SPIRALS AND SCHEMAS: HOW INTEGRATED LAW SCHOOL COURSES CREATE HIGHER-ORDER THINKERS AND PROBLEM SOLVERS

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Suppose a substantial minority of a respectable law school’s graduates never honed deep learning, higher-order thinking or sophisticated problem solving capacities. Many were very diligent. They memorized quite a bit of doctrine. Some are proficient at applying it in narrow circumstances they have already encountered. A few may rank quite high in the class.

But they learned very little law, because they did not know what they were supposed to do. Their original concepts of law and learning were flawed, and legal education failed to dislodge them. Many would leave law school six figures poorer without essentials for a novice practitioner to begin developing expertise: an interconnected framework of legal principles and the higher-order thinking and sophisticated problem-solving capacities to exploit it.

Many undergraduate schools produce hopelessly unprepared prospective law students. To many, law is “rules without reasons” to be learnt mostly by rote. Study and assessment
have always meant “memorize” and “regurgitate” in not very intellectually taxing circumstances.\textsuperscript{7} The first year of law school confirms these expectations.\textsuperscript{8}

Many law school graduates do not understand what the law is: what they must know, what they must do and “why” it works when solving legal problems.\textsuperscript{9} Few know that the “stream of commerce” is the same in personal jurisdiction and products liability.\textsuperscript{10} An unfamiliar term does not trigger them to reach for Black’s Law Dictionary.\textsuperscript{11} Students rarely chart the elements of the claim, facts and inferences in a personal injury summary judgment opinion.\textsuperscript{12} Even after legal research and writing courses, students missed that lawyers are active, independent learners, traits they did not cultivate or lost during law school.\textsuperscript{13}

Many new law students need a cognitive reconstruction of their concepts of law and learning. But reconstruction of this magnitude is not easy.\textsuperscript{14} It depends on a student’s motives and the guidance professors and the learning environment provide.\textsuperscript{15} No one “skills” or


\textsuperscript{5} Richard R. Skemp, \textit{Relational Understanding and Instrumental Understanding}, \textit{Arithmetic Teacher}, 9, 9 (1978).


\textsuperscript{9} Skemp, \textit{supra} note 5, at 89.

\textsuperscript{10} See World-Wide Volkswagen v. Woodson, 444 U.S. at 316 (Marshall, J., dissenting).

\textsuperscript{11} See Roach, \textit{supra} note 4, at 307-09; see also John B. Biggs, \textit{Student Approaches to Learning and Studying} \textit{11} (1987).

\textsuperscript{12} See Jennifer E. Spreng, \textit{Suppose the Class Began the Day the Case Walked in the Door}, unpublished manuscript on file with author (2015).


“academic support” course has the answers. Curriculum-wide problems require curricular solutions.

More curricular “integration” can help. “Integration” refers to the extent to which the program of education is ordered based on disciplinary, departmental, or clinical boundaries, which in law boils down to what I call “doctrine,” “intellectual and professional capacities,” and clinics and externships. Integration is a standard feature of introductory and advanced professional education. Many medical schools now organize their basic science curricula by body system instead of traditional disciplines.

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17 DELLA FISH & COLIN COLES, MEDICAL EDUCATION: DEVELOPING A CURRICULUM FOR PRACTICE, at loc. 2049-94 (Kindle ed.2005).

18 For purposes of this article, “doctrine” is what students learn in traditional law school doctrinal courses. “Intellectual capacities” include careful reading, constructing analogies, assessing relevance, logical thinking and reasoning, problem-solving, application of law to fact, making inferences, dealing with ambiguity, reconciliation, synthesis, outlining, briefing and some aspects of drafting and writing. See, e.g., Paul Wangerin, Learning Strategies for Law Students, 52 ALB. L. REV. 471, 496-99, 501-15, 519-22 (1988); Gantt, Deconstructing, supra note 2, at 445-47. Together, doctrine and intellectual capacities are “the law”; the division many legal educators create between “doctrine” and “skills” is both insufficient, cf. Niedwiecki supra note 6, at 151-52, 158, and false. See KARL LLEWELLYN, THE BRAMBLE BUSH 5-8 (Oxford U. Press 2008) (1930). “Professional capacities” captures a continuum extending from intellectual capacities that sweeps in writing, drafting, interviewing and counseling, taking depositions, advocacy, etc. None is easily separable from doctrine and intellectual capacities, and they are often useful vehicles for teaching doctrine and intellectual capacities. See Robert G. Vaughn, Use of Simulations in a First-Year Civil Procedure Class, 45 J. LEGAL EDUC. 480, 480 (1995). Clinics and externships are capstones in the modern law school curriculum.


20 See, e.g., Khalil & Kibble, supra note 19, at 200; see also Andrew K. Husband et al., Integrating Science and Practice in Pharmacy Curricula, 78 AM. J. PHARM. EDUC. Art. 63, at 4-7 (2014) (Durham (UK) University School of Pharmacy).
a pedagogy familiar to law professors but now almost a signature for medical schools in which students learn and apply their knowledge to a set of authentic problems, that often present new information or developments to the same set of foundational facts throughout the term, that call for active, deep learning and the intellectual and interpersonal capacities they will employ in diagnosis, treatment decisions, patient counseling, and collegial teamwork.22

Compared to medical schools, only the slightest whispers of integration have invaded law school curricula. Superficial forms of integration animate upper class law school curricula. Many would label “Law and Religion” integrated, for example, as they would “Legal Writing” and “Pretrial Practice” for linking practice skills and doctrine, even though none of those courses intends to teach both subjects. Legal education has not even conceptualized what it would mean to level the “doctrine-skills divide” – and may actually reinforce it – which is the essence of integration.25

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22 A. Sefton, Problem-Based Learning, in A PRACTICAL GUIDE FOR MEDICAL TEACHERS 158, 158-60 (John A. Dent & Ronald M. Harden, eds., 2001); see also David Gijbels et al., Effects of Problem-Based Learning: A Meta-Analysis from the Angle of Assessment, 75 REV. EDUC. RES. 27, 32-36, 44-45, 47 (2005) (hereinafter “Gijbels, Effects of Problem-Based Learning”) (problem based learning had greatest positive effects on higher-order thinking).


24 Benjamin Linder & Woodie C. Flowers, Integrating Engineering Science and Design: A Definition and Discussion, 17 INT’L J. ENG’NG EDUC. 436, 437 (2001) (“Two activities are integrated for a learning objective when students produce behaviors and outcomes in both activities that indicate progress towards that objective.”).

25 See generally infra Part III.A. The initial concrete suggestions for integration strongly reflect the practical difficulties that would arise from the process of approving and implementing them, which explains why so far they tend to be modest, such as adding a one-credit brief-writing option to an upper-class doctrinal course. See Sarah O. Schrup & Susan E. Provenzano, The Conscious Curriculum: From Novice Towards Mastery in Written Legal Analysis and Advocacy, 108 NW. U. L. REV. COLL. 80, 87-88 (2013). But for those challenges, a four-credit course with a writing-heavy practicum component would probably be the suggestion; for the same reason, this article includes a range of integration approaches.
What medical schools understand is that traditional introductory subjects such as “physiology” and “biochemistry” are not separate fields anywhere other than medical school.26 Doctors do not practice “anatomy”; they practice neurology.

Law is the same. Distinctions between injury law, in particular, and procedure were artificial constructs, the product of jettisoning writ pleading and later the “legal science” and carved into the stone of Harvard Law School’s first-year curriculum in 1870.27 A truly authentic first-year curriculum would present topics in torts, procedure, writing, drafting, research and analysis together with an authentic – but controlled – context such as simulated litigation and call it “Introduction to Civil Litigation.”28 In such an ideal setting, students could explore intellectual independence and hone their higher order thinking and problem solving capacities.29 The context could also provide the almost hyper-active learning environment necessary for students to fundamentally restructure their concepts of law and learning.30

This article argues that law schools should explore first-year curricular integration in the process of other programmatic reforms. Part II puts the problem in stark relief: it employs established learning theory about how and what students learn to explain why the traditional first-year curriculum is inadequate to many students’ needs schools’ practice-oriented missions, and even if adequate for others for others, it is not as good as it could be. Part III

describes “integration” from a high overview, what it should and does achieve pedagogically, and after zooming in, shows what particular integrated curricula, courses and activities that law schools could insert into their catalogs and syllabi today would look like. Part IV examines both anecdotal evidence and results from controlled studies of integrated curricula and their signature teaching methods. The article concludes that integrated first-year courses and activities have enough potential to make transformative pedagogical improvements in legal education that they to demand further consideration as a framework for reform.

Several “author’s notes” are appropriate. First, I teach Civil Procedure, and my guess is that a disproportionate number of my procedure colleagues do not need this article to see the pedagogical potential of teaching Civil Procedure integrated with another subject because we live daily the disadvantages of siloing. Though this article is laced with procedure-oriented examples, other subjects are easily integrable with other subjects and authentic activities.

Further, I have taught numerous integrated courses, which influences my conclusions., though I cannot authoritatively cite to that influence. But I have used almost all examples here in my own classes, and the anecdotal evidence described in Part IV.A is consistent with my own observations. My experience also teaches me that the success of any education reform or innovation probably turns most on the professor’s personal investment during implementation. This is an article about theoretical foundations, not implementation: it seeks only to explain what curricular and course integration is and why it should be considered a top-tier potential legal education reform. From there, schools can explore how to proceed, perhaps with the benefit of additional insights in a future article.
II. IN THE BEGINNING II: WHY REFORM?

Professional school curriculum reform should start with the question, “What do we want students to know and be able to do” come Graduation day.\(^{31}\) Every faculty will have its combined vision of what the ideal graduate looks like, but most will include first five of the McCrate report’s “Fundamental Lawyering Skills” from the *MacCrake Report*: problem-solving, legal analysis and reasoning, legal research, factual investigation and communication.\(^{32}\) Together, they reveal that the lawyer is a professional life-long learner, a higher-order thinker and sophisticated problem solver with a solid doctrinal knowledge base.

Many law students are not on a road through a program of learning that ends three years later having made much progress honing those essential professional capacities. Consider, for example, the student who dutifully copies down the holding of a case as stated in a professor’s powerpoint (which the professor only wrote late last night when she was too tired to perfect the details and intends to distribute anyway because nothing in it is important enough to divert students’ attention from the hypotheticals!), and therefore seems just a tad excessively conscientious until she hops on Facebook during the discussion of a hypothetical problem.\(^{33}\) Of course the student is tantalized to find out if she has any messages, and the hypothetical is one of those “hide the ball” things.\(^{34}\)

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This otherwise-diligent student tuned out at precisely the moment the class demanded active, higher-order engagement to practice elementary problem solving capacities, because she has a concept of law as rules and of learning as passive and regurgitative. The student does not understand what she is supposed to be doing in that moment, and she does not know that she does not know. Quite a few of her classmates do not know either.

Such as the third-year student who still asks, “Do you want us to we write our exam answers in IRAC or CREAC or IREAC?” After the professor admits she has no idea what that means, she points out that part of what he should learn from the course is the best way to present an answer based on the demands of the analysis and reasoning necessary to solve the problem presented. He feigns politeness but how could he not be irritated: he is a third-year, and the professor is still hiding the ball!

He believes law is about form, just as he probably believed math was about formulas. His concept of learning is instrumental: plugging the right facts into the right places in the formula and then going through the motions. He does not understand what he is supposed to

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36 IRAC is a formula, but learning “when to modify IRAC in response to a different type of question or set of directions, which would benefit from an alternative approach,” is an ‘understanding of how that task is performed,’” Elizabeth M. Bloom, Teaching Law Students to Teach Themselves: Using Lessons from Educational Psychology to Shape Self-Regulated Learners, 59 Wayne L. Rev. 311, 317 (2013); Krieger, supra note 3, at 205-06 (“Effective problem solvers need to learn how to distinguish between those situations in which their schemas should be used and those in which routine procedures should be modified to adapt to difficult or unusual problems.”). IRAC is not especially useful for explaining higher-order arguments. See Suzanne Darrow-Kleinhaus, Mastering the Law School Exam: A Practical Blueprint for Preparing and Taking Law School Exams 123 (2007).
37 Compare Darrow-Kleinhaus, supra note 36, at 124-25 (after the end of one IRAC analysis of an issue, “you are ready to repeat the whole process for the next issue you identify where each issue and sub-issue forms the basis for a separate IRAC analysis.”), with Kissam, supra note 8, at 433 (criticizing examination answers that display mostly “good paragraph thinking,” in which “each paragraph identifies a specific issue or subissue, identifies an appropriate authority in sufficiently precise terms and applies this authority to the problem, often showing how to arrive first at one result and then the other.”).
38 Niedwiecki, supra note 6, at 33-34.
be *doing*, because even at this late moment in his legal education, he does not know what law is or how to learn it. Many of his classmates moment, may not know either.

Law professors know these two students well. They are not going to “pick it up on their own”; we must help directly. This Part starts by describing the different types of learning concepts and strategies that law students may bring with them on the first day of class. Then, it explains from a cognitive science perspective what students must do to hone higher-order thinking and problem-solving capacities and why they may need more doctrinal professor guidance than in the past. Finally, it explores “what happens” if students do not receive that guidance early in the first year of law school and ideally from doctrinal professors.

A. Learning to Learn for Lifelong Learning

Leading educational psychologists believe every student has a “mental model of learning.”[^39] A mental model or concept of learning is a coherent combination of students’ conceptions about learning: of learning itself,[^40] of what they are learning, of their role on the learning process, of their teachers’ and classmates’ roles, of what learning tasks demand, of thinking, and of themselves as students, human beings, and as works-in-progress.[^41] These mental models are significant influences on a student’s learning strategies and behaviors, and unless they change, learning strategies and behaviors probably will not either.[^42]

[^40]: See supra text and notes at ____ - ____.
[^42]: Vermunt, Regulation, supra note 41, at 151, 153, 161.
1. Active and Passive Learning

Students employ either active or passive learning behaviors in the learning process, and learning environments may be labeled “active” or “passive” for the learning behaviors they promote. Active learning is anything “students do [] in the class beyond simply listening and watching,” particularly when students “do meaningful learning activities and think about what they are doing.” Passive learning is listening, watching and taking notes. Experts believe students learn more in active rather than passive learning environments.

Not all “active learning” occurs in the classroom. Active preparation for a law school class may involve checking the table of contents to understand how a new topic fits into the overall course structure, reading a hornbook for background prior to reading cases, referring to *Black’s Law Dictionary* when an unfamiliar word turns up, and reviewing the notes after the case, whether assigned or not. Engaged reading is active and occurs when the student calls on “‘higher-level thinking skills, such as connecting ideas and sources of information, spotting faulty logic in argumentation, recognizing bias or hidden agendas, identifying unsupported ideas, understanding metaphorical levels of meaning, and entertaining other perspectives and points of view on a subject.’”

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45 Id. They are less sure whether passive learners as well in an active environment.
46 Id.
Passive learning behaviors are hard wired into many modern law students. Students adopt them in high school; undergraduate schools do little to change them.49 Passivity is the hallmark of most of their leisure activities50: they even read passively, when they read at all.51 Students generally experience the traditional first-year law school class taught with Socratic method as a passive learning environment.52 The professor’s vision is that students are learning vicariously: while the professor and a student engage in some form of Socratic dialogue, other students are listening and actively testing their own understanding.53 Some may, but because first year students do not yet know what to listen for in Socratic dialogues, many probably have the same passive response as the student checking email during the hypothetical discussion above.54

2. Deep and Surface Learning Strategies

Whether a student adopts deep learning, surface learning or performance-driven learning strategies depends on the student’s concept of learning, formed over time based on the student’s experience of what students learn, what they should learn, why they learn and what behaviors and strategies they employ to learn. Deep learning is a true understanding or “mastery” of a subject, often motivated by a student’s interest or the apparent utility of the

49 See Richmond, supra note 7, at 957.
50 See Roach, supra note 4, at 306-07 (electronic media robs students of their attention spans and abilities to focus their attention).
52 See Lung, supra note 33, at 732-34.
53 Id. at 733 (quoting Schwartz, Teaching Law By Design, supra note 44, at 351.
54 See Lung, supra note 33, at 733; see also Caron & Gely, supra note 48, at 563.
subject. Deep learning strategists are active learners who have a concept of learning as something “they do.” Their deep learning strategies include “read[ing] widely,” “relating ideas and looking for patterns and principles,” “using evidence and examining the logic of the argument,” and “making connections between . . . existing knowledge and experience.”

Deep learning strategies and a desire for mastery are usually positively related to exam performance, but that relationship is less apparent if a study controls for student ability.

Surface learning is acquisition of superficial knowledge the student is unlikely to retain after the examination. Students who adopt surface learning strategies want to learn what they need to be able to reproduce it later on an assessment to earn a sufficient score or other outcome; their primary learning strategy is rote memorization. Surface learners are often passive learners whose concept of learning is that it is “something that just happens to them.”

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55 BIGGS, supra note 11, at 11.
57 See Richardson, supra note 41, at 3.
58 BIGGS, supra note 11, at 11.
60 Entwistle, supra note 59, at 3.
63 See BIGGS, supra note 11, at 12.
65 Entwhistle, Promoting Deep Learning, supra note 59, at 3.
66 See Richardson, supra note 41, at 3. Surface learners reading a text try to remember what the text says while deep learners try to understand what the text means. See PETER JARVIS, ADULT EDUCATION AND LIFELONG LEARNING: THEORY AND PRACTICE 90-91 (Routledge Kindle 4th ed. 2010) (1983); BIGGS, supra note 11, at 15.
therefore, it is not surprising that unsophisticated students tend to be surface learners.\textsuperscript{67} Surface learning tends either not to be related or is negatively related to performance.\textsuperscript{68}

Performance-driven learners either want to be high performers and be seen to be (“performance approach goals”) or they want to do as well as they can to avoid being seen to fail (“performance avoidance goals”).\textsuperscript{69} They may work very hard and their choices of learning strategies depends on must be done to meet their performance goals.\textsuperscript{70} Performance approach goals, but not avoidance goals are positively related to academic achievement.\textsuperscript{71}

Both nature and nurture influence learning strategies. On the one hand, learning strategies can be quite resistant to change.\textsuperscript{72} Demographic characteristics such as age, sex, and prior educational level seem to influence learning strategies, perhaps because they inform deeper conceptions of self that also will not quickly change.\textsuperscript{73} On the other hand, students can adjust learning strategies for different courses and professors, so a professor’s choice of a

\begin{itemize}
\item \textsuperscript{67} Ferla et al., \textit{Relationships Between Student Cognitions and Their Effects on Study Strategies}, \textit{Learning \\& Indiv. Diff} [6] (2007).
\item \textsuperscript{68} No causal relationship should be assumed. Students of less ability might also be predominantly surface learners. Cf. Elliot et al., \textit{supra} note 62, at 559 (finding performance of mastery students on examination mediated by ability).
\item \textsuperscript{69} Elliot et al., \textit{supra} note 62, at 549.
\item \textsuperscript{70} Elliot et al., \textit{supra} note 62, at 554.
\item \textsuperscript{71} Elliot et al., \textit{supra} note 62, at 554.
\item \textsuperscript{73} See, e.g., Garcia 2-3. Students with a more relativistic view of knowledge tended toward deep approaches to learning, while those with a more absolutist view tended to be reproduction directed. Vermunt \\& Vermutten, \textit{supra} note 72, at 374. Students with a “reproductive” concept of learning tend toward surface strategies and those with a “constructivist” concept of learning tend toward deep learning strategies. Ferla et al., \textit{supra} note 72, at [5]. Constructivists are among those who tend to take a more relativistic view of knowledge. Vermunt \\& Vermutten, \textit{supra} note 72, at 374.
\end{itemize}
student-centered or teacher-centered approach influences deep-versus-surface learning strategies. Learning strategies are also highly responsive to the perceived nature and difficulty of the classwork and the nature of the anticipated assessments.

Studies of law students’ learning strategies, behaviors and attitudes are rare and provide only spotty intelligence, but they are neither surprising nor unproductive. One study of European law schools revealed an utilitarian, vocational attitude, again unsurprising for what at its root is vocational education, that may not result in active or deep learning, albeit as much because of teaching rather than desired strategies. The study subjects employed high levels of memorization and reproduction strategies and less directed learning compared to Economics, Psychology and Arts students, but the law students also revealed higher analytical processing strategies and application-directed learning, a form of processing that stresses concretizing and use of knowledge. Their learning strategies also seemed more malleable.

74 Keith Trigwell, et al., Relations Between Teachers’ Approaches to Teaching and Students’ Approaches to Learning, 37 High. Educ. 57, 66 (2006). Studies differ as to which learning strategy is most sensitive to short-term change. Compare Vermunt & Vermetten, supra note 72, at 372 (memorizers insensitive to change), with Baeten, supra note 72, at 250 (surface learners switched to deep learning strategies when course context changed but deep learners did not change).

75 See Scouller, supra note 64, at 461, 466; Chris Rust, The Impact of Assessment on Student Learning: How Can the Research Literature Practically Help to Inform the Development of Departmental Assessment Strategies and Learner Centred Assessment Practices?, 3 Active Learning in Higher Educ. 145, 149 (2002) (“one of the most important influences on” a student’s learning approach, “is design of the course and the assessment strategies used.”); but see Jan F.H. Nijuis et al., 8 Learning Environment’s Res. 67, 86-90 (2005) (different assessment for problem-based learning did not change learning strategies).


78 Vermunt & Verloop, supra note 77, at 272.

Even though those results are not surprising, law schools should take little comfort that
they have produced students who use somewhat deeper learning strategies.80 Law may attract
students with a tendency to such strategies.81 A related study found a correlation between law
school grade point average and student pessimism but speculated the result might simply
reflect that law attracts students who are prudent, realistic and conservative.82

Law schools may also not want the “credit” for other findings about student learning
strategies. An American study revealed that higher performing students had unusually low self-
efficacy about their learning.83 Large minorities of European students report disorganized study
methods they do not know how to change, results that leave scholars scratching their heads in
confusion.84 If such results do reflect reality, cognitive psychology is not optimistic about those
students’ eventual achievement.85

Surely law school should orient students that active, deep learning is central to
performance and the practice of law. Instead, many first-year professors’ actual classroom
presentation confirms students’ instrumental vision of law as not demanding deep learning

80 Application-driven learning is also associated with application-driven teaching. See Vermunt & Vermetten, supra note 72, at 379.
81 Vermunt, Relations, supra note 76, at 229.
83 Christensen, supra note 13, at 71-73. This condition is rare in mastery learners, and surprising, because the study also found that mastery goals, not performance goals, were associated with grade point averages. Id. at 73. The explanations for these inconsistent results could be partly be study design. See Elliot et al., supra note 62, at 559. Though LSAT scores were not strongly associated with grade point averages in the study, grade point average is also a measure of ability. Cf. Diaz, supra note 82, at 427 (only LSAT scores predicted grade performance in study of relationship between examination performance and anxiety).
85 Satterfield, supra note 82, at 101-02 (observing that in diverse undergraduate settings, students who explained bad academic results pessimistically tended to receive lower grades).
strategies or active engagement for success.\textsuperscript{86} So even if the student initially believed “law school is different,” the student’s actual experience quickly lulls her back into the comfort zone of tried-and-true passive learning behaviors and surface learning strategies.\textsuperscript{87}

B. Schemes . . . Err, Schemas Everywhere!

Students interpret new knowledge based on their existing knowledge.\textsuperscript{88} Onto that existing knowledge, students are continually “constructing” and “reconstructing” their understanding based on new information gleaned from experience.\textsuperscript{89} These constructions are cognitive tools useful for problem solving — “schemas,”\textsuperscript{90} “scripts,”\textsuperscript{91} and “mental models” of a particular subject\textsuperscript{92} -- that represent or derive from “prototypical expectations about objects, situations and actions.”\textsuperscript{93} From countless professional experiences, a lawyer amasses a huge collection of schemas, scripts and other cognitive tools.\textsuperscript{94} They are the lawyer’s expertise and effective problem solving is the manifestation of that expertise.\textsuperscript{95} One difference between

\textsuperscript{86} See supra text and notes at ____-____.
\textsuperscript{88} David H. Jonassen & Johannes Strobel, \textit{Modeling for Meaningful Learning}, in \textit{_____} 1, 1-2 (XXXX).
\textsuperscript{89} Constructivism is both a learning theory and a set of psychological theories. \textit{See} Jonathan D. Raskin, \textit{Constructivist Theories}, \textit{in} \textit{COMPREHENSIVE HANDBOOK OF PERSONALITY AND PSYCHOPATHOLOGY: PERSONALITY AND EVERYDAY FUNCTIONING} 212, 212, 214 (Michael Hersen et al., eds. 2006).
\textsuperscript{90} Jonassen & Strobel, supra note 88, at 2.
\textsuperscript{91} One definition of “schema” is “‘an organized body of information about some distinct domain of knowledge.’” \textit{See} Gantt, supra note 16, at 733 n.168 (2012) (quoting Gregory Schraw, \textit{Knowledge: Structures and Processes}, in \textit{HANDBOOK OF EDUCATIONAL PSYCHOLOGY} 245, 248 (Patricia A. Alexander & Philip H. Winne eds., 2d ed. 2006)).
\textsuperscript{92} An “event schema” or “script” is a schema that is a “sequence of events” an aspect of procedural knowledge. \textit{See} Blasi, supra note 39, at 337-38; Gantt, \textit{Pedagogy of Problem Solving}, supra note 16, at 733.
\textsuperscript{93} Blasi, supra note 39, at 338-39. Mental models are really just a different type of cognitive tool from schemas and scripts. \textit{Id.}
\textsuperscript{94} \textit{Id.}
\textsuperscript{95} Blasi, supra note 39, at 343.
Novices and experts are that novices have far fewer and less complex schemas, and experts have more sophisticated tools and perspectives that help them understand the problem and produce a solution.\textsuperscript{96}

Legal problem solving activities such as fact-gathering, developing a theory of the case, client interviewing, and motions practice rely on the existence, quality and exploitation of doctrinal knowledge systemized into schemas\textsuperscript{97} and processes honed into scripts.\textsuperscript{98} A lawyer solving a problem sifts through her cognitive tools: schema found; schema adapted; and so solution, or the first step of one . . . discovered\textsuperscript{99} Therefore, doctrinal knowledge is not separable from “practice skills”\textsuperscript{100}; being an effective public speaker, for example, means little to the quality of oral advocacy in the absence of doctrinal knowledge.

Schema theory helps to define two related pairs of knowledge. The first pair is “domain knowledge” and “tacit knowledge,” both of which are essential components of expertise.\textsuperscript{101} The relationship between domain and tacit knowledge is analogous to that of schemas and scripts.\textsuperscript{102} Domain knowledge is “explicit knowledge of the concepts, principles and structures of thinking about the particular domain in which a problem arises” or what legal educators loosely define as “doctrine.”\textsuperscript{103} Tacit knowledge is “knowledge that cannot be made verbal that involves how to do things” or some of what legal educators loosely call “skills.”\textsuperscript{104}

\begin{thebibliography}{99}
\bibitem{96} Blasi, supra note 39, at 342-48.
\bibitem{97} Krieger, supra note 3, at 185-89.
\bibitem{98} See Blasi, supra note 39, at 337-38.
\bibitem{99} Blasi, supra note 39, at 338.
\bibitem{100} See Krieger, supra note 3, at 165-66.
\bibitem{103} Krieger, supra note 3, at 153.
\bibitem{104} Krieger, supra note 3, at 153; see also Tonya Kowalski, \textit{True North: Navigating for the Transfer of Learning in Legal Education}, 34 \textit{SEATTLE U. L. REV.} 51, 66 (2010).
\end{thebibliography}
capacities such as careful reading, analysis of law and fact, and higher-order thinking straddle both. Students can glean domain knowledge from a traditional academic setting but not tacit knowledge.¹⁰⁵ Tacit knowledge is not useful, however, outside a particular domain.¹⁰⁶

The other pair is “relational knowledge” and “instrumental knowledge.” A subject understood only instrumentally is so entirely different from one understood relationally, that they are not same subject.¹⁰⁷ Teachers seeking to impart a relational understanding value the behaviors a student employs to determine an answer more important than the answer itself.¹⁰⁸

An “instrumental understanding” is “having available only a collection of isolated rules for arriving at the answers to a limited class of problems.”¹⁰⁹ Imagine having a list of directions from one place to another in a city you do not know: the list is a schema for one operation only constructed from surface learning that you will jettison soon after arrival. Unless, of course, you get lost and never arrive at all, because you lack information to find your wayback by another route.¹¹⁰

By contrast, a “relational” or deep understanding” of a subject is “having available an appropriate schema or set of conceptual structures sufficient to solve a much broader class of problems.”¹¹¹ A relational understanding of how to get from place to place in a city is knowing the concept city planners used to layout the city’s streets or even an entire map of the relevant area in your brain. Make a mistake, and you can construct another route to where you are

¹⁰⁵ See Tynjälä, supra note 101, at 362-63.
¹⁰⁶ See Krieger, supra note 3, at 155.
¹⁰⁷ Skemp, supra note 5, at 11.
¹⁰⁸ See Linder & Flowers, supra note 24, at 438.
¹⁰⁹ A. Pollatsek et al., Concept or Computation: Students’ Understanding of the Mean, 12 EDUC. STUD. IN MATHEM. 191, 199 (1981).
¹¹⁰ Skemp, supra note 5, at 95.
¹¹¹ Pollatsek et al., supra note 109, at 199.
going. Such a deep understanding is often the product of deep learning strategies and a professor’s student-oriented teaching.

A relational understanding of legal subjects assists the problem solving lawyer in a number of ways. First, a relational understanding implies a broad and deep knowledge of the “domain” of law, which is the source of the lawyer’s schemas and scripts and their architecture that are imperative for solving unfamiliar or ill structured problems. Second, such the vocabulary and discourse of a relational understanding facilitate communication with others about the problem to obtain advice or work collaboratively. Third, it facilitates a more efficient reasoning process to a solution. Finally, a relational understanding is also more likely to “transfer” from the situation in which the student gleans the knowledge to another.

From the perspective of cognitive psychology, a law school’s mission is scaffolding students identifying, collecting, constructing and using law-related schemas and scripts to produce a relational understanding of the law. Students continue to add to their constructions over time until new information reveals that the existing schema or script is either wrong or no longer useful. Moreover, students are more likely to retain knowledge organized via schemas into a cohesive whole. Constructing schemas and other cognitive

112 Skemp, supra note 5, at 94.
113 Trigwell et al., supra note 74, at 65-66.
114 Gantt, Pedagogy of Problem Solving, supra note 16, at 733-75.
115 Gantt, Pedagogy of Problem Solving, supra note 16, at 739.
117 Sabine Hoidn & Kiira Karkkainen, Promoting Skills for Innovation in Higher Education: A Literature Review on the Effectiveness of Problem-Based Learning and of Teaching Behaviours, OECD wkg. pap. no. 10, at 8, 18, 36, 47 (2014).
118 Lustbader, supra note 1, at 338-39; Gantt, Pedagogy of Problem Solving, supra note 16, at 747; Bloom, supra note 36, at 317-18.
119 Tall, Continuities and Discontinuities, supra note 72, at 165.
120 See Gantt, Deconstructing, supra note 2, at 442-43.
tools incorrectly interferes with further learning.¹²¹ Students expend considerable intellectual and psychological energy constructing schema, and they do not abandon them lightly, even in the face of strong evidence of their inadequacy.¹²² Professors should prioritize explicitly directing students in schema and script construction, at least sufficiently to be sure students know how to do it.¹²³

3. The Humble Course Outline and Its Accoutrements: Schemas and Scripts as Intellectual Rocket Fuel

When the history of legal education reform is written, the demise of the high school term paper will deserve many more than fifteen minutes in the sun.¹²⁴ During that rite of passage, budding lawyers and other students acquired the first fragments of essential schemas for learning and practicing law. The term paper was a signal moment when students took active and independent responsibility for learning.¹²⁵ Many “touched” the dictionaries and encyclopedias that would one day morph into Black’s and American Jurisprudence.¹²⁶ They synthesized large amounts of information, some organized on the ubiquitous note cards one

¹²¹ See, e.g., Pesek & Kirschner, supra note 14, at 539 (students taught a subject instrumentally may not respond to subsequent relational teaching); Tall, supra note 72, at 169-70 (students need periodic cognitive reconstruction or may slip back to instrumental learning); Michelene T. H. Chi, Commonsense Conceptions of Emergent Processes: Why Some Misconceptions Are Robust, 14 J. LEARNING SCI. 161, 162-64, 170-71, 182-83, 185-86 (2005) (some misconceptions existent from naïve theories are more robust than others).
¹²² Saunders, supra note 15, at 137.
¹²³ See, e.g., Deborah Zalesne & David Nadvorney, Why Don’t They Get it?: Academic Intelligence and the Under-Prepared Student as “Other,” 61 J. LEGAL EDUC. 264, 273 (2011).
¹²⁴ See COLLEGE BD., NAT’L COMM’N ON WRITING IN AMERICA’S SCHOOLS AND COLLEGES, THE NEGLECTED “R”: THE NEED FOR A WRITING REVOLUTION 20 (2003) (“[T]he extended research paper, once a rite of passage in the senior year [of high school] is rarely required any more because teachers do not have time to deal with it.”). Many students will not encounter the experience often or at all in undergraduate school. ARUM & RIKSA, supra note 4, at loc. 334-54.
might refer to as mini-briefs. They encountered the concepts of intellectual authority and supporting assertions with epistemologically appropriate material. They tapped into higher-order logical reasoning capacities to craft a step-by-step progressions of ideas not unlike rule statements and then applied it to that next original step of their own. They also constructed topic-subtopic outlines. So were many legal reasoning and active learning capacities born.

First year law students start by constructing schemas and scripts into foundational structures such as case briefs, rule statements, “practice essays,” and outlines. They may seem humble, but they are actually pedagogical investments that produce ever larger returns over time. Call them intellectual rocket fuel; they are the first steps toward expertise.

A student’s course outline, like the term paper outline, is much more than a mere study tool: it is the student’s transformative construction of the knowledge; it is what learning law is. It is the product of immense effort to impose order or synthesize large amounts of information, an inherently relational process. The outline’s coherence is born of the student’s intellectual connections between concepts and what would otherwise be fragmented bits of information that form crucial links between schemas. The more conceptual connections a student makes and the more they illuminate the subject’s organization, the more the schema grows into a tightly integrated, sophisticated schema that the student is more likely

129 COFFIN, supra note 128, at 22, 25.
130 COFFIN, supra note 128, at 37-40.
131 Tynjälä, supra note 101, at 372-73.
132 See Bloom, supra note 36, at 343-48.
133 See Saunders, supra note 15, at 137.
134 See Wangerin, supra note 18, at 523-24 & n. 177 (discussing LLEWELLYN, supra note 18, at 54 and E. PATTERSON & R. POWELL, MATERIALS FOR LEGAL METHOD 163-64 (2d ed. 1952)).
135 Lung, supra note 33, at 737-38.
136 See Gantt, Deconstructing, supra note 2, at 442-43, 447; Bloom, supra note 36, at 317-18.
to retain, retrieve later for transfer to situated applications such as the final examination and circumstances outside the student’s current intellectual experience.

The “how” of making a course outline is also a set of scripts or tacit knowledge of how to organize other sets of information into problem solving tools. Students must draw on and therefore hone numerous intellectual capacities such as synthesis and generalization, inductive and deductive reasoning, and textual deconstruction to produce an outline. Outlines turned into “attack plans” for examinations, integrate course “material” with procedures for using it. The organization is crucial for final and bar examinations, and later for the practitioner developing a litigation strategy or a comprehensive partnership agreement.

If the outline is the construction of the law – the law itself – it is the doctrinal professor’s job to teach students how to construct them. Constructing the law is what lawyers do; a law school prioritizing preparation for practice must make forms of processes of legal knowledge construction top priorities. So the capacities and processes necessary to extract the law, organize it into an outline and understand it deeply enough to apply it beyond the final examination are the most important things law school teaches. Worse, studies, including those done on law students, show teaching “skills” and “problem solving” outside of a doctrinal context has limited success compared to teaching them inside a doctrinal context.

137 See Blasi, supra note 39, at 338-39; Lustbader, supra note 1, at 322-23.
138 See Gantt, Deconstructing, supra note 2, at 441-43.
139 See Gantt, Deconstructing, supra note 2, at 442-43.
140 See Gantt, Deconstructing, supra note 2, at 454, 457-61; see also Eric A. DeGroff & Kathleen McKee, Learning Like Lawyers: Addressing the Differences in Law Student Learning Styles, 2006 B.Y.U. EDUC. & L. 499, 508 & n.43 (defining “cataloguing” and other cognitive skills useful in legal reasoning).
141 See Lung, supra note 33, at 761-62. An “attack plan” or “solution path” is a script, the set of steps the student will use to solve the examination problem. See Gantt, Pedagogy of Problem Solving, supra note 16, at 733.
142 See Gantt, Pedagogy of Problem Solving, supra note 16, at 732.
143 Tynjälä, supra note 101, at 427; cf. Kowalski, supra note 104, at 93-94.
144 See Gantt, Pedagogy of Problem Solving, supra note 16, at 715-29; Tynjälä, supra note 101, at 472.
Separation also sends terrible messages to students about “what matters”: they observe their doctrinal professors, who perch at the top of the law school hierarchy, handing “skills” off to “someone else” who may never award them a grade. A more counterintuitive arrangement could scarcely be imagined.

C. Pulling It All Together: Problem Solving and the Law Professor 101

Though most legal educators have a strong sense of the last four of the first five McCrate skills, “problem solving” is a term oft used and rarely defined. Cognitive science defines problem solving as a process that entails a sequence of decisions and actions, no single one of which is likely to be determinative. That process involves “making of decisions at various critical junctures, each of which may constrain choices in the future. The focus is not on one or a few critical decisions, but on the entire sequence and pattern of decisions.”

Schemas and scripts are at the heart of such decisions.

Studies and anecdotal observations show that both domain and tacit knowledge are essential to honing problem solving skills. Students do not develop more generalized “lawyering skills” in the absence of such knowledge or “out of context,” because they construct cognitive problem solving tools such as schemas and scripts from domain and tacit knowledge.

145 The same is true of “problem,” which “is defined broadly as any situation in which the current state of affairs varies from the desired state of affairs, when there is no obvious way to reach the desired state.” Blasi, supra note 39, at 331.
146 Blasi, supra note 39, at 329-31 (describing differences between the decision-theoretic paradigm and the cognitive science paradigm of problem solving).
147 Blasi, supra note 39, at 331.
148 Clearly, the person with the most doctrinal knowledge is not necessarily the best problem solver, but it is very difficult to solve any problems without significant knowledge of the domain. Krieger, supra note 3, at 167-68.
knowledge. Then, as indicated above, when a law student connects concepts from multiple schemas or other tools, the connection links schemas, making them all the more powerful in problem solving.

To use those cognitive tools to solve problems, the student must transfer her “knowledge, skills and attitudes” from one situation to another, which is not simple but more likely to succeed if the student has a strong domain-knowledge rooted schema base. Law school, students transfer knowledge most readily from the classroom to the final examination. Ideally, though often with difficulty and considerable professor scaffolding, they can transfer knowledge from one class or learning situation to another. Hardest of all, the eventual graduate will have to be able to transfer abstract knowledge from a more traditional classroom to an authentic learning environment and finally, to practice.

When it happens, transfer does not happen immediately. Professors are probably too optimistic about the speed and extent of eventual transfer. Yet again, though, domain knowledge and intellectual capacities matter: students who process information deeply are both most likely to transfer knowledge to different situations and to do so spontaneously.

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150 See infra text and notes at ____-____.
151 See supra text and notes at ____-____.
152 N. Sanjay Rebello et al., Transfer of Learning in Problem Solving in the Context of Mathematics 1 (XXXX) (unpublished manuscript on file with author).
154 Lung, supra note 33, at 740-44, 748-65.
156 Dolmans et al., supra note 155, at 733.
157 Boekaerts, supra note 155, at 447; see also Lung, supra note 33, at 740-43.
Though domain knowledge is critical to honing problem-solving capacities, more domain knowledge eventually reaches the point of diminishing and even negative returns. Driving this dynamic is legal educators’ failure to distinguish between desired “behaviors” associated with higher-order thinking and problem solving and “outcomes” they actually assess on the final examination.\textsuperscript{158} Few final examinations can confirm if a student produced the examination outcome by actually engaging in those behaviors; therefore, students may never learn to do so and the professor be none the wiser.\textsuperscript{159} In fact, students may never have the chance: the workload course coverage priorities impose leaves very little time or energy for student-centered teaching or honing more sophisticated intellectual behaviors.\textsuperscript{160} But even professors of bar examination tested subjects cannot cover everything, and so providing students with the tools or capacities for learning law may be the best offense.\textsuperscript{161}

D. Cognitive Reconstruction on a Mass Scale

Law schools seek to produce higher-order thinkers and sophisticated problem solvers for practice. So first, those students must also be active life-long learners to acquire the necessary domain and tacit knowledge. Then, they must organize that knowledge into complex schemas and scripts so they are able to retain and eventually retrieve and transfer that knowledge to a particular problem. Unfortunately, after sixteen years of a very different sort of

\textsuperscript{158} See Linder & Flowers, supra note 24, at 438.
\textsuperscript{159} See Linder & Flowers, supra note 24, at 438; see also Krieger, supra note 3, at 164 (discussing cognitive load theory).
\textsuperscript{161} Gantt, Pedagogy of Problem Solving, supra note 16, at 756-60.
education, many new law students lack the concepts of learning and learning strategies to do so. Two colleagues put it very well: this is like “bringing a knife to a gunfight.”

Suppose a first year student knows that half of the points on the Torts final examination will be awarded based on answers to multiple choice questions. It is the last week or so of the term. She is struggling to impose order in the form of complete course outlines. She believes as many students do that multiple choice examinations do not require the same rigorous effort to construct an ordered vision of the course as essay questions do. Little does she know that internalizing and memorizing for a rote, instrumental understanding might take longer than developing a deeper knowledge. She chooses surface learning strategies to maximize her success on the multiple choice questions and just “get by on the essays.”

The student in the hypothetical is experiencing “friction” between her established surface learning strategies and law school’s demands. Because she may not understand why – perhaps she now thinks she is not as smart as she thought – she has grabbed onto that

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162 Stuart & Vance, supra note 51, at 41.
163 See Vermunt & Vermetten, supra note 72, at 375 (reproduction-directed learning more prevalent in a law department of a European university).
164 Bloom, supra note 36, at 345 (first year students who do not do well started study too late).
165 See Lustbader, supra note 1, at 335-36.
167 Compare Pesek & Kirsher, supra note 14, at 538 (rote learning unit in study took twice as long as relational learning unit to cover same concepts), with Skemp, supra note 5, at 92 (assuming relational learning takes longer than instrumental learning).
168 See GARY A. MUNNECKE, HOW TO SUCCEED IN LAW SCHOOL 88 (XXXX) (“[m]ultiple choice tests place much greater emphasis on the ‘black letter law’ and less on the ‘big picture’ than essay tests.”); Kissam, supra note 8, at 443-45 (explaining “good paragraph thinking” and why essay examinations are objective examinations in disguise).
169 See Christensen, supra note 13, at 77-79.
“any port in a storm”: what is “tried and true.” At least she has figured out how to learn something; some students’ study behaviors even become disorganized and unproductive. Others cannot change or do not know how even if they know they should.

She does not know what price she may pay for that decision. She is not developing the active deep learning habits of a practicing attorney. She has constructed only weak schemas from her fragmented knowledge, so because she will never have invested meaningful effort to imposing order on torts as a field and seeing how its unifying themes provide structure and coherence, she may struggle to retain her knowledge and retrieve it later. She will never have crafted a roadmap or set of steps for solving torts problems. Transferring that knowledge to other courses, experiential opportunities, the precise rule statements the bar examination demands and her clients’ problems will be challenging.

This student has “misconceptions” about law and learning it. Such misconceptions are analogous to those many naïve learners develop in the process of learning new subjects:

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172 Vermunt & Vermetten, supra note 72, 373; Elliot et al., supra note 62, at 559.
173 See Gijbels et al., Approaches to Learning, supra note 84, at 333.
174 See supra text and notes at ____-____.
175 See Gantt, Deconstructing, supra note 2, at 442-43.
176 See Lung, supra note 33, at 745-46 (explaining to use knowledge it must be organized and not overly contextualized); see also Bloom, supra note 36, at 345 (“Students with unorganized, poorly analyzed exams rarely have clear course outlines.”).
177 See Lung, supra note 33, at 745-46, 751; Krieger, supra note 3, at 195; see also Timothy W. Floyd et al., Beyond Chalk and Talk: The Law Classroom of the Future, 38 OHIO N. U. L. REV. 257, 265-68 (2011) (retention depends on linkages students make between information).
178 A simple definition of “misconception is a conception that is incorrect compared to another conception that is correct.” Michelene T.H. Chi, Three Types of Conceptual Change: Belief Revision, Mental Model Transformation, and Categorical Shift, in HANDBOOK OF RESEARCH ON CONCEPTUAL CHANGE 61, 65 (Stella Vosniadou, ed., 2008) (hereinafter “Chi, Three Types”). A more sophisticated definition is that a misconception is “a student[s] attempt[] to interpret scientific information within an existing framework theory that contains information contradictory to the scientific view.” See Stella Vosniadou, Capturing and Modeling the Process of Conceptual Change, 4 LEARNING & INSTR. 45, 46 (1994) (hereinafter “Vosniadou, Capturing”).
for example, children who originally believed the earth is a flat square and at an intermediate stage of learning, reconstructed their knowledge and now believe that people inhabit a flattened sphere or a flat circular floor inside of a sphere.\textsuperscript{180} Such a misconception is not merely “wrong”; it is an existent system of knowledge, an “alternate conception” or “mental model” that is both coherent and could plausibly explain early students’ passive, rule-oriented experience early in law school.\textsuperscript{181}

Such misconceptions are very resistant to change if students discern no compelling reason to do so.\textsuperscript{182} Reconstructing their entire, entrenched framework of learning after having spent sixteen years nurturing it is not an attractive prospect.\textsuperscript{183} The usual conditions that could convince students to change are not apparent.\textsuperscript{184} For example, a student has no reason to change if she is not dissatisfied with the results of her learning strategies and concepts, i.e., her grades.\textsuperscript{185} Higher order thinking, “analysis” and legal reasoning are not initially intelligible

\begin{footnotesize}

\textsuperscript{179} Conceptual change is “some sort of causal process in which changes in or manipulations of, an embraced system of beliefs result in a new system of beliefs.” Asa Larsson et al., \textit{A Structural View on the Emergence of a Conception: Conceptual Change as Radical Reconstruction of Contexts}, SCI. EDUC. \textsuperscript{______}. “Reconstruction” is a change in the student’s construction of knowledge. \textit{See supra} text and notes at \textsuperscript{______}.\textsuperscript{180}

\textsuperscript{180} See Vosniadou, Capturing, \textit{supra} note 178, at 52-56, 65.


\textsuperscript{182} See Lori Smolleck & Vanessa Hershberger, \textit{Playing with Science: An Investigation of Young Children’s Science Conceptions and Misconceptions}, 14 CURR. ISS. IN EDUC. 1, 7-8 (2011) (stating those factors are dissatisfaction with the current concept and the intelligibility, plausibility and fruitfulness of the potential concept).

\textsuperscript{183} See id. at 7; Gokhan Ozdemir & Douglas B. Clark, \textit{An Overview of Conceptual Change Theories}, 3 EURASIA J. MATHEM., SCI. & TECH. EDUC. 351, 352 (2007) (response to only partially satisfactory results may be insufficient).

\end{footnotesize}
concepts nor is their utility for problem solving apparent. A more correct conception of law and learning may be implausible in light of a student’s fundamentally different past experience, and so the student may not appreciate its potential value in the learning process. So students may construct new knowledge onto this foundation of epistemological quicksand and possibly never realize the error.

Legal educators must confront students with their misconceptions from Day One to facilitate a radical conceptual reconstruction of students’ models of learning and learning law. The pedagogy of the confrontation must demand high levels of engagement and deep learning. “Telling” students their misconceptions are wrong is insufficient; they will need active learning opportunities to question their beliefs and form better expectations of law as a discipline and how it should be learned. Fortunately, students are ripest for change when they experience a new type of education and if taught relationally from the beginning, with an eye to cognitive discontinuities students may experience along the way, law school will not unintentionally confirm their misconceptions.

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186 See also Smolleck & Hershberger, supra note 184, at 7; Gantt, Deconstructing, supra note 2, at 417, 419-20, 423, 428 (observing that what professors say is “thinking like a lawyer” is not consistent with other sources of information such as course examinations, the bar examination, and practicing attorneys); see Kurt M. Saunders & Linda Levine, Learning to Think Like a Lawyer, 29 U.S.F. L. Rev. 121, 122-23. Much of the research on reconstruction and conceptual change comes from elementary school science where the new concept is established as “correct.” Chi, Three Types, supra note 178, at 66. The same is not true in concepts of law or learning.

187 See Smolleck & Hershberger, supra note 184, at 7; see supra text and notes at ____ - ____.

188 See Smolleck & Hershberger, supra note 184, at 8; Gantt, Deconstructing, supra note 2, at 423.

189 See Chi, Commonsense Conceptions, supra note 181, at 162-63.

190 See, e.g., Chi, Three Types, supra note 178, at 178 (recommending a “holistic confrontation” of a flawed mental model to facilitate reconstruction).

191 See Dole & Sinatra, supra note 182, at 121.


193 Vermunt, Relations, supra note ____ , at 208.

and will be difficult after sixteen years of passive learning environments that rewarded surface learning.\textsuperscript{195} Success depends to a great extent on the student’s motives and guidance from the learning environment, and that means doctrinal professors must lead the effort.\textsuperscript{196} But this is what meaningful learning is.\textsuperscript{197}

These sorts of misconceptions cannot be brushed aside. If not reconstructed, our students’ legal knowledge and sense of learning as a lawyer will be only as good as those of the ninety-five percent of second graders in one study who stated clearly that they knew the Earth was a sphere and a spherical planet but in more informal conversation, insisted it was flat anyway.\textsuperscript{198} Many will end up all but intellectually emasculated, unable to solve more than the most routine legal problems.\textsuperscript{199} Integrated courses and curricula provide opportunities to avoid that fate and lead students toward more sophisticated conceptions than otherwise.

III. \textsc{What We Talk About When We Talk About Integration}

The ultimate purpose of integration in professional schools is maximizing the speed and extent to which students develop expertise to solve complex problems.\textsuperscript{200} A curricular

\textsuperscript{195} See Vermunt & Vermetten, \textit{supra} note 72, at 380 ("Especially when students enter a new type of education, there may be a temporary misfit, or friction, between the students’ learning conceptions, orientations, and strategies, and the demands of the new learning environment . . . The studies also showed that, in general, the usual exams in the first years of higher education hardly capitalize on students’ use of critical, analytical and concrete processing strategies.").
\textsuperscript{197} See Saunders, \textit{supra} note 15, at 137.
\textsuperscript{198} See Smolleck & Hershberger, \textit{supra} note 184, at 6.
\textsuperscript{199} Tall, \textit{Continuities and Discontinuities}, \textit{supra} note 72, at 170-71.
\textsuperscript{200} See, e.g., Thomas A. Litzinger et al., \textit{Engineering Education and the Development of Expertise}, 100 J. ENGN’NG EDUC. 123, 124-28 (2011); Andrew R. Thompson et al., \textit{A Comparison of Student Performance on Discipline-Specific
structure that maximizes students’ acquisition of expertise provides carefully scaffolded experiences for students to guide them through the process of knowledge construction by making connections between different types of knowledge as opposed to “trying to improve their minds by filling them with new content.”

By their very nature, integrated courses offer students more and richer connections and experiences so they can construct and use more complex schemas and mental models. Some curricula then lead students through the application of schemas to solve increasingly complex, ill structured problems. With all of these come opportunities for students to hone intellectual, professional and interpersonal capacities. Together, these dynamics accelerate students’ acquisition of expertise.

Integration also facilitates knowledge retention and transfer for use in other settings. Both learning in context and teaching methods characteristic of integrated courses promote active and deep learning as well as more relational and structured knowledge. In turn, all of these promote knowledge retention, accessibility and transfer, especially with guidance from

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204 Tynjälä, supra note 101, at 362-63, 382.

205 Tynjälä, supra note 101, at 361-62, 427.

206 See Kowalski, supra note 104, at 86; Rebello, supra note 152, at 20 (reporting student view that concurrent teaching of calculus and physics would help them apply calculus in physics). Professors must use integration to be sure certain students internalize its meaning. See Kulasegaram, supra note 203, at 5.

207 See, e.g., Gijbels et al., Effects of Problem-Based Learning, supra note 22, at 44-47 (students educated with problem-based learning possess “highly structured network of concepts and principles”); Christopher Justice et al., Inquiry-Based Learning in Higher Education: Administrators’ Perspectives on Integrating Inquiry Pedagogy into the Curriculum, 58 High. Ed. 841, 843 (2009) (inquiry); Baeten, supra note 72, at 249 (students perceiving assessment as more authentic employed deeper learning strategies); Hoidn & Karkkainen, supra note 117, at 31 (authentic problems produce increased motivation and deep learning).

208 Tynjälä, supra note 101, at 358, 374. See, e.g., Lili Cui et al., College Students’ Transfer from Calculus to Physics, 818 AIP Conf. Proc. 37, 37 (2006); Dolmans & Schmidt, supra note 149, at 536-37; Rebello et al., supra note 152, at
a professor about future application. In the absence of specific guidance, students who are able to integrate a curriculum for themselves are more likely to transfer their knowledge.

This Part examines curricular, course and topical integration from three perspectives – concepts, shapes, and connections – and shows how integration contributes to the outcomes described above. The concept of integration is to “blur boundaries” between disciplines or between theory and practice. The shapes of curricular and course integration are horizontal, vertical and spiral. Connections are “points of integration” between the subjects and activities that determine the identity and order of topics in an integrated course. Together these three perspectives inform the design of an integrated course or curriculum.

A. Concept: Blurring the Boundaries

In curriculum and course design, “integration” is a word of many meanings and a phenomenon that manifests itself in many ways. It is partly a matter of degree: a continuum representing the extent to which the program of education is ordered based on disciplinary or departmental boundaries between total siloing and total transcendence.

209 See Reder, supra note 155, at 7.
210 See Kowalski, supra note 104, at 86.
211 See Fogarty, supra note 23, at 61 (describing a continuum “[b]eginning with an exploration within single disciplines . . . and continuing with models that integrate across several disciplines . . . that operate within learners . . . and finally across networks of learners.”); see also RONALD M. HARDEN, Planning a Curriculum, in A PRACTICAL GUIDE FOR MEDICAL TEACHERS 13, 21, 25 (John A. Dent & Ronald M. Harden, eds., 2001) (explaining SPICES model for medical education as multiple continua: problem-based to information-oriented, integrated/inter-professional to subject/discipline-based; community-based to hospital-based; elective-driven to uniform; and systematic to opportunistic) (hereinafter “HARDEN, Planning a Curriculum”).
212 See, e.g., Harden, Integration Ladder, supra note 23, at 551-52; Fogarty, supra note 23, at 61.
boundaries fits into a concept of learning as making sense of life and human experience, which translated to professional school is practice.

The “Integration Ladder,” a leading description of that continuum, contains eleven steps between the two extremes:

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<tr>
<th>TYPE OF INTEGRATION</th>
<th>DEFINITION</th>
<th>EXAMPLE</th>
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<tbody>
<tr>
<td>Isolation</td>
<td>Professors organize their own courses and are unaware of what is covered in other classes</td>
<td>Many first-year law school curricula today</td>
</tr>
<tr>
<td>Awareness</td>
<td>Professors are aware of colleagues’ coverage and may take account of it in their own classes but have no formal contact with colleagues related to their respective courses</td>
<td>The Torts professor points out the connection between the stream of commerce in personal jurisdiction when covering products liability</td>
</tr>
<tr>
<td>Harmonization</td>
<td>Professors consult with colleagues and make explicit to students the connections between classes</td>
<td>Civil Procedure professor provides a Torts professor with a charting technique for summary judgment motions for the Torts professor to use to match elements and evidence in Torts cases</td>
</tr>
<tr>
<td>Nesting</td>
<td>Aspects relating to one course are included in another course that otherwise would not cover those aspects</td>
<td>Students draft a complaint in Torts class at approximately the same time Civil Procedure is covering pleadings</td>
</tr>
<tr>
<td>Temporal Coordination</td>
<td>Professors of different subject matters coordinate timing on a day-to-day basis to highlight relationships between topics</td>
<td>Scheduling Torts and Civil Procedure consecutively and using liability and apportionment concepts covered in Torts to animate joinder, jurisdiction and preclusion coverage in Civil Procedure</td>
</tr>
<tr>
<td>Sharing</td>
<td>Professors plan and implement joint teaching with interaction between them in one part of a course</td>
<td>The Torts professor teaches a unit jointly with the Civil Procedure professor about the Buffalo Creek Disaster, a mass tort action in West Virginia described in a book that discusses both the substantive and procedural aspects of the litigation</td>
</tr>
<tr>
<td>Correlation</td>
<td>Multi-subject teaching occurs concurrently with teaching of the subjects separately</td>
<td>The Torts and Civil Procedure and Torts professors hold a joint class every two weeks for discussion of overlapping cases and strategic concerns in litigation</td>
</tr>
<tr>
<td>Multi-disciplinary</td>
<td>Emphasis of the course is on the</td>
<td>Civil Procedure and Torts professors hold a</td>
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<table>
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<tr>
<th>Integration</th>
<th>Inter-disciplinary</th>
<th>Trans-disciplinary</th>
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<tbody>
<tr>
<td>The integration of the disciplines, but each subject looks at themes from the perspective of its own profession.</td>
<td>Two subjects are taught in one course by considering topics in light of both</td>
<td>A “course” offers exploration of an entire “field of knowledge as exemplified in the real world” and all other knowledge needed to internalize it comprehensively.</td>
</tr>
<tr>
<td>A joint class every two weeks in which students are engaged in authentic learning experiences that inform coverage and instruction in both courses.</td>
<td>A first-year course called “Introduction to Civil Litigation” in which one professor (or more) teaches topics in both Civil Procedure and Torts and designs the course so topics from each subject are used in class activities.</td>
<td>A personal injury clinic in which students are litigating a case in which students encounter contract, insurance, bankruptcy, procedure and other issues depending on how the litigation develops.</td>
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Some of these “steps” are really thematic curricular or course design organization models, not the most pedagogically profound and beneficial forms of integration. For example, some law schools infuse ethics, writing or skills and values “across the curriculum” in the hope of producing higher levels of student achievement in the infused subject or skill. To measure infusion’s success will require controlled studies that are unfortunately very difficult to design, but the odds are not favorable. While the infused subject or skill may be an excellent tool for teaching the receiving subjects, students are less likely to learn, retain and transfer resulting knowledge of the infused subject or skill itself. For one thing, the professor may not truly be teaching it. Such infusion curricula can also obscure connections and produce a fragmented understanding of the infused subject or theme.

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216 Integration has pedagogical value when, by virtue of integration, “students produce behaviors and outcomes in both activities that indicate progress toward that objective.” See Linder & Flowers, supra note 24, at 437; see also Roland Case, Our Crude Handling of Educational Reforms: The Case of Curricular Integration, 19 CANADIAN J. EDUC. 80, 85 (1994) (integration exists where “increased understanding promoted by any of the suggested activities contributes . . . to an understanding of the other, supposedly related topics.”). See infra Part III.C (discussion of “pedagogically productive points of integration”).


218 One example is “writing across the curriculum.” Writing is accepted as a productive pedagogy in many subjects. See generally Janet Emig, Writing as a Mode of Learning, 28 COLL. COMP. & COMM’NS 122 (1977). Except to the
Another example of integration—that-really-isn’t is a “block scheduled” class of two subjects that treats them separately, rather than as integrated whole. If the professor divides the class period in half and teaches one subject in one and the other in the other, the students are just taking two siloed classes taught by the same professor. By virtue of having control of the timing of topical presentation, the professor might have an opportunity to integrate some topics or activities topics, but to the extent the course presents one subject for a few weeks and then the other for a few weeks, it might create a “ping-ponging” effect and interfere with the continuity of student learning.

Extent that “practice makes perfect” — and it often does — unless the teacher in the non-writing subject is teaching writing, infusion into the non-writing course will not itself improve writing skills and since it imposes considerable work on both students and professors, it may be counterproductively inefficient. See Pamela Lysaght, Writing Across the Law School Curriculum in Practice: Considerations for Casebook Faculty, 12 LEGAL WRITING: J. LEGAL WRITING INST. 191, 194-204 (2006); cf. Susan E. Thrower, Teaching Legal Writing Through Subject-Matter Specialties: A Reconceptuation of Writing Across the Curriculum, 13 LEG. WRIT. J.: J. LEGAL WRIT. INST. 3, 4-5 (2007) (describing a hybrid “writing across the curriculum” program of specialized writing courses “in the discipline” of various doctrinal subjects as opposed to teaching writing in doctrinal classes). Similarly, a Civil Procedure professor using a complaint drafting activity to review jurisdiction and illustrate pleading standards is probably not teaching technical drafting, and though students may learn much doctrinal law from such an assignment, they are unlikely to learn much more than fragmented information about drafting, which does present a small risk of later interfering with students’ learning in an upper class drafting course taught by an expert in the field. Cf. Pesek & Kirschner, supra note 14, at 537-39 (describing pedagogical damage from teaching students instrumentally prior to relationally); Peter A. Joy, The MacCrate Report: Moving Toward Integrated Learning Experiences, 1 CLINICAL L. REV. 401, 406-07 (describing first-year program in which students solve one problem about an ethical issue in each class). So efforts to “infuse” skills and values or writing “across the law school curriculum” may be wasted efforts in the absence of great curricular and methodological sensitivity. See Case, supra note 216, at 86-87 (observing that organizing a curriculum around the letter “A” is unlikely to teach students much about the letter “A” by virtue of that organization and the individual topics, such as “algebra” and “atlases,” are unlikely to improve students’ learning of any other topic).

Case, supra note 216, at 86 (observing this phenomenon in elementary and middle school curricula organized by themes); cf. Emig, supra note 218, at 124-26 (presenting writing as a process of making and adjusting conceptual connections).
A “sharing” model would be more productive and not difficult to implement. Take pleading and cause-in-fact. Both are difficult topics, because both require precise, active fact analysis that first-year passive learners may be loath to perform in Torts and unable to perform in Civil Procedure, with its canon that arises from substantive law areas first-year students may not mastered.²²³ It is almost impossible to plead cause-in-fact without active, precise fact analysis, and students are more likely to learn to apply the Conley-Twombly standard if the substantive context is negligence, a first year topic, rather than antitrust.²²⁴

The “content-based” case for curricular recognition of at least some subjects’ inseparability is strong, but professors do not need full course integration to harness of the benefits of integration, especially if they collaborate. Torts and Civil Procedure professors can plan their respective syllabi so when students are studying the Conley-Twombly pleading standard in Civil Procedure, they are writing a brief memorandum of law synthesizing a closed universe of cases applicable to cause-in-fact in a particular negligence hypothetical,²²⁵ which itself integrates use of important intellectual capacities.²²⁶ Then, the two professors should join forces in the classroom for an activity in which groups of three draft the causation allegations for a complaint arising from the hypothetical, an authentic learning opportunity more likely to result in retention and transfer of the topics.²²⁷ Two professors together will be

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²²⁴ See Krieger, supra note 3, at 167-69.
²²⁶ See supra text and notes at ____-____.
able provide significant, immediate and targeted guidance to more students.\textsuperscript{228} Later attention to a few basic Evidence topics such as “relevance” would further animate authentic activities in either course or shared between the courses related to discovery or summary judgment.\textsuperscript{229}

B. Shape: Horizontal and Vertical Integration

Integration also connotes multi-dimensional shapes: horizontal, vertical and spiral. All three characterize the complaint drafting activity above.\textsuperscript{230}

1. Horizontal Integration

Horizontal integration blurs subject-matter boundaries, which facilitates richer thinking and problem solving opportunities.\textsuperscript{231} Topic and concept organization in a horizontally integrated course or curriculum should underscore interconnectivity and eliminate artificial separations between subjects.\textsuperscript{232} The examples of integration in Chart A above are mostly examples of horizontal integration.\textsuperscript{233}

A more modern-practice-oriented perspective suggests an avalanche of horizontal curricular reorganization possibilities with plain pedagogical potential. Would jurisdiction and

\textsuperscript{228} See Linder & Flowers, supra note 24, at 438.
\textsuperscript{229} Compare, e.g., Fed. R. Civ. P. 26(b)(1) (“Parties may obtain discovery regarding any nonprivileged matter that is relevant to any party’s claim or defense.”), with Fed. R. Evid. 401 (“Evidence is relevant if: (a) it has any tendency to make a fact more or less probable than it would be without the evidence; and (b) the fact is of consequence in determining the action.”).
\textsuperscript{230} See supra text and notes at ___ - ____.
\textsuperscript{231} See Fogarty, supra note 23, at 64 (describing the “integrated model” of an curriculum as one where “interdisciplinary topics are rearranged around overlapping concepts and emergent patterns and designs); Harden, Integration Ladder, supra note 23, at 555 (defining interdisciplinary integration as “use of two or more academic disciplines simultaneously” (quoting P. Jarvis, An International Dictionary of Adult and Continuing Education (1990)).
\textsuperscript{232} Sefton, supra note 22, at 184.
\textsuperscript{233} See Pearson & Hubbal, supra note 222, at 4.
choice of law be more wisely introduced or repeated in Constitutional Law with other
justiciability, federal-state and inter-state relations topics?\textsuperscript{234} The common law did not
separate property and contracts until recently, nor do any but the most specialized
practitioners do today and few would eschew business torts.\textsuperscript{235} The rise of the regulatory state
has converted separation of powers into the constitutional foundation of administrative law;
transferring separation of powers from Constitutional Law to a Administrative Law course, that
today arguably should be required, would be more realistic and avoid duplicative coverage.\textsuperscript{236}

2. \textbf{Vertical Integration}

Both types of vertical integration are familiar to legal educators.\textsuperscript{237} The first type is
integration of authentically practice-rooted activities such as a “litigation lab” or contract
drafting assignment,\textsuperscript{238} even in the first year.\textsuperscript{239} The second type spans an entire program of
education if “interlocking, mutually supporting” steps proceed over time to the program’s
goal,” usually via ever more sophisticated and authentic learning activities.\textsuperscript{240}

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\textsuperscript{234} Cf., e.g., Steel Co. v. Citizens for a Better Environment, 523 U.S. 83, 88-93 (1998) (explaining the jurisdictional
connections between statutory standing, Article III standing and subject matter jurisdiction).

\textsuperscript{235} See \textit{generally} Chester & Alumbaugh, supra note 28 describing a theoretical “Civil Obligations” course integrating
the two), see also Grey, supra note 27, at 1253-54, 1258.

\textsuperscript{236} See, e.g., 1 \textsc{Charles Koch & Richard Murphy}, \textit{Admin. L. & Pract.} \S\S 1:11, 1:13 (2015); 3 \textit{id.} \S 7:10; 4 \textit{id.} \S 11:12.

\textsuperscript{237} See, e.g., \textsc{Carnegie Report}, supra note 3, at 111-14; \textsc{Roy Stuckey Et Al.}, \textsc{Best Practices for Legal Education} 165-67
(2007) (hereinafter “\textit{Best Practices}”).

\textsuperscript{238} See \textsc{Harden}, \textit{Planning a Curriculum}, supra note 211 at 16.

\textsuperscript{239} This includes the increasingly “signature” medical school pedagogy, problem-based learning. See \textit{generally}
Shapiro, supra note 21 (Civil Procedure); Moskovitz, supra note 21. What Tonya Kowalski calls “integrating the
curriculum” is primarily the student’s process of integrating schemas, though she recommends curricular
integration to facilitate that process. See, e.g., Kowalski, supra note 104, at 86.

\textsuperscript{240} Case, supra note 216, at 85.
A curriculum need not offer authentic learning opportunities or an experiential capstone to be classified as “vertically integrated,” but given the current pressure for more experiential education, a law school might plump for vertical integration to maximize the consequentiality of a third-year clinic or externship experience. An ambitious version would start in the first year curriculum would start by integrating two core doctrinal courses with an emphasis on intellectual capacity-building and authentic activities. Chosen coverage would make logical connections in an orderly logical way to anticipated coverage in related core and horizontally and vertically integrated courses in the second year. Those courses would emphasize deeper, advanced doctrinal concepts and increasingly more authentic learning activities, perhaps through a product liability simulation or new business organization problem with a floor plan financing arrangement. These courses would provide the supportive doctrinal content also connected to its use in realistic applications prior to third-year live-client experiential programs.

<table>
<thead>
<tr>
<th>COURSE</th>
<th>COVERAGE</th>
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<tr>
<td>Introduction to Civil Litigation I and II – first year</td>
<td>Integrating procedure and tort topics in the context of a year-long product liability simulation.</td>
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<td></td>
<td>✓ Procedure topics would include personal jurisdiction, subject-matter jurisdiction, venue, pleading, basic discovery, joinder/res judicata/supplemental jurisdiction</td>
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See G. Lloyd-Jones et al., The Use of Multidisciplinary Consensus Groups in the Planning Phase of an Integrated Problem-based Curriculum, 32 MED. EDUC. 278, 280 (1998); see also Thompson, supra note 200, at 370.

Within the existing curriculum, a law school could sequence Civil Procedure, Evidence, Pre-Trial Practice, Trial Practice, and Appellate Advocacy followed by a litigation-based clinic or externship with structural and coverage links that reveal application of doctrine in practice that assist students constructing knowledge.


Which would integrate Business Associations, Commercial and Secured Transactions topics. See id. at 924-27.


A colleague and mine proposed and faculty approved such a program at Arizona Summit Law School.
Civil Litigation III – third semester (with Evidence and Administrative Law co-requisites)

Intermediate training for prospective civil litigators and others seeking an in-depth experience integrating development of litigation-oriented capacities with substantive topics in a coherent practicum.

- Possible fields of law might include one or more of administrative law, civil rights; environmental law; health law; or business and commercial disputes, with research-driven coverage
- Procedure topics might include advanced jurisdiction, Erie doctrine, advanced joinder, discovery, and dispositive and evidentiary motions practice.
- Practicum activities might include more independent litigation planning, pleading, taking discovery, pre-trial dispositive motions and motions in limine

Civil Litigation IV – fourth semester (with Professional Responsibility co-requisite)

Trial practice simulation of case from Civil Litigation III

- Additional fields of law might include insurance law or bankruptcy
- Additional procedure/evidence topics might include proof of facts, objections at trial, trial-related procedure, post-trial motions and preclusion
- Practicum activities might include preparation for trial, trial simulation, and post-trial motions

Civil Litigation Clinic – third year

Litigation oriented clinical program

3. Spiraling Out of Control!!

A program of learning such as that described in Chart II is both horizontally and vertically integrated and therefore, a “spiral curriculum.”247 The quintessential characteristic of a spiral curriculum that topics continually “spiral back around,” which means it returns over and over to key concepts “that permits [the] continual deepening of one’s understanding of [ideas] that comes from using them in progressively more complex forms.”248 During each reprise,

248 See BRUNER, supra note 247, at 11-13, 51-54.
students construct knowledge by connecting new complexities to the existing schemas.249 Therefore, spiral curricula facilitate students honing higher-order and independent thinking,250 problem-solving capacities and knowledge transfer.251

Spiral course design defies the notion that some concepts are beyond the reach of novice learners252 in part by solving this practical course design problem: what if improving mastery of topic A requires students to understand topic B, but they have not yet encountered B in a linear, topic-by-topic curriculum?253 A spiral curriculum presents sufficient aspects of topic A then switches to elementary aspects of topic B with the benefit of students’ introduction to A, and only then returns to more sophisticated aspects of topic A, repeating this dynamic, adding spirals of B and introductions of additional concepts as needed.254

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249 See Bruner, supra note 247, at viii-ix, 13, 52-54; Alison King, Guiding Knowledge Construction in the Classroom: Effects of Teaching Children How to Question and How to Explain, 31 AM. EDUC. RES. J. 338, 339-40, 361-64 (1994); R.C. Bandaranayake, Study Skills, in A PRACTICE GUIDE FOR MEDICAL TEACHERS 404, 410-11 (John A. Dent & Ronald M. Harden, eds., 2001) (describing problem-based curricula that return to the same individual problem over and over at increasing levels of complexity); see also Jarvis, supra note 66, at loc. 68, 78-82.

250 Bruner, supra note 247, at 12-13, 52-53; Wells, supra note 29, at 73-74.

251 See Husband, supra note 20, at 4-6; Dolmans et al., supra note 155, at 733-34, 736-37.

252 According to Professor Bruner:

[T]he basic ideas at the heart of all science and mathematics and the basic themes that give form to life and literature are as simple as they are powerful . . . . The early teaching of science, mathematics, social studies, and literature should be designed to teach these subjects with scrupulous intellectual honesty, but with an emphasis upon the intuitive grasp of ideas and upon the use of these basic ideas. A curriculum as it develops should revisit these ideas repeatedly, building upon them until the student has grasped the full formal apparatus that goes with them.


The “medical model” that legal education reform advocates admire is not merely experiential (vertically integrated); it is spiral as well.255 One typical model is a modified two-plus-two year program offering horizontally integrated modules of basic science courses in the first year; application of the basic sciences in diagnosis, pathophysiology and pharmacotherapy organized by body system in the second year; and clinical electives and clerkships in the third and fourth years.256 One pharmacy school has invented “conceptual hooks” or spirals to connect students’ pre-enrollment knowledge of familiar disease states to the basic sciences curriculum organized around those disease states.257 Some health care professionals train pursuant to astonishingly elaborate integrated curricula and delivery methods.258

Law school curricula lack orderly, deliberate horizontal or vertical integration, even though the course subjects invite it. Health Law, for example, is a cornucopia of advanced subjects.259 Though the major topics in the first five hundred pages of the leading casebook are presented topically, they are clearly integrable: medical error (malpractice and enterprise liability), professional licensing, quality control regulation, and the professional-patient relationship, liability.260 But unless the professor connects the dots, students may not see the

255 E.g., Michael Martinez, Legal Education Reform: Adopting a Medical School Model, 38 J. L. & EDUC. 705, 708-09 (2009); cf. Drew Coursin, Comment, Acting Like Lawyers, 2010 WIS. L. REV. 1461, 1478-98 (labeling the standard curriculum model in medical schools as integrated in the second year and describing such a program for law schools without labeling it as spiral).

256 See, e.g., Khalil & Kibble, supra note 19, at 200 (University of Central Florida Medical School).

257 Husband, supra note 20, at 6.


260 See FURROW, supra note 259, at 1-559.
connections between the topics or that they are spiraling back from foundational courses. Clinics and externships have prerequisites, but not the logical programs of preparation that characterize medical school curricula.

An individual course may also have a spiral structure. This very simple spiral course design model in a traditional Civil Procedure course starts with significant domain knowledge of personal jurisdiction, highlighting the concept of “stream of commerce” from *World-Wide Volkswagen v. Woodson*. The course continues with subject matter jurisdiction but then personal jurisdiction spirals back around, integrates with subject-matter jurisdiction, and illustrates the practical concept of procedure-as-tool: how the defendants in *World-Wide Volkswagen* engineered dismissal of two non-diverse defendants for lack of personal jurisdiction to create grounds for removal. Personal jurisdiction emerges again as a determinant of venue. Finally, personal jurisdiction, subject matter jurisdiction and venue all meet again in a sophisticated, authentic pleading assignment.

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261 See, e.g., Lung, supra note 33, at 752-53; Wenger, Reframing Legal Education’s “Wicked Problems”, 61 Rutgers L. Rev. 867, 941-43 (2009); Jessica Muller et al., Lessons Learned About Integrating a Medical School Curriculum: Perceptions of Students, Faculty and Curriculum Leaders, 42 MED. EDUC. 778, 782 (2008) (students in newly integrated medical school curriculum criticized lack of professor coordination resulting in duplicative coverage).

262 See Krieger, supra note 3, at 200-01 (observing that clinical programs should focus on teaching problem solving in the context of law students know well); BEST PRACTICES, supra note 237, at 188-97 (making little reference to doctrinal knowledge necessary for clinic success).


264 See David DiBiasio et al., Evaluation of a Spiral Curriculum for Engineering, 29th ASEE/IEEE Frontiers in Education Conf. 2 (1999) (in spiral curriculum “fundamentals were [] acquired on a ‘just-in-time’ basis” for projects).


267 See Fed. R. Civ. P. 8(a)(1) (“A pleading that states a claim for relief must contain: (1) a short and plain statement of the grounds for the court’s jurisdiction . . . .”).
Civil Procedure cries out for a spiral curriculum integrating another subject matter. Procedure never exists in practice in the absence of a “substantive context.” It also invites authentic activities.

Suppose the other subject is Torts. The course begins with few torts and procedure topics taught in isolation. Then, they intersect during the first presentation of *World-Wide Volkswagen*, which interprets language in Oklahoma’s long-arm statute permitting its courts to exercise personal jurisdiction over a person “causing tortious injury in this state.” Then the course continues with subject matter jurisdiction and then both personal jurisdiction and torts

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268 This is a very simplified version of the course design of my Civil Procedure I class before Arizona Summit Law School integrated its entire first-year curriculum.

269 See LLEWELLYN, supra note 18, at 10-11.

in the form of products liability spiral back again, *World-Wide Volkswagen* having also been a pioneering products liability case and fascinating litigation tale.\(^{271}\)

Procedure and torts spiral back, perhaps integrated in a group memorandum assignment with a closed universe of authorities. A plaintiff sues two defendants in state court, one of whom is a citizen of the same state as the plaintiff.\(^{272}\) The plaintiff’s claim against the non-diverse defendant is “novel,” suggesting the plaintiff fraudulently joined the non-diverse defendant in order to defeat federal subject matter jurisdiction. This problem has a deep structure similar to the personal jurisdiction-subject-matter jurisdiction dispute students had just studied in *World-Wide Volkswagen*.\(^{273}\) Students must navigate the procedure: first, transferring their subject matter jurisdiction knowledge to the new problem,\(^{274}\) and second, adding new knowledge (removal and remand).\(^{275}\) Then, the students must navigate the substance to determine not only whether the plaintiff has stated a claim but whether plaintiff has a “reasonable or colorable claims for relief,”\(^{276}\) which requires more sophisticated intellectual capacities than pure application of law to fact.\(^{277}\)

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\(^{272}\) See 28 U.S.C. § 1332(a) (diversity jurisdiction); Strawbridge v. Curtiss, 3 U.S. (Cranch) 267 (1806) (federal court jurisdiction exists only if all plaintiffs are citizens of different states from all defendants).

\(^{273}\) See Charles Alan Wright et al., *FED. PRACT. & PROC.* § 3641.1 (hereinafter “WRIGHT & MILLER”).


\(^{275}\) See 28 U.S.C. § 1441(a), (c).

\(^{276}\) WRIGHT & MILLER, *supra* note 273, § 3641.1.

\(^{277}\) Students must critically evaluate what others might reasonably believe, even if the student does not believe it. See Nelson P. Miller & Bradley J. Charles, *Meeting the Carnegie Report’s Challenge to Make Legal Analysis Explicit – Subsidiary Skills to the IRAC Framework*, 59 J. LEGAL EDUC. 192, 202 (2009). The same is true in when determining if a judge should grant summary judgment by reading the evidence in “the light most favorable to the non-moving party” summary judgment standard see Miller & Charles, *supra*, and then applying the “no genuine issue of material fact” standard. *Fed. R. Civ. P.* 56(a). Many students struggle to do so; instead, they just apply the law and decide the case as they see it. Joseph W. Glannon et al., *Coordinating Civil Procedure with Legal Research and Writing: A Field Experiment*, 47 J. LEGAL EDUC. 246, 256-57 (1997).
Therefore, both subject matter jurisdiction and torts have spiraled back around and met in more sophisticated circumstances, in a vertically integrated activity that further integrates both procedure and torts horizontally. Students add to their construction of jurisdiction law; learn the new tort topic relationally with their synthesis and outlining capacities.\textsuperscript{278} Then, they actively solve a problem with a similar deep structure to World-Wide Volkswagen problem they observed someone else solve earlier.\textsuperscript{279} Transfer from \textit{World-Wide Volkswagen} to this problem is really just knowledge construction, otherwise known as “learning.”\textsuperscript{280} Moreover, transfer is more likely to occur from this problem to the next, because students are progressing through the process of making connections and applying processes to structured problems in cases and hypotheticals to more authentic and increasingly ill-structured problems.\textsuperscript{281} Students are on the road to more expertise more quickly.\textsuperscript{282}

C. Connections: Points of Integration

“Points of integration” provide the organizing principle for integrated first year courses\textsuperscript{283} that determines the order and emphasis of topics and design elements.\textsuperscript{284} The points may be connections between one or more doctrinal courses or subjects, intellectual

\textsuperscript{278} See \textit{supra} text and notes at ____-____ (discussing Wangerin).

\textsuperscript{279} See Lung, \textit{supra} note 33, at 739-40 (explaining the limits of vicarious learning).

\textsuperscript{280} See Rebello, \textit{supra} note 152, at 29.

\textsuperscript{281} See Rebello, \textit{supra} note 152, at 31; Lung, \textit{supra} note 33, at 747-49, 752; Husband, \textit{supra} note 20, at 1-2.

\textsuperscript{282} Developing expertise can be thought of as “surpassing oneself in a process of progressive problem-solving.” See Tynjälä, \textit{supra} note 101, at 363 (citing Bereiter & Scardamalia (1993)).

\textsuperscript{283} I have coined the term “points of integration,” because no course will or should be fully integrated from beginning to end. Case, \textit{supra} note 216, at 86-88.

capacities, professional capacities, or authentic activities. Some construct integrated courses or curricula based on connections between the points such as the structure of knowledge as used in practice or opportunities to hone important intellectual and professional capacities. Some may be very creative, rooted in common methods of practice, or simply useful for teaching the course. No matter which, the points of integration a faculty chooses for a learning opportunity should pack as big a pedagogical punch as possible.

1. “Pedagogically Productive Points of Integration”

“Pedagogically productive points of integration” are those in which “students produce behaviors and outcomes in [multiple] activities that indicate progress toward [the same] objective.” Two integrated activities should produce those behaviors and outcomes because of the integration so “increased understanding promoted by [one] activity contributes [] to an

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285 E.g., Lisa Westcott & Mandy Shircore, Experience of a Small Regional Law School in Preparing Students for a Journey Through Law, 13 JAMES COOK U. L. REV. 81, 94-99 (2006) (integrated undergraduate law program focused on remediating lack of preparedness and “generic” skills at James Cook University, Australia) (describing an integrated first-year undergraduate law curriculum with a unit called “Governance through Adjudicative Law”: in one course students studied the structure of the judiciary and judicial reasoning; in another, students studied case briefing and research with the benefit of a case from a different third course as an example; and in the final course, students studied cases reflective of judicial activism and the role of precedent and applied judicial reasoning); Synman & Kroon, supra note 19, at 27 (disease-based dental curriculum at University of Pretoria, South Africa).

286 E.g., Westcott & Shircore, supra note 286, at 94-99 (integrated undergraduate law program focused on remediating lack of preparedness and “generic” skills at James Cook University, Australia); Kowalski, supra note 104, at 52-54 (“Core Skills Approach”).

287 E.g., Pearson & Hubbel, supra note 222, at 4 (medicinal chemistry course harmonized with a pharmacy skills laboratory “through the inclusion of chemical structures on a ‘Top 200’ drugs list used in both courses.”).

288 E.g., Donald E. Richards, Integrating the Mechanical Engineering Core, Proc. 2001 Am. Soc. For Eng’ng Educ. Ann. Conf. & Expo., at 1, 16-17 (core engineering curriculum at Rose-Hulman Institute of Technology organized around universally applicable problem-solving methods and other key concepts).

289 E.g., Klement, supra note 258, at 159-60 (problem-based medical school curriculum organized around dissection, because dissection cannot be taught in a body systems approach).

290 “Pedagogically productive points of integration” is a phrase I have coined to stand for Linder’s & Flowers’ definition of “integration.” Linder & Flowers, supra note 24, at 437.

291 Linder & Flowers, supra note 24, at 437.
understanding of the other.” The ultimate goal is for an integrated course or set of learning activities to produce more and better student behaviors and outcomes than in siloed courses because of the integration. Otherwise, integration is merely another, complicated, time-consuming, and resource-draining teaching technique.

Law professors believe use of intellectual capacities essential to case reading comprehension, synthesizing cases, and constructing schematic outlines are also essential to good outcomes – e.g., high quality final examinations – so each will beget the other. Neither is likely to be true in many cases. First, the demands law schools make of students to acquire superficial domain knowledge and students’ woeful underpreparedness to do so crowds

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292 Case, supra note 216, at 86.
293 Cf. Case, supra note 216, at 87-88 (describing counterproductive integration that ignores unique aspects of a discipline or those that facilitate teaching others); Linder & Flowers, supra note 24, at 438 (“The challenge is to develop knowledge and skills in learning contexts consistent with the contexts of their use or to find ways of merging the contexts.”); Thomas M. Brewer, Integrated Curriculum: What Benefit?, 103 ARTS EDUC. POL. REV., 31, 32-34 (2002) (observing that research indicating that linkages between the arts and other subjects are most advantageous when the subjects are taught independently).
294 See Timothy W. Aurand et al., Cross-Functional Business Programs: Critical Design and Developmental Considerations, MID-AM. BUS., Fall 2001, at 21, 25-26. The “downsides” of integration are beyond the scope of this article, and I hope to address them elsewhere. Certainly, integrating courses or an entire curriculum requires extensive planning and coordination among faculty. See, e.g., Muller et al., supra note 88, at 782 (integration obscured, because faculty lacked context for their individual lectures). Faculty may be loath to abandon traditional disciplines. See James R. Morgan & Robert W. Bolton, An Integrated First-year Engineering Curriculum, Proceedings of the Frontiers in Education Conference, Tempe, AZ, Nov. 1998, at 4 (Texas A&M University, engineering program); Lloyd-Jones, supra note 241, at 281. Integration can require additional administrative resources and adjustments. E.g., Richard Stull & Rodney A. Carter, Integrating the Pharmacy Curriculum: More to Consider Than Improving Learning, 66 AM. J. PHARM. EDUC. 407, 409 (2002) (integration demanded new layer of management and lines of authority became confused). Integrated courses usually require new teaching methods and creating new materials from scratch; there are no textbooks and teacher’s manuals for guidance. Beichner et al., supra note 227, at S19-S20; Ghosh & Pandya, supra note 26, at 7. Truly integrated assessments are more difficult to create and time-consuming to mark. See, e.g., Khalil & Kibble, supra note 19, at 207; Westcott & Shircore, supra note 12, at 100. Faculty incentive systems discourage faculty from the time investment develop and teach integrated classes. Scherpereel & Bowers, supra note 19, 10-11 (focus on student evaluations in retention and promotion decisions, plus teaching credit that fails to compensate for time commitment acts).
295 See Kissam, supra note 8, at 440-44; see also Linder & Flowers, supra note 24, at 437. See also Henk G. Schmidt, Impact of Problem-Based, Active Learning on Graduation Rates for 10 Generations of Dutch Medical Students, 43 MED. EDUC. 211, 213, 216 (2009) (hereinafter “Schmidt, Impact on Graduation Rates”).
296 See Gantt, Pedagogy of Problem Solving, supra note 16, at 756-60; cf. Linder & Flowers, supra note 24, at 438 (tendency to extend coverage “is exacerbated by our desire to have students be highly accomplished.”)
297 See supra Part II.
out some students’ ability to learn much else. Second, students do not just “pick up” these thinking, learning and problem-solving behaviors and capacities without direction or context, so unless the professor has taught them explicitly, students are unlikely to be using them, despite efforts of legal writing and academic success programs to pick up the slack. Finally, many students do not use their most sophisticated intellectual capacities to “solve problems” on final examinations, because final examinations neither demand nor permit them to do so. Therefore, students do not practice application of those capacities.

Therefore, final examination scores are at best indirect measures of students’ proficiency with the desired capacities and behaviors and the professor’s contribution to students’ professional development. Many factors influence examination outcomes. A well-designed integrated course, however, offers opportunities for the professor to teach the desired behaviors directly and then both observe and guide students as they use and convert them into well-honed intellectual and professional capacities.

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298 Lung, supra note 33, at 745-46 (weakly structured or organized knowledge impedes students’ ability to develop analytic capacities); see also Baeton, supra note 72, at 248; Linder & Flowers, supra note 24, at 438.

299 Lung, supra note 33, at 740-41. See also Linder & Flowers, supra note 24, at 438.


301 See supra Part II.D; Greg Sergienko, New Modes of Assessment, 38 SAN DIEGO L. REV. 463, 469-70 (XXXX) (observing that traditional law school examinations test the ability to apply rules to fact situations but not “to interpret and apply unfamiliar legal materials,” the primary activity in most courses.); Steven Friedland, A Critical Inquiry into the Traditional Uses of Law School Evaluation, 23 PACE L. REV. 147, 177, 199 (2002) (exam answers are first drafts, while careful editing, a form of critical thinking, is more indicative of ability to solve a problem).

302 See Sergienko, supra note 300, at 469 (failure of examinations to test interpretation and application of unfamiliar materials “removes a motivation for students to learn critical skills and makes tests unrepresentative of students’ abilities.”); Gibbs & Simpson, supra note 166, at 14-16; Scouller, supra note 64, at 466-67.

303 For example, passive learning and ineffective learning strategies in general decrease a student’s likelihood of retaining and transferring knowledge, even just to the final examination, which will interfere with that student’s ability to demonstrate analytical and problem-solving capacities. See supra text and notes at ___-____.

304 See, e.g., Beichner, supra note 227, at 517 (describing activities possible with an integrated course, especially when professors who teach each of the integrated subjects move around the classroom to meet individually with student groups); Sefton, supra note 22, at 155-56 (tutors in problem-based learning); DiBiasio, supra note 264, at 3 (videotapes of student teams solving problems).
The complaint drafting activity described above is an example of a very pedagogically productive point of integration. The immediate desired outcomes from the activity are competent application of both the cause-in-fact tests and the Conley-Twombly pleading standard. Complying with the pleading standard starts with the application of cause-in-fact tests to the facts at hand, so both subjects and the activity are contributing to achieving both learning outcomes in one activity.

Integration permits the professors to be more ambitious. Honing students’ higher order thinking capacities, such as analysis, synthesis and evaluation are desired learning outcomes also. This horizontally and vertically integrated pleading assignment manifests all of these goals. It provides the incentive to engage in the desired behaviors and direct insight into students’ capacities than a final examination.

Applying the cause-in-fact tests requires many higher order intellectual capacities. First, the student must go beyond memorizing the words and observing their meaning in a few cases; instead, students must build a schema by synthesizing assigned cases, which is characteristic of deeper learning strategies more likely to result in knowledge retention. Then students must link the facts together in a logical chain with creative fact analysis.

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305 See supra text and notes at ____ - _____.
307 Too much ambition may be counterproductive, however. See Baeten, supra note 72, at 248 (“students who perceived an overload of information” gravitated to surface learning); Linder, supra note 24, at 438.
308 The vocabulary to describe the “height” of the order of the thinking required to perform the drafting assignment is rooted in Bloom’s taxonomy and multiple revisions. See, e.g., SCHWARTZ et al., supra note 254, at 69 (explaining Bloom’s Taxonomy as revised for legal education as based on Krathwohl’s model); David R. Krathwohl, A Revision of Bloom’s Taxonomy, 41 THEORY INTO PRACT. 213, 215 (2002).
309 See, e.g., GERALD F. HESS & STEVEN FRIEDLAND, TECHNIQUES FOR TEACHING LAW 194-95 (1999).
310 See Krathwohl, supra note 308, at 213.
311 See supra Part II.
Only after those sophisticated behaviors does the student directly “apply” the cause-in-fact tests. If the chain has no missing links, the student may conclude that “but for” causation exists.\(^{314}\) If some links are missing or logically fragile, perhaps the chain satisfies another test or satisfies none.\(^{315}\) In a siloed course, the professor could ask the students to write up a brief memorandum to memorialize their respective applications of the tests, but the comparative lack of authenticity might obscure cues about what “precise fact analysis” or “step-by-step explanation” means.\(^{316}\) Therefore, the students’ work product would neither reveal nor even require the students’ use of all of the desired intellectual capacities.\(^{317}\)

What students would have done so far are the same steps necessary to satisfy the Conley-Twombly standard, a major connection linking two complex schemata into an integrated whole. The last piece for the pleading standard is drafting the complaint, which requires precise, technical writing.\(^{318}\) If the student can draft allegations that correctly describe a legally sufficient cause in fact chain as well as a sufficient factual predicate for the other elements, the complaint will state a claim.\(^{319}\) Any missing or fragile links in the fact analysis not seen first time around will loom large in that process.\(^{320}\) Drafting allegations requires a higher level of analytical sophistication than explaining a client’s theory of the case in a more general sense.\(^{321}\)

\(^{313}\) See MACRAT\_E REPORT, supra note 32, at 170-71 (describing aspects of “fact investigation” as “evaluating the information that has been gathered,” and identifying patterns, inconsistencies, determining conclusions the facts support, identifying alternate ways of analyzing the facts to produce alternate conclusions, assessing their relative merits, and determining courses of action in light of the above).

\(^{314}\) DOBBS ET AL., supra note 312, at §§ 187.

\(^{315}\) DOBBS ET AL., supra note 312, at §§ 189.

\(^{316}\) See Stella Vosniadou, The Cognitive-Situative Divide and the Problem of Conceptual Change, \_

\(^{317}\) See, e.g., Emig, supra note 218, at 127.

\(^{318}\) See, e.g., Boyle, supra note 51, at 19.


\(^{320}\) See Emig, supra note 218, at 126.

\(^{321}\) SCHWARTZ ET AL, supra note 254, at 49-51.
which is more likely to be what a three-hour final examination would elicit, but at least the student will have experienced the depth and sophistication of fact analysis they are “supposed” to be doing. The drafting product is the best evidence that most if not all of the behaviors occurred, and if not, it provides an opportunity for real-time feedback.

Connecting cause-in-fact analysis, the plausibility standard and technical drafting produces a pedagogical payoff siloed courses are unlikely to eclipse. All of the knowledge and capacities necessary to produce the complaint indicate progress toward students’ sophisticated application of two legal standards to a fact set and honing important intellectual capacities. The pleading standard and technical drafting push students to do and achieve more and real what law and study law really means. An integrated problem of this type is very complex, but properly scaffolded, students can do it!

2. Models of Points of Integration

322 Many if not most students cannot replicate the precise fact analysis or would not try, viewing the effort, probably correctly, as the wrong way to allocate time on a three-hour examination of a semester-long course. See, e.g., CHARLES CALLEROS, LAW SCHOOL EXAMS: PREPARING AND WRITING TO WIN 81 (2007) (“Adequate discussion of all the major issues [on an examination] will generally score more points than an unusually thorough discussion of only half of the issues raised by a question.”).


324 My Civil Procedure-only pleading assignments did require higher-order thinking, see SCHWARTZ ET AL., supra note 254, at 69 (apply and understand); created enthusiasm with “real work,” see Timothy W. Floyd et al., Beyond Chalk and Talk: the Law Classroom of the Future, 38 OHIO N.U. L. REV. 257, 281-82 (2011); made sure students saw a complaint before drafting their first in practice, cf. Madison, supra note 325, at 330; and presented doctrinal concepts in a setting that better served some students. See M.H. Jacobson, A Primer on Learning Styles: Reaching Every Student, 25 SEATTLE U. L. REV. 139, 155-56 (2001). But until I collaborated with a colleague teaching Property on this activity, complaint drafting could not illustrate the Conley-Twombly pleading standard very well, because students usually lacked the substantive knowledge to draft allegations. See Krieger, supra note 3, at 193-96.

325 See Lung, supra note 33, at 755 (listing ten problem-solving steps of which most are required in this pleading assignment). Beware: students can lose the big picture and if assaulted with more “stuff” than their brains can process be unable to keep up with the activity. See Krieger, supra note 3, at 164-65 (explaining “cognitive load theory”). With careful planning and scaffolding, perhaps over several weeks while also covering other material – with debriefings, status checks, and deeper integration – students should be able to hang onto the thread of the entire process. See Lung, supra note 33, at 753.
Pedagogically productive points of integration lurk where subjects/activities have conceptual or methodological commonalities or one is well suited to teaching the other:

- Teaching concepts relevant to both subjects at the same time;
- Using a doctrine or a topic from one subject to make sense or decisions about the other; and
- Using materials or methods normally associated with one subject to teach the other.

The cause-in-fact and pleading activity above exhibits all three. More examples and assessments of pedagogical value follow.

\[\text{a. Teaching Concepts Topics Have in Common Together}\]

Concepts topics have in common are the connections between them and direct, structural opportunities to scaffold complex schema-building that the traditional courses cannot beat. The “stream of commerce,” for example, is a tort concept the courts hijacked to solve jurisdictional problems arising from lawsuits against distant product manufacturers. Sellers have a well-established tort duty to place only safe products into the “stream of commerce” and having done so, may be held liable if the product injures someone. If a seller does place a product in the stream of commerce with the reasonable expectation that it will be

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326 Pearson & Hubbal, supra note 222, at 3 (observing that a school might organize integrated courses around disease states as opposed to offering disciplined based science courses).
327 Cf. George Zhou et al., Collaborative Teaching of an Integrated Methods Course, 3 INT’L ELEC. J. ELEM. EDUC. 123, 131 (2011) (science instructor used concepts of vibration and resonation taught in a music class to show how pitch depends on the thickness of a string).
328 See Charles J. Nagy, Jr., Strict Liability – Stream of Commerce, AM. L. PROD. LIAB. 3d § 5:9 (2014). Justice Marshall’s dissent indicates that the justices knew they were product liability law was informing their vision of personal jurisdiction. See World Wide Volkswagen v. Woodson, 444 U.S. at 315 (Marshall, J. dissenting) (“The majority apparently acknowledges that if a product is purchased in the forum State by a consumer, that State may assert jurisdiction over everyone in the chain of distribution.”).
329 See REST. 3D Torts § 1.
purchased in the forum state, the seller may haled into that state’s courts to determine if it is liable for injuries the product caused.\textsuperscript{330}

The connection is not coincidental or utilitarian, which adds to its richness. Stream of commerce” is an abstract concept that captures the notion of a locus of continual commercial activity through which things in commerce flow in predictable ways.\textsuperscript{331} “Placing” a product in the stream of commerce is inherently forward-looking, but may not connote any awareness that a product will pass through the stream of commerce via a specific chain of distribution that will only be apparent looking backward from the ultimate consumer.\textsuperscript{332} The distinction matters: a seller in the eventual chain of distribution who places a product in the stream of commerce may be liable for a user’s injuries, but a court’s personal jurisdiction over that seller depends the defendant’s realistic expectation when placing the product in the stream of commerce about where the ultimate the chain of distribution would take the product geographically.\textsuperscript{333} By contrast, while the seller may have placed a defective product into the stream of commerce, geography is irrelevant to its liability for resulting injuries as long as the product actually did pass along a cognizable chain of distribution to a party injured as a result of the defect.\textsuperscript{334} Finally, both the crucial analytical turning point in \textit{World-Wide Volkswagen} and the relevant duty of conduct in product liability rely on the defendant’s status as “seller,” but

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\item \textsuperscript{330} \textit{World Wide Volkswagen}, 444 U.S. at 297-98.
\item \textsuperscript{331} \textit{See Asahi Metals v. Superior Court}, 480 U.S. 102, 117 (1987) (Brennan, J. concurring).
\item \textsuperscript{332} \textit{Cf. World-Wide Volkswagen}, 444 U.S. at 297-98.
\item \textsuperscript{333} \textit{See World-Wide Volkswagen}, 444 U.S. at 297-98.
\item \textsuperscript{334} \textit{See Francis Amendola et al., Entities in Chain of Distribution or Placing Product into Stream of Commerce, 72A C.J.S. PROD. LIAB. § 52 (2015).} The tort is complete with the injury, wherever it occurs; where the injury occurs confers jurisdiction. \textit{See Gray v. American Radiator}, 176 N.E.2d 761, 762-63 (1961).
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not every link in a chain of distribution may be a seller and not every “seller” may be in a particular chain of distribution.\footnote{335 See, e.g., Antone v. Greater Arizona Auto Auction, 155 P.3d 1074, 1076-78 (Ariz. Ct. App. 2007).}

Some common concepts are really pure intellectual reasoning tools; call them “self-integrating” concepts. Relevance, for example, is foundational to both evidence and procedure\footnote{336 See Fed. R. Civ. P. 26(b); Fed. R. Evid. 401.} that is as much a doctrine as an intellectual capacity and requires a substantive context for meaning.\footnote{337 See, e.g., Niedwicki, supra note 6, at 433, 447-48 (“Identifying . . . how lawyers determine relevance is difficult to do because ‘relevance’ by definition depends on the specific problem being solved.”), 462. Identifying relevant facts is also essential to critical reading and case briefing. Miller & Charles, supra note at 277, at 196-98; Zalesne & Nadvorney, supra note 123, at 271, 273.} Another self-integrating concept is the inference,\footnote{338 See, e.g., Stuart & Vance, supra note 51, at 47, 49-50 & n.39, 55-57.} which is cloaked in doctrine if an inference may be drawn based on reasonableness or in the light most favorable to a particular party.\footnote{339 See, e.g., Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp. 475 U.S. 574, 587-88 (1986).} A course or curriculum that integrates teaching doctrine, honing intellectual capacities, and authentic activities would relish the opportunities self-integrating concepts present to better prepare students for higher-order thinking and problem solving.\footnote{340 See, e.g., Zalesne & Nadvorney, supra note 123, at 273.}

b. Using a topic from one subject to illuminate or solve problems raised in the other\footnote{341 Pearson & Hubbal, supra note 222, at 3 (2012) (observing that a school might organize integrated courses around disease states as opposed to offering discipline based science courses).}

Using a topic or activity from one subject to illuminate or solve problems raised in the other also defines a point of integration. A quintessential example is the mélange of joinder, supplemental jurisdiction, preclusion, defenses, indemnity, contribution, joint and several liability, and apportionment of damages. Some of the relevant substantive and procedural
concepts are the same or closely connected in essentials, and to apply some procedural tests requires prior application of substantive law. Further, the tort law partially answers the inevitable Civil Procedure question about joinder, jurisdiction and preclusion: “why?” The procedure answers the inevitable Torts question about defenses, apportionment, joint and several liability, etc.: “how?”

Doctrinal connections begin with the locus of facts resulting in injury, a “case or controversy” that on the one hand may create multiple substantive theories of recovery against multiple defendants and on the other may establish a federal court’s jurisdiction. If two claims, one of which is within the original jurisdiction of a district court, are “so related . . . that they form part of the same case or controversy,” a federal court will have jurisdiction to hear both. Whether claims are “so related,” however, depends on what facts establish the elements of the claims. Therefore, whether a federal district court has subject matter jurisdiction to hear and decide a claim is rooted in substantive law.

The connections do not end there. For example, if a federal district court has original jurisdiction over a claim, it has supplemental jurisdiction over others that arise from a

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342 See, e.g., Jones v. Ford Motor Credit Co., 358 F.3d 205, 210-213 (2d Cir. 2004) (holding that the same case or controversy standard of 28 U.S.C. § 1367(a) may permit exercise of supplemental jurisdiction over permissive counterclaims, but if a pleader’s counterclaim arises from the “same transaction or occurrence test” as the opposing party’s claim that relationship will always satisfy the “common nucleus of operative fact” standard and if one is within a federal district court’s original jurisdiction, it will always supplemental jurisdiction over the second).

343 E.g., FED. R. CIV. P. 14(a) (“A defending party may, as third-party plaintiff, serve a summons and complaint on a nonparty who is or may be liable to it for all or part of the claim against it.” (emphasis added)).


347 Cf. Martin v. Hunter’s Lessee, 14 U.S. (1 Wheat.) 304, 339 (1816) (“It is the case then and not the court, that gives the jurisdiction”). Federal question jurisdiction makes this connection apparent as well, presenting another point of integration and spiral. See Louisville & Nashville R. Co. v. Mottley, 211 U.S. 149, 152-53 (1908).
“common nucleus of operative fact,” and whether a judgment in a prior case precludes a claim brought in a subsequent case is also often said to depend on whether the two claims are based on “a common nucleus of operative fact.” The elements of a claim give meaning to the concept of an “operative fact”: many courts hold that an operative fact is one the plaintiff must prove to recover on a claim or as an affect on a legal relation.

Jurisdiction with its substantive connections is closely tied to joinder. For example, a pleader may join a claim that arises from the same “transaction or occurrence” – also a substance-driven test – as the defending party’s claim against. A “transactional” test often determines if a prior judgment precludes a subsequent claim. And claims that arise from the same transaction or occurrence also arise from a common nucleus of operative fact, which connects joinder, preclusion and jurisdiction via the facts necessary to establish the viability of the multiple substantive claims arising from the case or controversy.

349 See also Andersen v. Chrysler Corp., 99 F.3d 846, 852 (7th Cir. 1996) (defining preclusion’s “transaction” test as “a single core of operative facts which give rise to a remedy” (quoting Car Carriers, Inc. v. Ford Motor Co. 789 F.2d 589, 593 (7th Cir. 1986)).
350 See, e.g., Andersen, 99 F.3d 846, 852 (7th Cir. 1996); see Klamath Irrigation District v. United States, 113 Fed. Cl. 688, 699 (2013) (observing differentiation between “operative facts” and “background facts”). One might call an “operative fact” a fact that is one necessary to establish existence of a legally significant concept or event. See, e.g., Comment, Operative Facts in Gift of Land, 29 YALE L.J. 549, 551-52 (1920); see also Klamath, 113 Fed. Cl. at 700-09 (collecting and synthesizing precedents defining “operative fact” and identifying legal component tied to a party’s claim).
351 See WRIGHT & MILLER, supra note 273, § 1653 (defining “transaction or occurrence” as “all logically related events entitling a person to institute a legal action against another” and stating that multiple claims may arise from ‘the same transaction or occurrence’” if they will require “overlapping proof” at trial).
352 E.g., FED. R. CIV. P. 13(a)(1) (“A pleading must state as a counterclaim any claim that . . . the pleader has against an opposing party if the claim (A) arises out of the transaction or occurrence that is the subject matter of the opposing party’s claim’’); FED. R. CIV. P. 13(g) (same, though permissive test for crossclaim); FED. R. CIV. P. 14(a)(3) (same for plaintiffs’ claims against third-party defendants); FED. R. CIV. P. 20(a)(1) (“persons may join in one action as plaintiffs if: (A) they assert any right to relief jointly, severally, or in the alternative with respect to or arising out of the same transaction, occurrence, or series of transactions or occurrences’’); FED. R. CIV. P. 20(a)(2)(A) (same for multiple defendants); FED. R. CIV. P. 13(h) (Rule 20 standard).
353 See REST. 2D Judgments § 24.
354 See authority cited supra note ____.
Joinder, jurisdiction and preclusion provide the procedural vehicles to decide liability and apportionment issues. They determine how the parties establish respective liability of multiple parties in light of the substantive law; the defending parties’ prospects contribution or indemnity; and when these decisions will be made. The desirability of joining parties or claims may turn on a jurisdiction’s apportionment law. The respective jurisdiction’s joinder rules may impede plaintiff’s and the defendant’s effort to establish the responsibility of all potentially liable parties and pursue recovery. Prospects for recovery may influence the parties’ choice of forum and lead to complicated litigation strategy. These topics almost

355 E.g., FED. R. CIV. P. 13(g) (“The crossclaim may include a claim that the coparty is or may be liable to the crossclaimant for all or part of a claim asserted in the action against the crossclaimant.”), 14(a) (“A defending party may, as third-party plaintiff, serve a summons and complaint on a nonparty who is or may be liable to it for all or part of the claim against it.”).
356 See, e.g., FED. R. CIV. P. 8(c)(2) (mistaken designation of a defense as a counterclaim and vice versa).
358 See DOBBS ET AL., supra note 314, at §§ 488 (joint and several liability), 490 (several liability).
359 See, e.g., Glomb v. Glomb, 530 A. 2d 1362, 1363-65 (Pa. Super. 1987). The plaintiff determines from whom he will seek a judgment in the federal system, but not necessarily in Pennsylvania. Compare PENN. R. CIV. P. No. 2252(a) (“any party may join as an additional defendant any person not a party to the action who may be . . . (4) “liable to or with the joining party on any cause of action arising out of the transaction or occurrence of series of transactions or occurrences upon which the underlying cause of action against the joining party is based.”), with FED. R. CIV. P. 14(a)(1) (“A defending party may, as third-party plaintiff, serve a summons and complaint on a nonparty who is or may be liable to it for all or part of the claim against it.”), and with FED. R. CIV. P. 14(a)(3) (“The plaintiff may assert against the third-party defendant any claim arising out of the transaction or occurrence that is the subject matter of the plaintiff’s claim against the third-party plaintiff.”).
360 An example is whether a plaintiff chooses to sue in a federal forum but a potential co-defendant would destroy diversity jurisdiction; she cannot simply wait to for the defendant to join the non-diverse co-defendant and then join a claim against the now-third-party defendant. 28 U.S.C. § 1367(b); FED. R. CIV. P. 14(a)(1), (a)(3) see also Owen Equipment & Erection Co. v. Kroger, 437 U.S. 365, 376-77 (1978). Even if the plaintiff gambled in a joint and several liability jurisdiction and relied on the defendant to seek contribution or indemnity from the other the third-party defendant if needed, few if any plaintiffs would take such a risk in a pure several liability state. See DOBBS ET AL., supra note 314 §§ 490, 493.

The cutting edge issues in personal jurisdiction spiral back around as well. See, e.g., J. McIntyre Machinery, Ltd. v. Nicastro, 131 S. Ct. 2780, 2789-90 (2011). Even if no United States court would have personal jurisdiction over a foreign manufacturer for injuries to a plaintiff in a particular state, id., perhaps some American seller in the chain of distribution could establish a state court’s personal jurisdiction over the foreign manufacturer on an indemnity or contribution claim in a separate action. See REST. 3D Torts (Apportionment of Liability) § 22(2) (2000). The opportunity to reflect on the potential content of a partial settlement agreement between the plaintiff and that American seller is much less likely in a siloed course and too good to miss.
scream for the sort of collaboration that animated the pleading assignment; otherwise, students are unlikely even to scratch the surface of these legal and strategic issues.

c. Using materials or methods normally associated with one subject to teach both at the same time

Using materials or methods normally associated with one subject to teach the other or both at the same time is both pedagogically productive and also an efficient way to cover topics and create room in the syllabus for additional course elements. Consider the landmark choice of law case, Erie v. Tompkins, which is really a premises liability case “gone wrong.” Not only can it reinforce premises liability concepts but it may serve as the sole case coverage for the “beaten path exception.” Plus, a better understanding of the substantive law illuminates the federal-state law conflict and the forum shopping and equitable administration of the laws problems that drive the Erie Doctrine.

Teaching market-share liability followed by Celotex v. Catrett also creates efficiencies. Celotex – an asbestos wrongful death claim – would never have graced the Supreme Court had the plaintiffs had the benefit of a market-share causation theory. Market-share liability permits plaintiffs injured by a fungible products manufactured by numerous entities to recover even though they cannot prove which manufacturer’s product caused their injuries. Celotex illustrates the impact on plaintiffs’ prospects for recover when not-quite-fungible products

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362 Id. at 70; see also, e.g., Cain v. Johnson, 755 A.2d 156, 160-62 (R.I. 2000) (also discussing REST. 2D Torts § 334); Collins v. Toledo, A.A. & N.M.R. Co., 45 N.W. 178 (Mich. 1890).
cause injury\textsuperscript{365}: a plaintiff clinging to the prospect of a favorable interpretation of the impact of the summary judgment standard shifting burdens of production.\textsuperscript{366} Paired with a traditional case adopting the market-share theory, Celotex illustrates the other side and converts the technicalities of Federal Rule of Civil Procedure 56 to profundity without adding cases.

“Materials” need not and perhaps should not always be cases. A professor can cull a limited universe of discovery material from an actual case file, for example, to create an authentic problem that vertically integrates a siloed course.\textsuperscript{367} First, students would identify the relevant evidence. The evidence might give rise to disputes over the merits of the parties’ legal theories. Finally, on behalf of the parties, students might make and respond to motions for summary judgment.

\textbf{V. Survey Says?? What We Know About the Results of Integration}

As explained above, a reasonable benchmark for a successful integrated course or curriculum is that the integration itself achieves its goals better than siloed courses.\textsuperscript{368} Education theory indicates that integration can provide opportunities for students to reconstruct their concepts of learning and learning strategies, engage in higher order thinking and hone other intellectual capacities, build more powerful schemas and scripts for greater

\textsuperscript{365} See Celotex Corp. v Copeland, 471 So. 2d 533, 536-39 (Fla. 1985) (holding that asbestos is not fungible because different products have different toxicities).

\textsuperscript{366} Catrett, 477 U.S. at 319-21.

\textsuperscript{367} I use iterations of such activities as a running theme throughout the term in both my first-year and upper-class iterations of Civil Procedure II. They are richer when students have taken Evidence and the subjects of the claims, which speaks to the potential of horizontal integration. See Jennifer E. Spreng, It’s All About the People: Classroom Hierarchy, Deference and Teaching Assistants in a Civil Procedure Classroom Community, 8 SOCIO-LEG. REV. 121 (2013); Jennifer E. Spreng, It’s All About the People: Creating a Community of Memory in Civil Procedure II, Part One, 4 PHOENIX L. REV. 183 (2010).

\textsuperscript{368} See supra text and notes at ____ - ____.
retention and more sophisticated problem solving, improve transfer of knowledge by learning in more authentic contexts, and simply “learn more” from courses or curricula that eliminate duplicative coverage. Both anecdotal and scholarly evidence also give rise to cautious optimism that integration can contribute to producing better outcomes in law school than the traditional curriculum.

A. Anecdotal Accounts of Efficacy and Implementation

Anecdotal accounts support the conclusion that integrated courses and curricula do contribute to many important pedagogical and practical goals for legal education. They report that students do develop superior problem-solving capacities; engage in higher-order thinking; and make more and better connections between concepts. They also claim that students perform better on examinations; work better in teams; and emerge with more marketable professional competencies. Students express greater enthusiasm, and some schools with integrated introductory courses even report improved student retention rates.

If anecdotes are reality, integration could contribute to high pedagogical priorities in legal education. Integrative learning and legal reasoning are closely connected; in law, the

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369 E.g., DiBiasio, supra note 264, at 3-4; Beichner et al., supra note 227, at S20-S21.
371 E.g., Westcott & Shirecore, supra note 12, at 99-100 (Australian first-year law school curriculum); Pearson & Hubbal, supra note 222, at 3-4.
372 E.g., Beichner et al., supra note 227, at S20-S21.
373 E.g., O'Neill et al., supra note 3, at 229; DiBiasio et al., supra note 264, at 3-4.
375 E.g., Morgan & Bolton, supra note 294, at 3.
376 See, e.g., MACRATE REPORT, supra note 32, at 138-41.
377 See, e.g., Pearson & Hubbal, supra note 222, at 3-4 (recommending the following as benchmarks of integrative learning: “Connections between content across disciplines,” “transference of skills, abilities, theories, or methods
former can be said to be a product of the latter.\textsuperscript{378} The best of integration is a student centered,\textsuperscript{379} active,\textsuperscript{380} and authentic learning experience,\textsuperscript{381} all of which are linked to developing the higher-order thinking capacities that the legal profession demands.\textsuperscript{382} Efficiencies do arise from eliminating coverage redundancies and may provide room for additional topical breadth and depth,\textsuperscript{383} never unwelcome while bar examination looms.\textsuperscript{384} Professors report that students’ interpersonal and collaboration skills, so prized in law practice,\textsuperscript{385} improve as a result of group projects and problem-solving activities, which are pedagogies characteristic integrated courses and activities.\textsuperscript{386} If controlled scholarly studies confirm the anecdotal evidence, integration has real prospects for law schools.

\textbf{B. Controlled Studies of Integrated and Problem-Based Curricula.}

Controlled studies curricula justify cautious but significant optimism about integrated courses and curricula for legal education.\textsuperscript{387} Caution arises from the limited data about integration other than studies of medical school student outcomes from a particular pedagogy, problem-based learning. Integration is not a pedagogy; it is a form of course and curricular

\textsuperscript{378} Cf. Kowalski, supra note 104, at 86-87, 98.
\textsuperscript{379} Lowry, supra note 222, at 1482.
\textsuperscript{380} See, e.g., Beichner, supra note 227, at 516-517; Morgan & Bolton, supra note 294, at 2.
\textsuperscript{381} Lowry, supra note 222, at 1482, 84; Stull & Carter, supra note 294, at 408 (integrated courses show how disease states are viewed by multiple disciplines and why information is important in pharmacy practice); Muller, supra note 88, at 781.
\textsuperscript{382} Pearson & Hubbal, supra note 222, at 2-3.
\textsuperscript{383} See, e.g., Richards, supra note 288, at 16; Morgan & Bolton, supra note 294, at 4 (students complete courses at a faster rate than traditional program); Stull & Carter, supra note 294, at 4 (integration eliminates curricular redundancy).
\textsuperscript{384} See Niedwiecki, supra note 6, at 37-39.
\textsuperscript{385} See MACRACCAT REPORT, supra note 32, at 201.
\textsuperscript{386} See, e.g., DiBiasio, supra note 264, at 3.
Further, protocols for studies to measure the impact of curriculum or pedagogy over time are hopelessly adequate. Further, problem-based learning outcomes are very sensitive to the assessment used and tend to improve compared to other pedagogies if not measured with a standardized assessment.

The limited evidence from studies of students educated with “pure” integrated (non-problem-based) curricula show outcomes that equal or outstrip their traditionally and problem-method educated colleagues in most measures of achievement, particularly those requiring higher-order thinking. For example, students educated with a pure integrated medical curriculum performed better on examinations made more difficult with integrated questions requiring higher-order thinking and application than students educated and assessed traditionally. A study of Dutch medical students educated with either a pure integrated curriculum, problem-based learning program, or a traditional approach showed that the students educated with the integrated curriculum demonstrated greater diagnostic ability.

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388 Medical schools adopting problem-based learning usually have integrated courses and curricula, but law professors, for example, use problem methods in non-integrated courses. See generally Shapiro, supra note 21.

389 It is simply very difficult to design study controls and assessments that leave no footprints in a study of the effects curricular approaches have on student learning and attitudes, especially over time. See Henk G. Schmidt et al., Comparing the Effects of Problem-Based and Conventional Curricula in an International Sample, 62 J. MED. EDUC. 305, 314 (1987) (hereinafter “Schmidt et al., Comparing the Effects”); David Gijbels et al., Effects of Problem Based Learning, supra note 22, at 32-36, 44-45, 47.

390 Ravitz, supra note 387, at 5.


392 See, e.g., Thompson et al., supra note 200, at 374-75 (finding integrated curriculum examinations required more higher order thinking than traditional curriculum examinations and students in integrated curriculum scored better on most challenging questions); Kimberly Hoffman et al., Problem-Based Learning Outcomes: Ten Years of Experience at the University of Missouri-Columbia School of Medicine, 81 ACAD. MED. 617, 620-23 (2006); see also Robert L. Blake et al., Student Performances on Step 1 and Step 2 of the United States Medical Licensing Examination Following Implementation of a Problem-Based Learning Curriculum, 75 ACAD. MED. 66 (2000).

Early studies of problem-based learning painted a mixed picture, but more recent results are more favorable, especially now that they include studies of more disciplines. Perhaps greater expertise with designing and implementing problem-based curricula explains the phenomenon. Scholars are also learning more about how to evaluate them.

Student outcomes in studies of problem-based learning outcomes, usually produced in the context of an integrated curriculum, tend to exceed those of the traditionally educated over a range of indicators. The largest differentials come in teacher education, social science and a large “other” category and the smallest in the studies of medical and allied health professionals that so dominate the scholarly research about problem-based learning.

Problem-based learners exhibit many of the attributes and intellectual capacities prized in legal education. They are disproportionately biased in favor of deep learning strategies and independent, self-directed learning behaviors that promote higher order thinking, problem solving, and therefore learning itself. The problem based learners often exhibit a slight

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395 See, e.g., Walker & Leary, supra note 391, at 24-25 (discussing similarity of results with Gijbels et al, Effects of Problem-Based Learning, supra note 22, at 45-46).

396 See, e.g., Klement et al., supra note 258, at 157 (describing extension of initial successful curricular integration efforts); Woei Hung, Theory to Reality: A Few Issues in Implementing Problem-Based Learning, 59 EDUC. TECH. RES. DEV. 529, 533-47 (2011); Dolmans et al., supra note 155, at 734-36 (discussing frequent weaknesses and solutions in problem-based courses).

397 See, e.g., Ravitz, supra note 387, at 5-9.

398 Walker & Leary, supra note 391, at 24-28. The effect is least pronounced in medical and allied health education, however. Id. at 28.

399 Walker & Leary, supra note 391, at 400 E.g., Gijbels et al., Effects of Problem Based Learning, supra note 22, at 32-36, 44-45, 47; see Lung, supra note 33, at 734-749. Independent learning “Incorporates six key principles: Students learn on their own. Students have a measure of control over their own learning. They may choose: where to learn, what to learn, how to learn, when to learn. . . . Independent learning is based on discovery-guided mentoring rather than on the transmission
disadvantage compared to their traditionally educated colleagues in the acquisition of knowledge, but they retain more.\textsuperscript{401} They also outstrip their traditionally educated colleagues in linking concepts and application,\textsuperscript{402} and problem based learning seems to enhance performance and long-term practice skills,\textsuperscript{403} though perhaps, ironically, the record for superior problem-solving capacities is not so favorable.\textsuperscript{404}

As a leading meta-analysis concluded:

- “[S]tudents’ path toward expertise has been accelerated.”\textsuperscript{405}
- Students taught with problem-based methods “seem to possess a highly structured network of concepts and principles.”\textsuperscript{406}
- Students educated with problem based methods are “equally competent at recalling specific items of information.”\textsuperscript{407}
- When assessment tools are targeted to measure ability to apply knowledge, the positive effect of problem-based learning is greater.\textsuperscript{408}

\textsuperscript{401} E.g., Hoffman et al., supra note 391, at 620-23 (finding disproportionately improved mean scores on USMLE Step 1 and 2 score, a more application-driven licensing exam than previous); Rehana Rehman et al., Evaluation of Integrated Learning Program of Undergraduate Medical Students, 7 PAK. J. PHYSIOL. 37-39 (2011).

\textsuperscript{402} Gijbels, Effects of Problem Based Learning, supra note 22, at 35, 38 (only linking concepts as statistically significant for problem based learners); Schmidt, Comparing the Effects, supra note 393, at 662 (comparing problem based and pure integrated learners’ results); see also, Thompson, supra note 200, at 273 (students with discipline-specific exam in integrated course outscored students tested with integrated exam questions, but the integrated exam students lagged much less on the most important topic and outstripped their colleagues on questions requiring students use capacities higher on Bloom's taxonomy).

\textsuperscript{403} See e.g., Choon-Huat Koh et al., The Effects of Problem-Based Learning During Medical School on Physician Competency: A Systemic Review, 178 CAN. MED. ASSN. J. 34, 40 (2008) (finding that “problem-based learning during medical school has positive effects on physician competencies after graduation, especially in the social and cognitive dimensions.”); Strobel, supra note 181, 54.

\textsuperscript{404} See, e.g., Walker & Leary, supra note 391, at 25.

\textsuperscript{405} Gijbels et al., Effects of Problem Based Learning, supra note 22, at 45.

\textsuperscript{406} Id. at 46.


\textsuperscript{408} Gijbels et al., Effects of Problem-Based Learning, supra note 22, at 45.
Law may be a good fit for greater integration, especially given that the capacities and outcomes integration and problem solving seek and do promote are such high priorities for legal education. The traditional case method along with the increasingly common problem-based method inserts a dash of vertical integration already. Further, non-problem-based integrated curricula and problem-based methods outside the context of health professions education report the most favorable outcomes. Law professors will not need studies to tell them traditional subjects, such as procedure, might actually be easier for students to learn if integrated into one course with another subject.

Unfortunately, the few efforts to gauge the effectiveness and impact of integration in legal education have produced opaque results. Researchers believe study design and assessment problems plus the subjects themselves created too much background noise to produce meaningful results. Substantial minorities of students at multiple European law schools taught via the problem-method revealed incoherent learning strategies, for example: they rejected both deep and superficial learning behaviors, an indicator of disorganized learning strategies and a combination usually characteristic of novices or disordered learners. In one, neither deep versus surface learning strategies correlated with examination results nor did responses to questions demanding comparatively higher-level thinking and analysis. A different, albeit consistent study reported: “[m]any of the students realized that their study

409 Walker & Leary, supra note 391, at 28.
410 Walker & Leary, supra note 391, at 28.
411 See, e.g., Thompson, supra note 200, at 200; Schmidt et al. Comparing the Effects, supra note 393, at 662
412 Gijbels et al., Approaches to Learning, supra note 84, at 333, 335.
413 Gijbels et al., Approaches to Learning, supra note 84, at 332. Disorganized learning strategies “refer[] to the learner’s difficulty in establishing or maintaining a structured, organized approach to studying.” Elliot, supra note 62, at 549. Another study showed greater resistance to change in learning activities in a study done comparing a law department with arts, economics and social science departments. Vermetten et al., supra note 79, at 6.
414 Gijbels, Approaches to Learning, supra note 84, at 333.
methods were not suitable for studying law, but they did not know how to develop them.\footnote{Gijbels, \textit{Approaches to Learning}, supra note 84, at 333. It is not surprising that the students felt helpless about changing their study methods. Apparently they did not know what to do and even if in fact they did, they may have been unable to do so. DeGroff & McKee, \textit{supra} note 140, at 259-60 (observing that some researchers believe learning styles are “hard wired” into students); Gantt, \textit{Pedagogy of Problem Solving}, \textit{supra} note 16, at 753 (describing study in which educational psychology students did not change their study strategies in response to learning challenges).} Certainly this evidence is disappointing but hardly illuminating.

\textbf{V. CONCLUSION}

As legal educators continue to prioritize preparing students for practice, particularly helping them develop their intellectual and professional capacities, they should put integrated courses and curricula, even in the first year, into their top tier of potential reform vehicles. Integrated courses and curricula plus their signature teaching methods tend to promote active, deep learning that facilitate orderly knowledge construction and reveal more connections between vital legal concepts. The greater authenticity in integrated courses and curricula also improves students’ retention and transfer of knowledge. Such accessible, interconnected knowledge in such a vital learning environment is like intellectual rocket fuel to law students as they hone higher-order thinking and problem-solving capacities. It is not necessary to integrate multiple courses or an entire curriculum to harness the power of integration; what it takes is thinking anew about our subjects, how they fit together, the opportunities for collaboration they create, and the potential to scale such micro-integration up to entire courses and beyond.