “mindfully abstracting” principles from the cases they were reading.⁴⁸ In addition, many of them were giving no thought to how they might use these principles on their exams (the future transfer situations) but rather focused on the more immediate task of answering questions in class.⁴⁹

43 *Id.* at 117.

44 *Id.* at 120.

45 As the next section of this article explains, the key to teaching for low-road transfer is practice and repetition. When law professors across all three years of law school provide many opportunities for practicing a skill such as using an organizational paradigm, students are more likely to reach the point of automaticity by the time they encounter the bar exam.

46 Salomon & Perkins, *supra* note 20, at 113.

47 *Id.*

48 Many, if not most, law professors are spending much, if not all, of their class time helping students to engage in this kind of mindful abstraction of principles from the cases. To the extent that students are still failing, it may be that we, as professors need to be much more explicit about what we’re doing. The next section will explore the idea of giving students explicit learning outcomes which will help those students who are not intuiting that they need to engage in mindful abstracting of principles.

49 This problem, of failing to consider future transfer situations, is not unique to first-semester 1Ls, but it does present a particular challenge for them, especially in courses in which professors don’t provide exam-style practice questions. Beyond the first semester, students have a sense of how they will be expected to use legal principles on exams, though many of them will fail to think further into the future and consider how they might use what they’re learning in practice.

There is another kind of high-road transfer, which Salomon and Perkins have named backward-reaching transfer. Backward-reaching transfer occurs when a student faced with a problem in a transfer situation looks back at former learning situations in an attempt to help her formulate an abstraction that would be helpful to her in the transfer situation.⁵⁰ If those 3Ls studying for the bar exam had slowed down to reflect⁵¹ on what they knew about legal writing and had looked back on their 1L writing course, they might have realized that IRAC, which is simply a way of organizing legal analysis, would be helpful to them not just in writing for law practice but in writing bar essays as well.⁵²

The key to high-road transfer, whether it is forward-reaching or backward-reaching, is “mindful abstraction.”⁵³ Salomon and Perkins define mindful abstraction as “the deliberate, usually metacognitively guided and effortful, decontextualization of a principle, main idea, strategy, or procedure, which then becomes a candidate for transfer.”⁵⁴ To achieve high-road transfer, learners can mindfully rehearse future situations in which what they’re learning could be helpful, which is forward-reaching, or they can mindfully reflect on past learning to identify what concepts or skills could help them in their current context, which is backward-reaching.⁵⁵

Thus, in addition to employing the teaching techniques in the next section of this article to teach for transfer, law professors can be explicit about how students will need to use the principles they are learning on exams. In addition, first-semester 1L professors can show students what their exams will look like, even before those students are remotely ready to answer any of the exam questions. This preview allows students to anticipate how they will use what they’re learning on exams.

50 Salomon & Perkins, *supra* note 20, at 119.

51 Of course, there is no slowing down to reflect on the bar exam. This is one of the reasons that, when I was doing academic and bar support, I insisted, often to student dismay, that we practice using IRAC on essays so extensively that it becomes automatic.

52 Of course, those teaching bar preparation courses have a role here as well. In the next section, which explores ways of teaching for transfer, this article will explore the concept of elaboration and helping students to connect what they’re learning to what they already know. A professor teaching a bar preparation course who is cognizant of this kind of barrier to transfer can help students make the connections between their 1L courses - where they learned both substance and skills that are valuable on the bar exam - and the bar exam itself.

53 Salomon & Perkins, *supra* note 20, at 126.

54 *Id.* at 126.

55 Again, the learning is ultimately the responsibility of the student but the professor’s teaching plays a critical role in this learning. While the bar exam professor can play a role in helping students to achieve backward-reaching transfer by reminding them of their 1L courses, 1L professors can play a role in forward-reaching transfer. The next section of this article explores the role that meaningful learning and explicit learning outcomes can play in supporting student learning. In addition to engaging in those teaching techniques to help students mindfully abstract principles, professors can help students to think about the future contexts in which they will use what they are learning. As we’re teaching a concept such as IRAC or CREAC, LRW professors can be explicit about the contexts in which this organizational paradigm works - on exams, on the bar exam, in memos and briefs, etc.,

III. How We Can Teach for Transfer

While understanding transfer generally is helpful, if we are to teach for transfer, we must move beyond the theoretical into the practical. Those practical approaches will be more effective if they are rooted in the science from which they are drawn. Thus, as we consider approaches to teaching for transfer, we should also consider the underlying learning theories that educational psychologists rely on as they theorize about and study transfer. These learning theories include behaviorism, social cognitive theory, and cognitive theories including information-processing theory, constructivism, and contextual theories of learning.⁵⁶

In each of the following sections on teaching for transfer, I will describe at least one learning theory and explore what that theory can offer to help us teach for transfer.

A. Promoting Ordinary Learning

Every theory of transfer builds upon a foundation of “ordinary learning.” Thus, just as recognizing prior learning as relevant to transfer is foundational to transfer, teaching for ordinary learning is foundational to teaching for transfer.

i. Supporting the Forethought Phase of Self-Regulated Learning

Because significant learning in law school occurs outside of the classroom, the social cognitive theory of learning provides a helpful entry point to teaching in a way that promotes ordinary learning. One of the key aspects⁵⁷ of the social cognitive theory of learning is a focus on the agency of learners and their ability to direct and reflect on their own learning.⁵⁸ In his article *Teaching Law Students to Be Self-Regulated Learners*, Michael Hunter-Schwartz explores self-regulated learning—a process that is focused on the agency of the learner—in depth.⁵⁹ In this article, he details the phases of self-regulated learning, which include forethought, performance, and reflection.⁶⁰ In addition, Dean Hunter-Schwartz advocates for law schools to adopt curriculum to teach students how to become self-regulated learners.⁶¹ However, even at law schools that have adopted this curriculum for students, there are still concrete techniques that professors can use in their classrooms to improve student learning.

etc., etc.

56 Many excellent articles have given thorough background on learning theory. For a more in-depth discussion of learning theory in the instructional design context, see Schwartz, *Law by Design*, *supra* note 25, at 367.

57 The social cognitive theory of learning also focuses heavily on the importance of observation and modeling in learning. Those aspects of the social cognitive theory will be explored elsewhere in this article.

58 Albert Bandura, *Toward a Psychology of Human Agency*, 1 PERSPS. ON PSYCH. SCI. 164, 164 (2006).

59 Schwartz, *Teaching Law Students*, *supra* note 1, at 452.

60 *Id.*

61 *Id.*

First, we can support students in the forethought phase of self-regulated learning by educating them about effective study strategies. The forethought phase of the self-regulated learning cycle requires students to understand the task before them and to choose the study strategies that are most likely to support their success in undertaking that task.⁶² But in working with students in an academic support setting, I realized that many of our students, even our strongest students, don't necessarily have the information they need to choose effective study strategies. We can give them that information.⁶³

One year, in the middle of the fall semester in LRW, I took about ten minutes in class to review some of the research in "*Make It Stick: The Science of Successful Learning*"⁶⁴ with students. Among the topics that we discussed was the relative ineffectiveness of rereading a text.⁶⁵ We talked about how rereading can often lead to an illusion of knowing and how students would be better served by engaging in some kind of retrieval practice.⁶⁶ In other words, rather than rereading, students should be answering practice questions to test their knowledge. It was a quick session that I had almost forgotten about by the beginning of the next semester when a student approached me. The student shared that he had done very well on his exams and wanted me to know how important that ten minutes in class had been. He sheepishly admitted that, at a bit of a loss for what else to do, his plan for the weekend had been to reread every case that he'd read in every one of his classes. However, because we had reviewed effective study strategies in class, he spent that weekend doing practice problems and working on an outline instead of simply rereading his cases. In retrospect, I don't know whether this student simply did not know that rereading was an ineffective study strategy or whether, in his anxiety around the new context of law school, he was failing to transfer former learning about effective study strategies. I suspect that, for some students in the classroom, this might have been new information, and for others it may have been the trigger that allowed them to recall what they already knew about effective study techniques. Either way, whether I was promoting transfer or just helping

62 This description of the forethought phase is a bit simplified and incomplete. The forethought phase of self-regulated learning "includes at least five components: task perfection, self-efficacy, self-motivation, goal setting, and strategic planning." Schwartz, *Teaching Law Students*, *supra* note 1, at 450.

63 In this article I offer one idea about how individual professors can give students this information in class. However, not every law professor is going to feel comfortable talking to students about effective learning and study. In that case, referring students to helpful resources can be just as effective, if not more so. Helpful resources could include law school resources, such as academic support programs, or even books or online resources focused on effective study in law school.

64 PETER C. BROWN, HENRY L. ROEDIGER III & MARK A. MCDANIEL, *MAKE IT STICK: THE SCIENCE OF SUCCESSFUL LEARNING* (2014).

65 *Id.* at 10.

66 *Id.*

students engage in ordinary learning, this specific instruction on learning strategies resulted in learning that might not have otherwise occurred.⁶⁷

While my discussion of learning strategies in LRW was meant to help students to be more effective learners in my class, the instruction had ripple effects. For this student, my discussion of learning strategies changed the way he thought about studying in all of his classes. But not all students will make this generalization as easily. While academic support programs across the country are no doubt doing their best to educate students on effective study strategies, all professors have an important role to play here. Spending ten minutes with your students on effective study strategies, even if they are hearing what you have to say for the third or fourth time, will help them to become more effective self-regulated learners.

ii. Being Explicit about Learning Outcomes

In addition to empowering students with effective study techniques so that their time outside of class is as effective as possible, we can be explicit about what we're teaching and why so that their time in class is as effective as possible. Giving our students learning outcomes is one of the best ways that we can be explicit with them about what they are learning and why. While I was initially a bit skeptical about the ABA's push for learning outcomes,⁶⁸ since my return to LRW, I have not only written learning outcomes for every class session, but I share them—every day, in class—with students. This allows students to focus, which often reduces their anxiety and always increases the chances that they will learn what I'm intending to teach.

Just as promoting self-regulated learning is grounded in the science of learning theory, incorporating learning outcomes is also grounded in one of the cognitive learning theories, information-processing theory. Information-processing theories are interested in how learners store, encode, and retrieve information.⁶⁹ One of the best-known models for how learners store, encode, and retrieve information is the dual-store model of memory. It has three components: (1) the sensory register, (2) working memory, and (3) long-term memory.⁷⁰

67 Not only was the student engaging in more effective learning, but by doing practice problems he was also supporting the later transfer of that learning. Thus, the good news is that study techniques that promote ordinary learning can also promote transfer of that learning.

68 In a 2016 article, Anthony Niedwiecki describes the context and events leading up to the ABA's adoption of Standard 302. Anthony Niedwiecki, *Law Schools and Learning Outcomes: Developing a Current, Cohesive, and Comprehensive Law School Curriculum*, 64 CLEV. ST. L. REV. 661, 665-74 (2016).

69 Gregory Schraw & Matthew T. McCrudden, *Information Processing Theory*, in *PSYCHOLOGY OF CLASSROOM LEARNING: AN ENCYCLOPEDIA* 493, 497 (Eric M. Anderman & Lynley H. Anderman eds., 2009).

70 "Although the two-store model is the best-known example of information-processing theory, many researchers do not fully accept it." SCHUNK, *supra* note 20, at 168.

The sensory register is where a learner's brain holds incoming information before it is either discarded or moved to working memory.⁷¹ Each sense (vision, hearing, touch, smell, and taste) has its own sensory register and very briefly holds information in the form in which it is received (visual information in visual form, auditory information in auditory form, etc.).⁷² Sensory registers have a very large capacity but an extremely limited duration.⁷³ A sensory register's primary job is to "screen incoming stimuli and process only those stimuli that are most relevant at the present time."⁷⁴ Those stimuli that are most relevant move from the sensory register into working memory, where cognitive processing—or active thinking—takes place.⁷⁵ In other words, for information to move from the learner's sensory register into their working memory, the learner must pay attention to it.⁷⁶ Even when a student is paying attention and the right things move into working memory, she has to use working memory, which is limited both in capacity and duration,⁷⁷ to process the information and ultimately store it in long-term memory.

However, knowing what to pay attention to in a law school classroom is not an easy task. A learner's sensory registers must screen out an enormous amount of information, including the undergraduates outside the window playing in the sunshine, the classmate shopping for shoes online, and the vibration of their own cell phone with an incoming text. If the learner is successful in paying attention, and the "right" information makes it into working memory, the learner still has to process that information in a system that is fairly limited and then ultimately move that information into long-term memory.

This process is complex enough that law students can be forgiven when even their best efforts don't result in the intended ordinary learning. But as law professors, we can help students to focus on the "right" information and give them context for processing that information in working memory. And we can do that simply by providing them with learning outcomes.

In LRW, I have taught a very straightforward problem in the beginning of the fall semester that asks students to determine where their client is

71 Schraw & McCrudden, *supra* note 69, at 493.

72 SCHUNK, *supra* note 20, at 178.

73 ORMROD, *supra* note 6, at 169–70. Some theorists believe that the sensory register usually processes information for somewhere between a half-second to three seconds. Schraw & McCrudden, *supra* note 69, at 493.

74 Schraw & McCrudden, *supra* note 69, at 493.

75 ORMROD, *supra* note 6, at 171.

76 *Id.*

77 "Miller (1956) proposed that it holds seven plus or minus two units of information. A unit is a meaningful item: a letter, word, number, or common expression." SCHUNK, *supra* note 20, at 166. However, the exact capacity of working memory has not been determined: "It may be virtually impossible to pin down the true capacity of working memory, at least in terms of a specific number of discrete items that can simultaneously be held there." ORMROD, *supra* note 6, at 168–69.

domiciled.⁷⁸ Because I'm teaching this in the context of LRW, my goal is not for them to learn the rule for domicile. Though the students will ultimately need to know the rule for domicile to engage in the analysis, the focus of the exercise is not really on the rule. Rather, the goal for this assignment is for students to be able to extract a rule from a case and identify the structure of the rule. So I tell the students that explicitly and then review the learning outcomes both before and after we engage in the learning. This means that, before we begin working on this problem, I tell students that the goal is for them to be able to extract a rule from a case and identify the structure of that rule. Then, in the class after we've done this work, rather than say "Last class we talked about *Lay v. Lowell*," I say, "After last class, you should be able to pull a rule from a single case and identify the structure of that rule."

The problem from a student perspective, of course, is that if they were reading this exact same case in a civil procedure class, the goal would likely be very different. The rule for domicile wouldn't be beside the point. It would be the whole point. But again, rather than say "Last class we talked about *Lay v. Lowell*," I would say, "After last class, you should be able to list the factors a court considers when determining domicile and apply those factors to a unique factual scenario."⁷⁹ Of course, if my goal was not for the students to know the rule but rather for them to begin to understand diversity jurisdiction and filing strategy, then I would tell them that. Every law school professor, whatever the subject and whatever the learning outcome, will support student learning by helping those students focus on the right information and giving them context for processing that information in working memory.

You can see how, without an explicit learning outcome, my LRW students could be forgiven for thinking that I was trying to teach them the rule for domicile when that was really secondary to my goal. And, in fact, teaching them something about domicile might actually be my goal if we were in a civil procedure classroom. And things can become even more complicated from a

78 This problem, which I give students in the first week of class, comes in the form of an email from a "partner" at the student's law firm. The "partner" tells the students that, while she's happy to share the details at a later time, she really just needs the students to read one case and apply it to the client's facts. In the case, the court determines where the plaintiff is domiciled for purposes of local election law. But the "partner" provides the students with only a list of facts that mimic the factors in the case. The goal of the assignment is for the students to find the rule in the case, identify its structure (it's a factor analysis), and engage in rule-based reasoning. The rule, though specific to determining domicile for purposes of holding elected office in the particular jurisdiction, largely tracks the rule for domicile for purposes of subject matter jurisdiction.

79 In my years teaching in law school, I've often heard concern over "spoon-feeding" information to students. But there is a world of difference between telling students "this is why we're reading this case" and "this is what this case says." Of course, if your learning outcome is for students to figure out why you're having them read a certain case, then you would want to tell them *that*. If that were the case, the learning outcome would not be "After last class, you should be able to list the factors a court considers in determining domicile," but rather "After last class, you should be able to explain why we read *Lay v. Lowell*," or something to that effect.

student's perspective if my goal is for them to learn both the skill of extracting the rule and the substance of the rule. If I'm also using the case to teach students something about diversity jurisdiction generally and filing strategy specifically, then my students could be forgiven not only for mistaking the goal but also for feeling a real sense of overwhelm.

If I'm not explicit with my students about the learning outcomes, it is quite easy for them to pay attention to the wrong thing. For example, my students in LRW might pay attention to the rule for domicile and then process that rule in working memory and even move that rule to long-term memory. And while that information might serve them well in their civil procedure course, they would not have achieved the learning outcome for LRW. The same is true in their civil procedure course. They might pay attention only to filing strategy or only to the factors in the rule and thus process the wrong or incomplete information to their long-term memories. By providing them with an explicit learning outcome, we can leverage what we know about the information-processing theory of learning to support their learning.

B. Promoting Positive Transfer

While helping students to engage in ordinary learning is an important prerequisite to transfer, for positive transfer of that learning to occur, the student must (1) recognize that learning, whether it is knowledge or a skill, could help them in the new learning situation, (2) successfully recall that learning, and (3) use that knowledge or skill to execute the transfer task.⁸⁰ Thus, as we teach for transfer, we must think about how we can help students increase the chances that they will recognize and recall that right information at the right future moment.

There are several different strategies that we can employ in our teaching to help students increase the chances that they will recognize and recall the right information at the right future moment. Some of these strategies focus on helping students to recall past learning that will support their learning in our classes. Other strategies focus on increasing the chances that students will recall what they learned in our classrooms in future learning situations. All of the strategies focus on teaching in ways that encourage students to store what they're learning in organized ways. First, we can encourage students to engage in meaningful learning. In addition, we can model our own mental models for students. And finally, we can encourage students to elaborate on what they're learning by expressing ideas in their own words and connecting what they're learning to what they already know.

i. Promoting Meaningful Learning

Here again, the cognitive theory of information processing can inform our teaching choices. While the ordinary learning we do relies largely on the sensory register and working memory, positive transfer, by its very definition, requires us to rely on our long-term memories. Because working memory is

80 Butler, *supra* note 7, at 1129.

so limited,⁸¹ learners must move information into long-term memory to store it. And, of course, because all of our declarative and procedural knowledge is stored in long-term memory, long-term memory is where we must go to retrieve that knowledge.

In some ways, a failure to transfer learning may really be just a failure to retrieve the right information at the right time. Some learning theorists believe not only that long-term memory, unlike the sensory registers or working memory, is unlimited⁸² but also that information stored in long-term memory is stored there permanently, or at least for an indefinitely long period of time.⁸³ Those theorists who believe that information is stored permanently in long-term memory believe that if a learner forgets information, she is really just failing to retrieve it from long-term memory.⁸⁴ Thus, because positive transfer requires learners to retrieve information from long-term memory, teaching for transfer requires us to teach in a way that will promote the ability to retrieve that information.

Because long-term memory may be unlimited, retrieving information from long-term memory can be a significant challenge. Once information is stored in long-term memory, a student will recall it from its storage space when something prompts her to begin searching long-term memory.⁸⁵ Long-term memory is so large, however, that it is implausible for the student to search all long-term memory.⁸⁶ Instead, she must “look[] in various small ‘locations’ in memory, just one location at a time.”⁸⁷ Thus, the better organized a student’s long-term memory, the more likely she will be to find the information she needs.⁸⁸

If storing and retrieving material is key to positive transfer, then we can help students to create better storage systems and increase their chances of retrieving the right information at the right time by encouraging them to engage in meaningful learning.⁸⁹ “‘Meaningful learning’ is often defined in contrast

81 SCHUNK, *supra* note 20, at 166.

82 ORMROD, *supra* note 6, at 181.

83 *Id.* at 182.

84 *Id.*

85 A student might be prompted by a question from a professor, an exam question, or a client problem. Questions from a professor and exam questions, particularly if they are multiple choice, often come with a retrieval cue. A retrieval cue is, essentially, a hint about where to find the information in long-term memory. *Id.* at 219. Open-ended exam questions and questions from clients are difficult to answer because they don’t necessarily come with any retrieval cues, and thus lawyers, particularly new lawyers, must look in more places in long-term memory to find potentially relevant information.

86 *Id.* at 217–18.

87 *Id.* at 218.

88 *Id.* at 217.

89 Jeffrey D. Karpicke, *Retrieval-Based Learning: Active Retrieval Promotes Meaningful Learning*, 21

to ‘rote learning.’”⁹⁰ Rote learning occurs through simple repetition, while meaningful learning occurs when students are able to relate new information to information that they already have stored in long-term memory and to elaborate on that new information.⁹¹ Another way to think of this distinction, perhaps, is that rote learning requires mere memorization, while meaningful learning requires understanding.⁹²

One summer, I worked closely with a student who was studying for the bar exam and struggling to score well on practice tests. As we worked together, it became clear that while he had worked hard to memorize rules, he didn’t understand many of the concepts that were being tested. I tried everything I knew to encourage him to work on meaningfully learning the concepts. The student, terrified by the amount of material that he needed to memorize for the exam, responded that he did not have time to use the study techniques I was suggesting. The student was telling me, though not in these words, that he did not have the time to understand the material because he was too busy memorizing it. He was trying to cram hundreds of rules into long-term memory without organizing them in any meaningful way.

This student failed to understand that rote learning was not going to produce the kind of results he needed to pass the bar exam. The issue is that rote learning or memorization is “brittle and transient,” while meaningful learning is “robust and enduring.”⁹³ “Rote learning is thought to produce poorly organized knowledge that lacks coherence and integration, which is reflected in failures to make inferences and transfer knowledge to new problems. Meaningful learning, in contrast, is thought to produce organized, coherent, and integrated mental models that allow people to make inferences and apply knowledge.”⁹⁴ What this bar study student was failing to see was that his repeated practice with flashcards to memorize rules of law was not going to result in his ability to use those rules to solve a problem. In fact, when the moment came, he might not even be able to recall the rules at all because there were simply too many places to look for them in long-term memory.

CURRENT DIRECTIONS PSYCH. SCI., 157, 160 (2012); see also ORMROD, *supra* note 6, at 200 (“Meaningful learning facilitates both storage and retrieval: information is stored more quickly and remembered more easily.”).

90 Karpicke, *supra* note 89, at 21.

91 ORMROD, *supra* note 6, at 199–200. A variation on meaningful learning, or perhaps what could even be described as a kind of meaningful learning, is elaboration. “[E]laboration involves using prior knowledge to embellish on new information and storing the embellished version.” *Id.* at 202. “When we elaborate we add to information being learned with examples, details, inferences, or anything that serves to link new and old information.” SCHUNK, *supra* note 20, at 202.

92 ORMROD, *supra* note 6, at 199–200.

93 Karpicke, *supra* note 89, at 160.

94 *Id.*

ii. Modeling Mental Models

As educators, we can use what we know about how information is stored and retrieved to teach in a way that increases a student's ability to later retrieve—and transfer—that information. One of the most important things we can do to encourage students to store information in an organized way is to present that information in an organized way as a means of sharing our own organized mental models.

As experts, law professors have elaborate mental models. We know how the material that we are teaching on the first day of class relates to the material that we'll teach on the last day of class. We have mental models not only of the substance we teach but of the processes that we use to solve legal problems or to plan to avoid those problems. But as novices, students don't yet have those mental models, and they can benefit from our sharing our mental models so that they begin to understand what it is to build their own and thus engage in meaningful learning and effective storage in long-term memory.

That overwhelmed bar studier, who had memorized hundreds of rules but hadn't learned those rules meaningfully, was often frustrated by his inability to recall rules that he "knew." And when he could recall the rules, he still struggled to use them. For example, he could recite the rule for the statute of frauds, but he didn't necessarily understand the relationship the statute of frauds has to larger questions of contract formation. Thus, when he was writing essay exams, he would skip over any discussion of mutual assent and move straight to this defense to enforcement. An expert with an elaborate mental model might make this jump, reasoning that whether there was an oral contract between the parties simply didn't matter, because that contract was unenforceable. But this novice wasn't making that logical jump; he simply didn't understand the relationship that the statute of frauds has to the larger question of contract formation. He didn't yet have an elaborate mental model of how the rules of contract relate to one another or a model for problem-solving using those rules.

One of the most important ways we can help students create their own mental models is to model our own models. This modeling taps into another key aspect of the social cognitive theory of learning. That theory focuses on learning that occurs through observation and modeling.⁹⁵ Social cognitive theorists focus on "the fact that a great deal of human learning involves watching and interacting with other people."⁹⁶

For example, when I was working with that struggling bar studier, I shared that, as I approach a legal question, I start not with a set of rules but rather with a set of questions that will allow me to do the analysis.⁹⁷ This student was learning about my mental model for solving problems by watching me do it.

95 ORMROD, *supra* note 6, at 123.

96 *Id.*

97 I explained that, to answer a contracts question on the bar exam, I first ask, What law applies? And then move on to Does a contract exist?

While a student may or may not find my specific approach helpful, the goal is not to provide the details of the model to the student but rather to allow the student to understand the importance of creating a mental model.

Modeling my own process works not just with a substantive area of the law but with any skill that I'm trying to teach. For example, as an expert, I have an elaborate mental model for doing legal research, which means that I begin research projects with a clear sense of what I am looking for and why. My students, on the other hand, often spend enormous amounts of time endlessly searching for authorities. Now, when my students begin their final research of the fall semester, I guide them through an exercise that mimics, to a certain extent, my own mental model.⁹⁸ While doing the research for my students would be counterproductive, so too would it be counterproductive to send them to do research without a model for approaching that research. Ultimately, of course, my students will create their own approaches to research, which no doubt will change over time. Thus, the goal is not to provide them with one definitive model but rather with an example of how one expert thinks about legal research.

iii. Encouraging Elaboration

In addition to modeling our own mental models, we can teach in ways that encourage the students to be actively engaged in building their own mental models. Here, we can pull from another of the cognitive theories of learning—constructivism—for ideas on teaching for transfer. Constructivists, unlike information-processing theorists, are interested in not just the way that all human brains work but in the ways individual learners actively try to organize and make sense of the information that they are learning.⁹⁹ So, while all brains will process information through sensory registers, working memory, and long-term memory, the specifics of that processing are, to a certain extent, unique to the individual learner. Constructivists focus on how individual learners make meaning of what they're learning.¹⁰⁰

One key way that learners can make meaning of what they're learning is through elaboration. Elaboration is “the process of giving new material meaning by expressing it in your own words and connecting it with what you already know.”¹⁰¹ Encouraging this kind of elaboration can take different forms, but the key is to emphasize to students the importance of making meaning for themselves.

98 We identify what we don't yet know that we should and identify secondary sources that could fill in the gaps; we think through the kinds of authorities we are looking for; and we think about both ideal and realistic research results.

99 ORMROD, *supra* note 6, at 164.

100 “Thus, for constructivists, three factors are crucial to learning: practice in real settings (experience), the opportunity to develop personal interpretations of experiences (construction of meaning by the learner), and the opportunity to negotiate meaning (collaboration.)” Schwartz, *Law by Design*, *supra* note 24, at 380.

101 BROWN ET AL., *supra* note 58, at 5.

One of the simplest ways that I encourage elaboration is to require students to paraphrase rather than quote in their written work. While this may seem like a matter of style, it is much more than that. Through the process of expressing the material in their own words, students can begin to make meaning of the material for themselves.

Encouraging students to express ideas in their own words in writing that they are required to submit is easy. It is much more difficult to persuade students to elaborate when we won't see their written work until their exams. With that struggling bar student, it was only during one-on-one conversations that I realized he was failing to elaborate. I would ask about a rule, and he would recite it from memory. But when I asked whether he could articulate the rule another way or provide a real-life example, he wasn't able to do that.

Finding ways to replicate these kinds of one-on-one conversations in a classroom, especially in a large class, is a challenge. However, finding even a few ways to encourage students to engage in elaboration can result in more meaningful learning. If you won't see any written work before an exam, you could spend a few minutes explaining to students the importance of elaboration and then ask them to turn in a rule statement for a foundational rule in your course. A quick skim of the rules would help you to see which students are failing to elaborate and refer those students for any support that is available at your law school.

Engaging in elaboration in writing might be the most effective approach, but we can also encourage students to elaborate during Socratic dialogue. Ask a student who has given you a perfect recitation of a rule from a case to rephrase the rule and provide a real-world example. When you make this request, be explicit that your goal is to encourage all students to engage in elaboration and explain to them why that is important.¹⁰² You can also encourage elaboration by flipping roles during Socratic questioning, asking the students to pose the hypotheticals. In thinking through potential hypotheticals, the students must engage in the kind of elaboration that will move them beyond memorization and into meaningful learning.

In addition to putting material in their own words, elaboration requires that students connect new learning with what they already know.¹⁰³ Helping students connect what they're learning to what they already know is a particular challenge in the first semester of law school when students are just beginning to build domain knowledge. However, when working with students beyond the first semester of law school, professors can help students to connect what they are learning to the foundational 1L courses. An employment law professor, for example, can help students make meaningful connections to and distinctions

102 When I do this, I often think of the colleague who sometimes tells her students, "I can't understand it for you." Another way of expressing that sentiment is that the students must make meaning of the material for themselves.

103 Information-processing theorists would say that this connection will also help students to store information in an organized way.

from tort law, helping students to connect what they are learning about, for example, sexual harassment to what they already know about torts.

The keys are, first, to be explicit and transparent in connecting what they're learning to what they know, and second to shift the workload from professor to student. In other words, constructivists would tell us that the students must make sense of the information they are learning, so it is less productive when the professor makes the connections for the students.¹⁰⁴ Instead, the professor can help students by prompting them to make connections. The employment law professor, for example, rather than simply explaining the connections and distinctions to what students should have learned in torts, can begin by prompting students to recall key concepts from torts, asking them to explain the concepts to each other, to freewrite about the concepts, or even to take a straightforward assessment on the concepts.¹⁰⁵ Asking the students to engage in this work will help them to connect new learning to what they already know, which will result in the kind of meaningful learning that will be more readily transferred in future situations.

C. Avoiding Negative Transfer

As I think about positive transfer, I think primarily about how I can encourage students to transfer what they're learning in my classroom to other contexts. But as I think about negative transfer, I am primarily concerned with the ways their prior learning can negatively impact their learning in my classroom.

One of the challenges of teaching in law school is that we are teaching adult learners who are in the early stages of learning in a new domain. As adult learners, our students come to us with such a wide array of prior learning experiences that some negative transfer as they are learning in this new domain seems inevitable. However, there are at least a few concrete steps we can take to minimize that negative transfer.

Recall that information-processing theory tells us that the way we store information matters and that a key component of that storage process is connecting new knowledge to previously learned knowledge.¹⁰⁶ In other words, what our students know or don't know can have a significant impact on what they learn in our classrooms, which in turn will have an impact on their

¹⁰⁴ Professors can prompt students to make their own connections while also modeling how the professor themselves makes connections. For example, a professor might explain that whenever they encounter a new area of law, they start by thinking about what they know about other areas of the law that might be relevant to understanding this new area. By telling the students about the process for connecting what they're learning to what they already know and then prompting the students with questions, the professor can model the skill while also making the students do the work of identifying the particular connections that will serve them well.

¹⁰⁵ This approach will promote positive transfer of the torts concepts and will help students to meaningfully learn the employment law concepts, which will, in turn, result in a greater chance that students will transfer the employment law concepts to a new learning situation.

¹⁰⁶ ORMROD, *supra* note 6, at 217.

ability to transfer their learning to a new context. Thus, if our students don't have information on which to build, they will struggle.¹⁰⁷ And, perhaps even more problematic, if they are building on misinformation, negative transfer may impede or even prevent their learning.

To help students avoid this kind of negative transfer, especially when we know that some or even all of our students might not have important knowledge or skills, faculty can engage in an assessment of the knowledge and skills with which students are arriving in our classrooms.¹⁰⁸ Through this assessment, we might realize that our students have some misinformation or incomplete information that might interfere with their ability to learn the material that we are attempting to teach.¹⁰⁹ Students, for example, often arrive at law school with misconceptions about specific subject matter¹¹⁰ or about the law generally, believing, for example, that it is a set of definitive rules that they will memorize. In addition, students also bring misconceptions about their own abilities¹¹¹ or about learning generally. Students might believe, for example, “that great effort might not be necessary, that learning should come quickly, and that what is learned should be ‘unambiguous’ and have ‘only one (right) answer.’”¹¹²

As I worked with students in an academic setting, I was often surprised at their misconceptions and even more surprised by what they told me they simply did not know. So, as I returned to teaching in the LRW classroom, I realized that I had been assuming, for example, that students had some basic understanding of formal logic. I have stopped assuming and instead have begun to assess my students' level of understanding.

Understanding where my specific students are in terms of their incoming knowledge is supported by social cognitive theories of learning, which emphasize the ways in which people learn through interaction with one another,¹¹³ and also by constructivism, which focuses on the ways individual learners process information.¹¹⁴ In other words, who my students are and what they know in any given year matters. This approach is also supported by instructional design.¹¹⁵ “Instructional designers, however, have long regarded

107 I've long believed that one of the reasons that law school, particularly the first year, is so challenging is that students must acquire a significant amount of domain knowledge and they may have very little prior learning on which to “hang” this new learning. They are building from scratch in that first year and that is an incredibly difficult thing to do.

108 Schwartz, *Law by Design*, *supra* note 25, at 368.

109 Aida Alaka, *Phenomenology of Error in Legal Writing*, 28 QUINNIPIAC L. REV. 1, 19–20 (2009).

110 *Id.*

111 *Id.*

112 Schwartz, *Teaching Law Students*, *supra* note 1, at 456.

113 ORMROD, *supra* note 6, at 123.

114 ORMROD, *supra* note 6, at 164.

115 Schwartz, *Law by Design*, *supra* note 25, at 362–63.

consideration of the characteristics of the learners in designing instruction. In fact, a fundamental precept of instructional design is the idea that the selection of instructional strategies depends, in significant part, on the entering skills of the learners.”¹¹⁶

However, if we are going to assess what our students know, we must be willing to remediate when we discover that they lack some knowledge or skill. And this is where teaching to avoid negative transfer can start to feel untenable. Some law professors, maybe even many, are reluctant to accept that unless they “correct past deficiencies or . . . mistakes made in the students’ past educational experiences,” their students will struggle to learn what they are teaching.¹¹⁷ And this reluctance makes sense. After all, we have so much to teach students in our own disciplines that allocating time to correcting past deficiencies could mean teaching less of what we feel we need to teach in our discipline.

As I thought about teaching more formal logic in LRW, I had to make the very intentional decision to forgo teaching other skills. However, I decided that this trade-off made sense. If my ultimate goal is for my students to engage in positive transfer of what I’m teaching in LRW, then I need to do what I can to “correct past deficiencies” and help students to avoid negative transfer. After all, if negative transfer means that my students are learning what I teach them in an incomplete or incorrect way, and if they are unable to access that information in the future to help them better learn or perform in another setting, then, in some ways, it did little good for me to teach them the material at all.¹¹⁸

Of course, remediating and correcting past deficiencies does not necessarily need to take up class time. I can provide resources to students as well. As I was building an academic support program and working individually with students, one of the things I often did was to work with students to correct past deficiencies, whether those deficiencies were related to study skills, reading comprehension, fundamental writing skills, or even substantive misconceptions. Academic support programs can do a great job of remediating

¹¹⁶ *Id.*

¹¹⁷ Anthony S. Niedwiecki, *Lawyers and Learning: A Metacognitive Approach to Legal Education*, 13 WIDENER L.J. 33, 40 (2006).

¹¹⁸ When it comes to meaningful learning, less is probably more. In her article *Cognition and Star Trek: Learning and Legal Education*, Professor Kate Bloch describes a medical school study in which researchers studied lecture density: “But who of us, you may ask, can afford to ‘lose’ six minutes of presentation time in each class session? Research suggests that more of us can, or at least should, than perhaps we had realized The post-tests demonstrated, to a level of statistical significance, that ‘students in this study learned and retained lecture information better when the density of new material was low The implication is that the amount of information a student can learn within the span of a lecture is limited and the lecturer actually defeats his purpose by exceeding that limit.” Kate Bloch, *Cognition and Star Trek: Learning and Legal Education*, 42 J. MARSHALL L. REV. 959, 973 (2009) (citing I. Jon Russell, William D. Hendricson & Robert J. Herbert, *Effects of Lecture Information Density on Medical Student Achievement*, 59 J. MED. EDUC. 881, 881 (1984).

skills for small groups of students or even individual students. So now, as I identify students who need additional support, I can refer them to resources that can help.¹¹⁹ Certainly, though, when it becomes clear that many or most of my students would benefit from some remediation, I can work that remediation into class time.

But negative transfer is not always the result of a student's misinformation or incomplete information.¹²⁰ Anytime a student's learning in one situation makes learning or performing in another situation more difficult, that's negative transfer. And negative transfer can be a particular problem for our adult students, who are coming to law school from very different backgrounds: "Adults will often apply previous knowledge to every new learning experience that they encounter. This may present initial problems to law students because they are changing discursive communities, which likely differ significantly."¹²¹ As one small example, students who have written extensively about literature or art will often write case illustrations in the present tense. Whether they realize it or not, they have learned to use the literary present tense. But when lawyers write about cases, they use the past tense. Students who have brought this writing convention with them to law school are experiencing negative transfer.

However, because we are working with adult learners, we can talk with them explicitly about how what they know, while completely accurate in one context, may not serve them well in their current context. For example, in LRW, I can help students understand that they are writing in a new discipline and that they will have to hold some of what they know about writing loosely as they begin to learn what it is to write like a lawyer.

In addition to talking openly with students about negative transfer, we can also offer corrective feedback. Offering this corrective feedback is likely most effective after a formal assessment opportunity. For example, it takes me just a few moments to correct literary present tense¹²² if I see it in student writing.

119 Consider the resources that already exist at your law school or university, which might include colleagues with teaching and learning expertise, library resources, or tutoring programs. Also consider resources that might exist outside your law school or university—for example, programs through the Law School Admissions Council (LSAC).

120 The authors of *Reaching Backward and Stretching Forward: Teaching for Transfer in Law School Clinics*, describe the negative transfer that can occur in legal education: "[W]hen students attempt to reach backward (transfer in learning), clinical educators should expect both some creative solutions and some 'white noise' or interference from students' personal perceptions and learned behaviors from previous training and life experience." Shaun Archer, James P. Eyster, James J. Kelly, Jr., Tonya Kowalski & Colleen F. Shanahan, *Reaching Backward and Stretching Forward: Teaching for Transfer in Law School Clinics*, 64 J. LEGAL EDUC. 258, 272 (2014).

121 Niedwiecki, *supra* note 117, at 13.

122 Literary present tense is the practice of writing about literary works, paintings, and films in the present rather than the past tense. Students trained to use literary present tense will often write about cases in the present rather than the past tense. But the practice in legal writing is to write about cases in the past tense. It's an easy correction to make and

However, we can also gently offer that corrective feedback in the classroom in a way that benefits the entire group.

For example, for several years I led a mock class in orientation that focused on the employment law concept of provoked discharge. The idea is that employees who provoke their own discharge are ineligible for unemployment benefits. In designing this class, I anticipated that most of the 1Ls in the room would have experience as employees, some of them would have experience as employers, and some of them would have experience with unemployment benefits. Each category of student would be bringing with them some ideas about quitting a job, getting fired from a job, and likely even unemployment insurance. So I began the mock class by asking them to think about their own experiences and asking them to volunteer what they knew. As we talked, I was able to highlight the helpful knowledge that they're bringing with them and therefore promote positive transfer, and also gently correct any misinformation. While I never predicted exactly the kind of misinformation students would have from year to year, by encouraging students to talk openly about what they know—or think they know—there was inevitably some misinformation or misconception that we could work through as a group.¹²³

D. Teaching for Near and Far Transfer

In law school, we are almost exclusively teaching for far transfer. That is, we are asking students to take the information or skills they learn in our class and apply them successfully in a very different setting.¹²⁴ Both behaviorists and information-processing theorists have a fairly pessimistic view of the likelihood that far transfer can occur. Behaviorists seem to suggest that the stimulus in the original learning situation and the transfer situation must be identical for the learner to transfer her learning.¹²⁵ This also makes sense from an information-

typically a professor will only need to point this out to a student once.

123 For example, one year there was a student who struggled to understand that the cases were not about whether the employer had the right to fire the employee but about whether the employee was entitled to unemployment benefits. This was a student who had been employed in at-will situations—and so knew that he could be fired for almost any reason—but had no experience with unemployment benefits.

124 Recall that learning theorists disagree about just how different two situations must be for transfer to be considered far transfer. I would argue that, in training students to be lawyers, we are teaching them skills and knowledge in the context of a school setting that they will ultimately use in a practice setting, which, to my mind, is a very different setting.

125 One early behaviorist, Edward Thorndike, proposed that transfer would occur only to the extent that the original and transfer tasks are identical. ROBERT E. HASKELL, *TRANSFER OF LEARNING: COGNITION, INSTRUCTION, AND REASONING*, 80 (2001). Thorndike's work was largely a response to what is known as the formal discipline mode of transfer. This model, which has largely been rejected by contemporary theorists, suggested that training in certain formal disciplines would "automatically transfer to everyday reasoning and performance." *Id.* Haskell notes: "Today, the formal discipline approach is considered antiquated, if not a 'dead horse,'—though there remain what are called critical thinking programs that often assume that transfer will occur by teaching general thinking skills. Again, it doesn't. The research findings show that the current cottage industry of teaching

processing model perspective. Given the way that information is stored, if the original learning situation and the transfer situation are identical, then the learner is much more likely to search the right place in long-term memory to find the right information to apply in the transfer situation.¹²⁶

However, the good news is that if learners anticipate the transfer situation when they're storing new information or skills, the likelihood that they will be able to apply that information or skill to a far transfer situation increases.¹²⁷ In other words, if learners anticipate the transfer situation when they're storing the new information in long-term memory, they are essentially storing the new information with the information about its potential use, making the likelihood of recall at the right time much higher.¹²⁸

Now, as I teach skills in LRW, I talk with students explicitly about where and how they might use these skills in the future. This year when I taught students to identify the structure of each rule they encounter, I told them that they should be using this skill *every* time they encounter a rule, even if they encounter that rule in one of their other courses. That the skills I was teaching would transfer to other situations seemed so intuitive to me that, in the past, I've rarely talked with students about potential transfer situations. But suggesting possible transfer situations or asking students to brainstorm about possible transfer situations allows them to see that the principles or skills that they're learning in one context could also be helpful in future situations. And, in fact, they will now encode those future transfer situations with their new learning about identifying rule structure. In anticipating future transfer situations, the goal really can't be to create an exhaustive list of transfer situations. That simply isn't possible. But even coming up with a list of several different transfer situations will ensure that the new learning is stored with the idea that it can be used in a number of different contexts. And that will ultimately help with far transfer.

In addition to teaching in anticipation of transfer situations, we can also promote far transfer by emphasizing underlying relationships rather than superficial features. Recall that far transfer occurs when a learner uses a principle learned in one situation to promote learning or solve a problem with very different surface features. If students stay focused on superficial features, they won't achieve the desired far transfer.

In working with students, I discovered that their outlines were often focused on superficial features. This discovery came when I began working with 1Ls on their outlines and realized that, for many of them, outlines were, more or

general thinking, critical thinking, and general writing skills don't easily lead to transfer; as we have seen, learning typically remains welded to the specific context in which the subject matter was learned. There are exceptions to these findings, but they are not directly applicable to most learning environments." *Id.*

126 Leberman et al., *supra* note 31, at 14.

127 ORMROD, *supra* note 6, at 424.

128 *Id.*

less, a compilation of case briefs. And more often than not, the case briefs were made up primarily of facts. In other words, as they read cases and outlined the law, they were focused on the surface features of the case. When they were focused on surface features, they did a fairly good job of engaging in near transfer. If they'd read a case in which the driver of a boat was speeding, when they saw a new problem in which a driver of a boat was speeding, they did fairly well in analyzing the problem. On the other hand, this focus on surface features makes far transfer much more difficult if not impossible.

While, as experts, law professors can easily set aside the differences in surface features to focus on the underlying relationships, law students, as novices, are often able to see only the surface features and struggle to identify underlying relationships. Thus, the kind of transfer—far transfer—that we are asking our students to engage in is the most difficult for the law student, a novice, to achieve. So to support student's far transfer of the concepts we're learning in class, I've begun repeatedly refocusing students on the underlying structures.

One of the learning outcomes for fall LRW at many schools is students' ability to identify the structure of rules. Ultimately, I want them to automatically identify a rule's structure—elements, factors, simple rule, alternative rule—every time they encounter a rule. In past years, I've introduced this concept of rule structure very early on in the course, told students that it was important, and then assumed that students would break down the structure of the rule each time they saw one.

However, a rule's structure is a perfect example of an “underlying structure,” and my students were often too overwhelmed with the surface features of the specific rule to think about this underlying structure. They would grapple with what a burglary tool was but never slow down to realize that the statute we were reading was an alternative rule with several analytically separate definitions of burglary tool. The result was that both their thinking and their analysis were confused when they failed to pull those alternatives apart and address them separately. Now, I slow down to make them identify and map the structure of every rule that we encounter. In other words, I repeatedly focus them on the underlying structure. And it's this repeated focus that will ultimately support far transfer.

E. Teaching for Low-Road and High-Road Transfer

In law school, we are primarily teaching for high-road transfer. That is, we want students to “mindfully abstract a principle from one context” and then be able to “apply it in a new context.”¹²⁹ However, there are some concepts and skills that we want students to learn so well that they will use them in a new context as a matter of low-road transfer. As educators, we can identify the knowledge or skills that are good candidates for low-road transfer and encourage students to practice to automaticity.

This idea of practicing to automaticity pulls from behaviorist theories of learning. Behaviorism was an early approach to measuring learning that

focused on behavior as the only objective way to describe and measure learning.¹³⁰ Behaviorists look at how a learner's behavior changes in response to some stimulus in the environment.¹³¹ Pavlov famously discovered that he could condition his dogs to change their behavior (begin to salivate) in response to a stimulus in the environment (a ringing bell). Pavlov, of course, conditioned his dogs to respond to this stimulus through repetition. We can help students to achieve low-road transfer by using a similar kind of repetition to condition students to respond automatically to certain stimuli.

For example, while reading case law is always going to be a matter of mindfully abstracting a principle, there are some things that we can encourage students to do as a matter of habit whenever they read a case.¹³² For example, most lawyers will immediately identify the date a case was decided and the court that issued the opinion without any thought at all. Many lawyers likely also have a way of reading a case that allows them to search for the information that they are looking for. I have a colleague who, in teaching 1Ls, approaches Socratic questioning on every case in every class period in the same methodical way. He is teaching his students to automate their approach to reading case law. This automation, then, allows students to engage in low-road transfer with respect to some aspects of reading case law while also freeing them up to do the much more difficult analytical work of engaging in high-road transfer by identifying the principles they must mindfully abstract from the case law.

Probably the most important thing that my colleague has done in approaching class discussion of cases methodically is to be explicit in showing the students what his method is and then repeatedly practicing it. That transparency and repetition are more important than the specific approach he takes. I too have discovered in my own teaching that I can do more to be transparent about what we're doing and why. Rather than just approach our discussion of case law in a methodical way and hope that students will intuit that method, I can tell my students why I approach case law in the way that I do and why they would be well served to automate their approach.¹³³ This automation not only will more likely result in low-road transfer in future

¹³⁰ ORMROD, *supra* note 6, at 41.

¹³¹ *Id.* at 42.

¹³² The example I give here is just one of many ways we can encourage students to automate. In my legal writing course, I also encourage automation of some of the mechanics around legal writing like using proper citation and grammatical conventions appropriate for formal legal writing. My hope for them is that some of these skills become so automatic that they simply function in the background with little effort or thought on the students' part.

¹³³ Because law students, especially 1Ls, are in the early stages of learning in a new domain, they are not well served by the advice to "find what works for them." Instead, I offer them a model by showing them how I approach reading case law and then encourage them to continue to refine their own approach as they learn. In this way, I'm offering my approach not as the "right" approach but rather as one approach that can serve as a starting point from which they can create their own.

contexts, but it also frees up cognitive resources¹³⁴ to spend on the important analytical work that can be done only through high-road transfer.

High-road transfer requires students to mindfully abstract a principle from one context and apply it in a new context. When we're working with law students, we're primarily asking them to engage in forward-thinking high-road transfer. That is, we want them to abstract a principle from a case they are reading for class and then apply it in a new context, whether that is a hypothetical posed in class or an exam question at the end of the semester. This, really, is the foundation of much of what we do in law school, and yet there is more that we could do to ensure that students will be successful in the transfer situation.

First, we can look to what behaviorists would tell us about repetition. While we want students to mindfully abstract principles from each case, which is not a process that can be automated, what can be automated is their understanding that that is their goal every time they read a case. Recall that when I began working with those frustrated 1Ls, I realized that their outlines were insufficient because they were focused on the surface features of the specific cases they were reading rather than on the underlying principles. They had often been so overwhelmed with reading the cases and being prepared to answer questions in class that they lost sight of the larger goal. But by repeatedly and explicitly reminding students that their goal should be extracting a principle that they can use later, we are changing their behavior (abstracting a principle) in response to a stimulus (reading a case).

In addition, we can look to information-processing theory for what it tells us about providing retrieval cues to encourage backward-reaching high-road transfer. Recall that backward-reaching transfer occurs when a student faced with a problem in a transfer situation looks back at former learning in an attempt to find an abstraction or principle that could help her be successful

134 In helping students to make some aspects of reading a case automatic, my goal is to help them free up working memory to focus on the more complex analytical task of reading and understanding the case, especially when they are encountering a new area of the law. The authors of *Cognitive-Load Theory: Methods to Manage Working Memory Load in the Learning of Complex Tasks* explain the difficulty of processing the kind of complex new information that law students must process. "The processing of new information is heavily constrained because, according to the *narrow-limits-of-change principle*, novel information needs to be processed in [working memory] prior to being stored in [long-term memory]. Contrary to [long-term memory], [working memory] is severely limited in both capacity . . . and duration . . . ; people can hold from five to nine information elements for no more than 20 s, and even fewer when the information elements need to be combined, contrasted, or manipulated. The limits of [working memory] may not be relevant when dealing with (a) biologically primary knowledge, (b) familiar information that is already well organized in cognitive schemas in [long-term memory] (e.g., for experts in a task), or (c) very simple tasks that can be performed without using schemas in [long-term memory]. But the limits of [working memory] are especially relevant in common situations in which people are learning complex tasks that heavily deplete [working memory] resources . . ." Fred Pass & Jeroen J.G. van Merriënboer, *Cognitive-Load Theory: Methods to Manage Working Memory Load in the Learning of Complex Tasks*, 29 CURRENT DIRECTIONS PSYCH. SCI., 394, 395 (2020).

in her current learning situation. However, information-processing theory would tell us that to find success in backward-reaching transfer, our students will need to search long-term memory where that past learning is stored. And, unless something prompts the student to begin this search, she is unlikely to search long-term memory for relevant information, much less find where it is stored.¹³⁵

As law professors, we should be the *something* that prompts students to begin searching long-term memory by reminding them that they have prior learning that can help them in the new learning situation.¹³⁶ And we should also help them to avoid the endless search of their long-term memories by providing retrieval cues. Retrieval cues are simply “hints that may trigger the activation of certain parts of long-term memory.”¹³⁷

Last year, when students in my LRW class were transitioning from a factor analysis in their first assignment to an elemental analysis in their second assignment, I began class by asking students what organizational tools they might use to begin organizing their analysis. In prior years, I would have simply assumed that the students would use the tools we’d explored in their first assignment and apply them to the second assignment. But recently, I decided to ask them outright to identify some useful tools. In other words, I was asking them to engage in backward-reaching high-road transfer. I want them to look back on their prior learning to find a tool that could help them with the problem before them. To my surprise, every student in the classroom avoided my eyes, hoping not to be called on. So I gave them a few minutes

135 ORMROD, *supra* note 6, at 219.

136 I have, at times, been reluctant to be the something that prompts students to begin searching long-term memory. I have been frustrated by the fact that my students, when learning how to do legal research, don’t recognize that their prior research experience will help them in the task I’ve set before them. Why don’t they recall what they know about indexing systems and use that information to assist them as they learn about the way legal research is indexed? I become even more frustrated when the students are failing to use something I know that I just taught them to help them in learning a new concept.

But I am working on overcoming this frustration and reluctance since I have learned that recalling information from long-term memory is such an incredibly difficult task. In fact, only information that is stored in a logical place in long-term memory (because it was learned meaningfully and well practiced) will likely be accessed quickly and with relative ease; information that is not stored in a logical way (such as information stored through rote learning) will likely be accessed only with extensive searching, if it is accessed at all. *Id.* at 426.

Because I have no control over whether students learned to do research as undergraduates in a meaningful way or whether they practiced that research, I simply must stop getting frustrated when they fail to access and use that information. And, because I do have control (to a much greater extent, anyway) over whether students are storing what I am teaching them in a logical way, I must also stop getting frustrated when they fail to access that information. Instead, I’ve begun to change the way that I teach so that students are, in fact, storing what I am teaching them in a way that will allow them to access the information more easily.

137 *Id.* at 219.

to talk to one another and go back through their notes. After this chance to reflect, we were able as a class to identify the tools we could use and begin to think about how to use them. Some of the students shared that they hadn't thought a tool we'd used to do a factor analysis could help us to do an elemental analysis. Others, it seemed fairly clear to me, had forgotten about the tool altogether.¹³⁸ Thus, backward-reaching transfer may not have ever occurred had I not provided a retrieval cue.¹³⁹

IV. Conclusion

The time that I spent creating an academic support program and working closely with students taught me that I had been, for many years, assuming that my students were transferring what they learned in my classroom to other contexts. The more I worked closely with students, the more I realized that this assumption was mistaken. Further, this realization is supported by the science, which suggests that transfer is neither easily understood nor easily achieved. Though transfer is a challenge, it is so foundational to what we're doing in legal education—where our primary goal is to have impact beyond our classrooms—that we should be doing what we can to teach for transfer. Empowering our students with effective learning strategies and implementing teaching strategies that promote transfer will help ensure that our teaching and our students' learning has impact beyond our classrooms.

¹³⁸ Some information-processing theorists would say that they hadn't forgotten about the tool but were simply unable to pull the memory of the tool and using it from long-term memory.

¹³⁹ The authors of *Reaching Backward and Stretching Forward: Teaching for Transfer in Law School Clinics* describe what a retrieval cue might look like in the clinical setting: "Thus, when assigning a student to write an advice letter to the client, the supervising attorney can remind her student that in addition to other considerations like tone, audience, and recordkeeping, the letter calls for the student generally to adapt the same IRAC structure in the paragraphs presenting legal advice as he would in a memo, or a brief. When giving those instructions, the professor is mindfully recognizing the transfer problem and cueing the student 'reach back' to prior learning." Archer, et al., *supra* note 120, at 272. However, the supervising attorney may need to take additional steps to ensure that the student can use what she knows about IRAC to effectively write this letter. The supervising attorney should ask the student to recall what she knows about IRAC and ensure that the student is able to accurately recall the necessary information.