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A Model of Evidence-Based Practice for Law Schools to Improve System Outcomes

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ARTICLE

A MODEL OF EVIDENCE-BASED PRACTICE FOR LAW SCHOOLS TO IMPROVE SYSTEM OUTCOMES

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INTRODUCTION

This improvement project took place at a law school struggling to increase bar passage. Framed more broadly, the project involved an organization that wanted to change a system outcome. Our goal was to specify a set of program changes that, based on best evidence and context-sensitive analysis, would optimize bar performance in the law school's learning community. From a meta-perspective, a secondary goal was to model how a law school, like any organization facing a complex challenge with limited resources in an unstable environment, can use evidence-based disciplines to manage complexity, reduce uncertainty, and make decisions that improve results. We reached powerful findings specific to the law school's problem and setting, but *how* we reached those findings should be of greater interest to decision-makers in legal education. This project is an example of how a law school can begin to architect success.

Bar passage is one of many outcomes of a law school organizational system. Imposing deliberate change on a system outcome is about learning to confront and mitigate the system's complexity. A law school is an ecology of program activities, administrative processes, organizational structures, normative substructures, social practices, communities, identities, power relations, and other affordances and constraints that shape outcomes. A law school decision maker—no matter how wise or experienced—cannot mentally account for the interactions of so many variables mediating and

moderating learning. Nor can they anticipate how conditions will reconfigure when a change is introduced to the system. The system's workings are simply beyond human perception, which is inescapably biased,[1] and working memory, which has known limits.[2] The only way to make reliable decisions is to offload the cognitive challenges of accounting for and prioritizing the relationships among the many interrelated considerations.

Thus, law schools must take up tools of disciplined observation and scientific inquiry. For instance, improvement science offers ways to derive and specify solvable problems and potential causes from complex organizational systems that seem to defy order.[3] The field of program evaluation provides methods for defining how a program is thought to impact a problem, so that impact can be measured.[4] The social sciences provide techniques for measuring aspects of human experience and behavior that seem immeasurable.[5] Data science provides ways of computing the significance of and relationships among measured variables.[6]

By building organizational capacities around these tools through hiring and professional development, a law school can marry its decision-making to evidence. Ultimately, what is left to a decision-maker's cognition is a choice among well-defined alternatives with more predictable downstream consequences. Intuition gives way to reason, opinion to fact, and guesswork to analysis.

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1. *See* MAX H. BAZERMAN & DON A. MOORE, JUDGMENT IN MANAGERIAL DECISION MAKING 1–11 (8th ed. 2012) (outlining the cognitive biases humans experience and providing suggestions on how to be a better decision maker).

2. Daniel T. Willingham, *How Knowledge Helps*, 30 AM. EDUCATOR 30, 33 (2006), https://www.aft.org/sites/default/files/media/documents/2023/30.1_spring_2006.pdf [https://perma.cc/C6NG-DSSF].

3. *See generally* GERALD J. LANGLEY ET AL., THE IMPROVEMENT GUIDE: A PRACTICAL APPROACH TO ENHANCING ORGANIZATIONAL PERFORMANCE (2nd ed. 2009) (introducing the Model for Improvement and exploring other methods of improvement); Chance Meyer, *Law Schools Need Improvement Science, Now More Than Ever*, 51 SYLLABUS, no. 3 (2020), https://www.americanbar.org/content/dam/aba/publications/syllabus/2020-spring-syllabus-51-3.pdf [https://perma.cc/8EUK-M8PR] (listing problems and causes for complex organizational systems).

4. *See generally* PETER H. ROSSI & HOWARD E. FREEMAN, EVALUATION: A SYSTEMATIC APPROACH (5th ed. 1993) (explaining program evaluation).

5. *See generally* EARL BABBIE, THE BASICS OF SOCIAL RESEARCH (7th ed. 2017) (discussing how social sciences measure human characteristics).

6. *See generally* NATE SILVER, THE SIGNAL AND THE NOISE: WHY SO MANY PREDICTIONS FAIL—BUT SOME DON'T (2012) (emphasizing data science's importance when comparing variables).

Lawyers, of all people, should appreciate the need for evidence-based practice. After all, we swear oaths to follow evidence.[7] In court, we forbid arguments not backed by evidence.[8] We understand a jury's collective decision-making is by no means perfect, but still more reliable when based on evidence evaluated against predefined standards. Lawyers should carry their commitment to evidence from the courtroom to the classroom. Like jury deliberations, faculty meetings should not be left to an unstructured, power-laden contest of opinions. The stakes of legal education—as high as those of many jury verdicts—merit our best efforts to avoid caprice.

This project models an evidence-based approach to law school decision-making. This project was based on a consultation agreement between the author and the law school, akin to the research-practice partnerships (RPPs) becoming more common in learning organizations outside legal education.[9]

This project followed a two-wave approach. First, we used existing data to identify influenceable variables most closely related to bar performance among the law school's graduates. Consistent with the literature, these proved to be individual learning activities. While the project was ongoing, the law school acted on our initial findings. The bar preparation program emphasized the key study practices we identified and stopped promoting practices we found to be unrelated to bar performance.

In the second wave, we collected new data to support granular program redesign decisions that would optimize utilization of the key learning activities identified in the first wave. Because learners will often slip back to using ineffective, intuition-based learning strategies after being encouraged

7. *See* Lauren E. Bartlett, *Human Rights and Lawyer's Oaths*, 36 GEO. J. LEGAL ETHICS 411, 446–67 (2023) (providing a chart of a lawyer's oaths by state).

8. *See* Justin Sevier, *Evidence-Based Hearsay*, 76 VAND. L. REV. 1799, 1800 (2023) (outlining the basic hearsay rule, which "forbids witnesses from repeating secondhand, untested gossip in court").

9. *E.g.*, KELLY MCMAHON ET AL., CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING, PARTNERING TO SCALE INSTRUCTIONAL IMPROVEMENT: A FRAMEWORK FOR ORGANIZING RESEARCH-PRACTICE PARTNERSHIPS 1–2 (2022), https://www.carnegiefoundation.org/wp-content/uploads/2022/06/Partnering-to-Scale-Instructional-Improvement-CC.pdf [https://perma.cc/Z7HS-PAHP] ("Research-practice partnerships (RPPs) emerged as a promising strategy for generating new knowledge and building new capabilities for improving teaching and school systems through research.").

to use effective, evidence-based strategies,[10] we intentionally designed program elements that would invite and sustain utilization.

To summarize the project design in a few words, we figured out what mattered most and learned how to influence it best.

Below, I describe the project's organizational context and the problem of practice we faced. I synthesize the literature we used to design the project and make meaning of our evidence. I then share the conceptual framework we developed to structure and discipline our evaluation of the law school's bar preparation program. I explain our data collection and analysis methods, our findings, and resulting recommendations to the law school. In sum, I recount one law school's experience learning to improve a system outcome with evidence-based practice.

I. PROJECT CONTEXT

The project's success in reaching valuable findings was not due to conditions especially favorable to evidence-based practice. As is common in legal education, the law school environment was both unstable and problematic. At the time of our project, relevant leadership roles were turning over, legal education was changing in the wake of pandemic remote education, and the bar exam itself—our target outcome—would soon change with the advent of the NextGen Bar Exam.[11] We were keenly aware that today's solutions would go stale as the environment reoriented around them. We needed not only to identify concrete actions the law school could take to have the most significant and immediate impact on current graduates' bar results, but also to lay the groundwork for iterative program improvement in response to ever-evolving challenges. Like law students, how law schools learn dictates what they learn over time.

The law school faced the usual pressures to respond to unfavorable bar exam results with swift, visible, and large-scale action. Organizations in

10. *See* Felicitas Biwer et al., *Fostering Effective Learning Strategies in Higher Education—A Mixed-Methods Study*, 9 J. OF APPLIED RSCH. IN MEMORY & COGNITION 186, 186 (2020) (studying "the intervention on metacognitive knowledge and self-reported use of effective learning strategies during self-study . . . .").

11. *See About the NextGen Bar Exam*, NAT'L. CONF. OF BAR EXAM'RS, https://nextgenbarexam.ncbex.org/ [https://perma.cc/448E-QDB5] (introducing the new bar exam set to debut in July 2026).

crisis often think they must make a show of a quick, aggressive response.[12] They favor wholesale, splashy program changes with unknowable consequences over surgical, behind-the-scenes design work that would improve outcomes reliably but incrementally.[13] No one has time for evidence-based practice when the sky is falling, so they miss their best chance to hold it up.

As is commonplace in legal education, faculty decision-making at the project law school was micropolitical.[14] Relationships and power dynamics were fraught among stakeholders, such as academic support, doctrinal faculty, and administrators. Other interests of legal education competed with the bar for the law school's limited resources. Under these conditions, we could not seek ideal solutions while ignoring whether they would be adopted. Unpracticable recommendations would be worthless. We sought to identify the best solutions the law school could realistically accept and effectively implement.

The consulting and NDA agreements underlying this project require the law school to remain unidentified. However, conditions at the law school surrounding its bar problem are common enough to describe. The law school admits cohorts of more than 200 students. Students have a median Law School Admission Test (LSAT) score that—based on national data not specific to the law school—places them at moderate risk for bar failure, and they have a lower 25th percentile LSAT at high risk.[15] The law school's thirty-year first-time bar passage rate was more than 15% below the jurisdictional passage rate. In recent decades, the law school undertook the usual bar-focused initiatives, including curricular changes, partnerships with educational services companies, new academic support programming,

12. *But see* W. Timothy Coombs, *Protecting Organization Reputations During a Crisis: The Development and Application of Situational Crisis Communication Theory*, 10 CORP. REPUTATION REV. 163, 163 (2007) (arguing crisis management should be supported by evidence-based guidance backed by "empirical research rather than personal preference and unscientific experience").

13. *But see id.* (utilizing experimental methods instead of case studies to identify how stakeholders will respond to crisis).

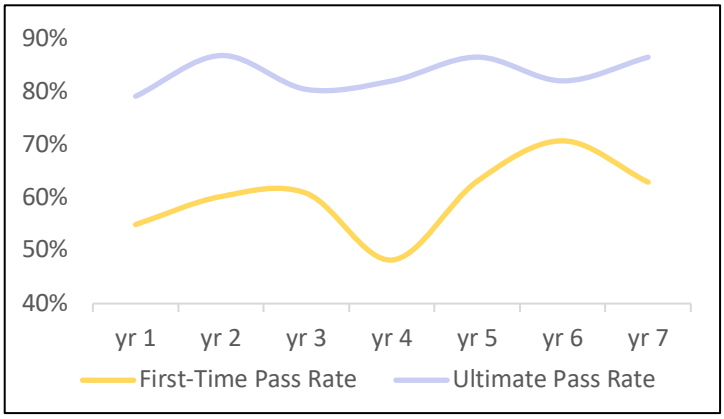
14. *See, e.g.*, Phoebe A. Haddon, *Academic Freedom and Governance: A Call for Increased Dialogue and Diversity*, 66 TEX. L. REV. 1561, 1561 (1987–88) (recounting the firing and immediate replacement of the Temple University School of Law dean during the 1986–87 school year).

15. *See generally* L. SCH. TRANSPARENCY, 2015 STATE OF LEGAL EDUCATION, https://archive.lawschooltransparency.com/reform/projects/investigations/2015/key-findings/ [https://perma.cc/T6XR-TLYX] (showing the correlation between LSAT scores and bar passage rates).

leadership changes, and taskforces that generated reports about who was (and who was not) passing the bar. Improvement remained elusive.

Our project oriented around a particular aspect of the bar passage problem—the law school's first-time pass gap. Nearly a quarter of the law school's graduates eventually passed the bar after experiencing the personal and professional setback of first-time failure. Over a recent seven-year period, the law school's mean ultimate pass rate was roughly 23% higher than its mean first-time pass rate. We wanted to explain the gap and learn how to close it.

Graph 1: Bar Passage Rates



The law school wondered why so many of its graduates, who ultimately proved capable of passing the bar, failed initially and what the law school might do to front-load their successful efforts. The law school was not alone in wondering. Each year, thousands of law school graduates nationwide pass the bar exam after having failed at least once.[16] They do so on the merits of the same legal education they brought to prior attempts. They do so despite having had good reason to make their initial efforts their best, given the grave consequences of failure. Their law schools had good reason to support their first attempts, given the existential concern of first-

16. *E.g.*, *Jurisdiction Bar Examination Data,* THE BAR EXAM'R (2021 STATS. SNAPSHOT) 10–11 (2022), https://thebarexaminer.ncbex.org/2021-statistics/2021-statistics-snapshot/ [https://perma.cc/4CLN-WMHL] (providing an informational graphic displaying first-time and repeat test taker status).

time pass rates, which impact admissions and reputation. Why then do so many bar takers fail before they pass?

II. LITERATURE REVIEW

The following synthesis of evidence from bar research and the learning sciences suggests the most significant driver of bar performance is what learners do during individual bar study. Of course, why learners do what they do (or do not do) is a complex and important question reaching far beyond personal accountability. But as an evidence-based starting point for an improvement project focused on bar performance, the literature suggests the best place to look for ways to help bar takers is their personal learning activities.

If what learners do in bar preparation is the greatest driver of bar performance, then capable learners might fail their first attempt because they are not aware of the learning activities required to pass. That is, what exactly they need to do in the weeks leading up to the bar. Thus, encouragingly, the literature provides a satisfying explanation for the law school's first-time pass gap.

Below, I evaluate leading bar research. I describe why common research designs have limited the usefulness of bar-related findings. Additionally, I emphasize certain important but neglected findings that run contrary to common views about how to help bar takers. Finally, I interpret bar-related findings against the learning sciences, to make meaning around widely misunderstood evidence.

A. *Bar Research*

Most bar studies are not designed to produce evidence showing what to change about a law school bar preparation program to improve its impact in context.[17] Many studies ask *who* needs intervention, rather than *how* to intervene.[18] Studies that do focus on interventions tend to look at a

17. *See, e.g.,* Scott Johns, *Empirical Reflections: A Statistical Evaluation of Bar Exam Program Interventions*, 54 U. LOUISVILLE L. REV. 35, 36 (determining whether interventions, including Intermediate Legal Analysis, Legal Analysis Strategies, and the Bar Success Program have an impact on bar passage rates).

18. *See generally* Lorenzo A. Trujillo, *The Relationship Between Law School and the Bar Exam: A Look at Assessment and Student Success*, 78 U. COLO. L. REV. 69, 104–09 (2007) (reporting the most important indicator of bar passage rate at the University of Colorado Law School was the student's relative class rank).

program's overall impact, rather than what discrete program elements are more or less related to bar performance.[19] Consequently, program designers do not learn what to keep, drop, or reconfigure. Studies examining what discrete learning activities are related to bar performance tend to ask what works, rather than addressing the context-sensitive question of what works for whom under what conditions.[20] Below, I review existing bar studies with special attention to how the instant project and future research can produce evidence more useful to law school program designers. The methodologies and pioneering rigor of the studies considered below have been widely discussed. In fact, these studies are held in such well-deserved esteem that legal education has struggled to determine where bar research might go next. Rather than reproducing existing discussions of the studies' merits, the goal of the following review is to identify opportunities to build on their findings. I ask, despite these studies' many valuable contributions, what gaps remain? From that question a next generation of research can emerge.

Significant bar studies fall into three categories of research design that I refer to as (1) enrollment studies, (2) usual-suspects studies, and (3) examiners studies.

1. Enrollment Studies

In enrollment studies, researchers use regression analysis to measure the relationship between enrollment in a law school bar preparation program and bar performance.[21] Researchers do not specify as independent variables

19. *See generally* Katherine A. Austin et al., *Will I Pass the Bar Exam: Predicting Student Success Using LSAT Scores and Law School Performance*, 45 HOFSTRA L. REV. 753, 768–70 (2017) (noting the relationship between the number of bar exam courses taken and bar exam success).

20. *See* Karina Nielsen & Mariella Miraglia, *What Works for Whom in Which Circumstances? On the Need to Move Beyond the 'What Works?' Question in Organizational Intervention Research*, 70 HUM. RELS. 40, 40, 58 (2017) (questioning the suitability of trials to evaluate the effectiveness of organizational intervention).

21. *See* Raul Ruiz, *Leveraging Noncognitive Skills to Foster Bar Exam Success: An Analysis of the Efficacy of the Bar Passage Program at FIU Law*, 99 NEB. L. REV. 141, 202–05 (2020) (utilizing regression analysis); *see also* Derek Alphran et al., *Yes We Can, Pass the Bar. University of the District of Columbia, David A. Clarke School of Law Bar Passage Initiatives and Bar Pass Rates - From the Titanic to the Queen Mary!*, 14 UDC/DCSL L. REV. 9, 12 (2011) (determining "law schools' bar preparation programs can contribute significantly to improvement in the overall bar passage rate"); *see generally* Johns, *supra* note 17, at 54 (explaining regression analysis allows researchers to analyze whether there is a difference in bar passage rates for students who participate in bar preparation programs).

discrete program elements, learning activities, or context mediators.[22] Consequently, they learn how well a program works overall, but not why, or how to improve it.

Past enrollment studies have demonstrated the effectiveness of industry leading bar preparation programs, generating well-earned acclaim and emulation. Invariably, enrollment studies have found statistically significant relationships between enrollment in the authors' bar preparation programs and bar outcomes.[23] That overall finding results in an overall design decision—to leave the program unchanged.

For instance, a leading enrollment study at the Denver Sturm College of Law found a statistically significant relationship between enrollment in the school's two bar preparation courses and bar exam scores.[24] From that finding, the conclusion was that the law school should "not interpose any fundamental changes on the Bar Passage Program."[25] Instead, the recommendation was "fine-tuning."[26] But the decision of what to tune, how, how much, and why would require further study generating additional evidence.

An enrollment study at Florida International University College of Law (FIU) found a statistically significant relationship between enrollment in the school's bar preparation course and bar passage.[27] Again, the study proved the program's efficacy within FIU's organizational and jurisdictional conditions, but the result of the study was limited to concluding the program "will not be fundamentally changed unless and until data begins to dictate otherwise."[28]

An enrollment study at the UDC David A. Clarke School of Law also found enrollment in the school's bar preparation program had a statistically significant relationship with bar passage.[29] From that finding, the recommendation was that the program should "continue to sail!"[30] But,

22. *See, e.g.*, Alphran et al., *supra* note 21, at 10 (examining LSAT scores, undergraduate GPAs, and enrollment in Bar Skills Preparation Program).

23. Ruiz, *supra* note 21, at 202–05; Alphran et al., *supra* note 21, at 39; Johns, *supra* note 17, at 60.

24. Johns, *supra* note 17, at 60.

25. *Id.* at 67–68.

26. *Id.* at 68.

27. *See* Ruiz, *supra* note 21, at 202–05 (noting a positive shift in bar passage rates after the implementation of the Law & Procedure course).

28. *Id.* at 202.

29. Alphran et al., s*upra* note 21, at 39.

30. *Id.*

once again, there was no evidence showing *how* to improve the sailing or whether the program was on the best tack. The conclusion was merely that something was working, so do not rock the boat.[31]

Enrollment studies helped to blaze a trail for evidence-based practice in legal education. They show how effective programs can demonstrate their effectiveness to stakeholders, decision-makers, and legal education at large. They describe programs that readers could attempt to replicate, if they believed similar programs would be successful in their own organizational contexts. They also show where the research should go next by highlighting the need for more design-oriented research questions. They whet our appetites for more granular inquiries.

Published enrollment studies operate under the basic assumption that, given the observed overall correlation between program enrollment and bar outcomes, readers should make their programs like the authors' programs. But readers are left to speculate from the authors' characterizations of their teaching practices what activities might have mattered and why to the programs' impacts. Deeper inquiries are necessary to make evidence-based decisions about what program elements are beneficial and how those elements may interact with differing context variables at other law schools. Our project is an example of how to develop, interpret, and leverage evidence from more granular inquiries.

2. Usual-Suspects Studies

Another group of studies seeks to identify what variables outside a law school bar preparation program predict bar outcomes. The usual suspects

31. *See id.* at 23, 39 (rejecting the possibility that more granular analysis would be informative: "[n]o single factor is responsible, but rather, it is a combination of increased admissions scores, strengthening of the academic curriculum, and a full scale effort at early bar preparation").

here are LSAT score,[32] undergraduate GPA (UGPA),[33] learner demographics,[34] law school cumulative GPA (CGPA),[35] and taking courses in bar-tested subjects during law school.[36]

Like enrollment studies, usual-suspects studies help pave the way for evidence-based practice in legal education. They show how to identify, as early as possible, learners with low odds of bar passage. They cry out for next-order inquiries. Usual-suspects studies answer the readily answerable question of who needs intervention, but not the very challenging learning-design question of how to intervene.

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32. *See* Deborah J. Merritt, *LSAT Scores and Eventual Bar Passage Rates*, FAC. LOUNGE (Dec 15, 2015), http://www.thefacultylounge.org/2015/12/lsat-scores-and-eventual-bar-passagerates.html [https://perma.cc/8M4U-5RHZ] (reporting there is an association between LSAT scores and bar passage, but association does not equal causation); *see also* Laura Rothstein, *The LSAT, U.S. News & World Report, and Minority Admissions: Special Challenges and Special Opportunities for Law School Deans*, 80 ST. JOHN'S L. REV. 257, 284 (2006) (suggesting more resources should be used for academic support programs, rather than denying students entry to law school based on a low LSAT score); Harvey Gilmore, *The SAT, LSAT, and Discrimination: Professor Gilmore Again Responds to Professor Subotnik*, 34 L. & INEQ. 153, 166 (2016) (arguing standardized test scores are not the only indicator of whether someone will be a successful lawyer).

33. *See* Christian C. Day, *Law Schools Can Solve the "Bar Pass Problem"—"Do the Work!"*, 40 CAL. W. L. REV. 321, 339 (2004) (noting "the highest LSAT scores [are] from students who excelled at competitive undergraduate school"); *see also* Trujillo, *supra* note 18, at 107 (listing undergraduate GPA as one of the bar passage factors studied).

34. *E.g.* LINDA F. WIGHTMAN, LSAC RSCH. REP. SERIES, LSAC NATIONAL LONGITUDINAL BAR PASSAGE STUDY, at viii (1998), http://lawschooltransparency.com/reform/projects/investigations/2015/documents/NLBPS.pdf [https://perma.cc/TS6W-AFKK] ("The goals of the data analysis were two: to report for the first time national bar examination outcome data by ethnicity and gender and to explore factors that could explain differences in outcomes.").

35. *See* Nicholas L. Georgakopoulos, *Bar Passage: GPA and LSAT, Not Bar Reviews* 9 (Ind. Univ. Robert H. McKinney Sch. of L., Rsch. Paper No. 2013-30, 2013), http://dx.doi.org/10.2139/ssrn.2308341 [https://perma.cc/MU3T-QHCU] (stating the highest indicator of bar passage is a student's law school GPA); *see also* Alphran et al., *supra* note 21, at 10, 12, 16 (suggesting law school GPA is a predictor of future bar passage).

36. *See* Amy N. Farley et al., *A Deeper Look at Bar Success: The Relationship Between Law Student Success, Academic Performance, and Student Characteristics*, 16 J. EMPIRICAL LEGAL STUD. 605, 618–624 (2019) ("[C]ontrolling for student law school GPA, demographics, and admissions data, each additional upper-level bar course taken was associated with a 2.1 times increase in the odds of bar passage."); *see also* Austin et al., *supra* note 19, at 778 (explaining a significant relationship exists between the number of bar exam courses a student takes and bar exam success); Douglas K. Rush & Hisako Matsuo, *Does Law School Curriculum Affect Bar Examination Passage? An Empirical Analysis of Factors Related to Bar Examination Passage During the Years 2001 Through 2006 at a Midwestern Law School*, 57 J. LEGAL EDUC. 224, 226 (2007) (examining the relationship between the number of bar examination subject-matter courses and bar exam passage rates).

For instance, a trailblazing usual-suspects study at Texas Tech University School of Law was intended "to identify students who are at risk of failing the bar exam so that appropriate intervention strategies could be developed and implemented."[37] Indeed, an early step in program design is determining who needs intervention, because scale is a first-order consideration in program design.[38] The next (far greater) challenge is learning what interventions are appropriate in context and how to implement them. When too many bar takers are failing, figuring out what to do about it is much harder than who to do it with. Future research should rise to the challenge posed by the usual-suspects studies.

The Texas Tech researchers described their findings as "being used to foster discussion among the law faculty, and to discuss curricular requirements, as well as potential curricular reform, if deemed appropriate."[39] Such discussions require further evidence for any proposed solutions, curricular or otherwise, to be evidence-based and thus reliable. The Garbage Can Model of organizational decision-making tells us law schools are collections of "choices looking for problems, issues and feelings looking for decision situations in which they might be aired, solutions looking for issues to which they might be the answer, and decision makers looking for work."[40] It should not be taken for granted that proposed solutions uncoupled from evidence have anything to do with the problems they are supposed to address. They may simply reflect proponents' intuition-based preferences. Future research should demonstrate how to link program design decisions to evidence. This project attempts to do so.

Because usual-suspects studies are mostly single-site, the usefulness of their findings to other program designers is limited by context variation.[41] For instance, a usual-suspects study at the University of Cincinnati College of Law (UC Law) looked at LSAT, UGPA, 1LGPA, and CGPA.[42] When

37. Austin et al., *supra* note 19, at 783.

38. *See* Eric Bettinger et al., *The Effects of Class Size in Online College Courses: Experimental Evidence*, 58 ECON. EDUC. REV. 68, 68 (2017) (declaring class size a "first-order consideration" when studying education cost and effectiveness).

39. Austin et al., *supra* note 19, at 783.

40. Michael D. Cohen et al., *A Garbage Can Model of Organizational Choice*, 17 ADMIN. SCI. Q. 1, 2 (1972).

41. *See* Chance Meyer & Nicole Noël, *Beyond Best Practices*, 6 RAISING THE BAR 2, 2–4 (2023) (arguing "law schools should learn to design their own context-sensitive teaching methods in response to measured phenomena in their own learning environments").

42. Farley et al., *supra* note 36, at 605.

the researchers found graduating law school CGPA best predicted bar passage at UC Law—far better than LSAT and UGPA—they concluded, "At a minimum, we believe our findings suggest that legal education matters" for bar passage.[43] But variation in conditions from one law school to another will change the predictive value of context-sensitive variables. As Ruiz observed, LSAT scores will be more predictive of bar performance at law schools with less effective bar preparation programs.[44] Ultimately, whether legal education matters to bar passage depends on the education.

Perhaps a law school can use usual-suspects studies from other organizational settings as a starting point to identify underperformers in its class who would benefit from intervention. But it is easy enough for a law school to find an evidence-based answer to this question specific to its learner population. A law school can determine the predictiveness of its own usual suspects simply by pulling a dozen fields of data from its database and retaining a data analyst to run a few computations.

Like enrollment studies, usual-suspects studies are not designed to generate evidence on which to select or develop program interventions. 1LGPA and graduating CGPA—if found to relate to bar performance in the context of a particular law school—do not show a program designer what to do for struggling learners. Half the students in every class have below average GPAs. The difficult question is what to do about it.

The usual suspect of learner demographics is critical to consider in designing equitable programs. But figuring out whether learners in a particular identity group are more likely to fail the bar is a simple matter of comparing reported group membership to bar results. Learning to mitigate the problem, on the other hand, demands years of self-work and system redesign with justice-oriented, culturally sustaining, asset pedagogies[45]—work we have hardly begun in legal education. Discovering that a learning environment is not inviting authentic participation in opportunities to learn across communities is just the beginning. We must now learn how to design equity in context.

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43. *Id.* at 626 (emphasis omitted).

44. *See* Ruiz, *supra* note 21, at 158 (suggesting "[a]n effective law school bar exam preparation program can make a difference for students near the bottom of the class").

45. *See generally* KRIS D. GUTIÉRREZ & PATRICK JOHNSON, *Understanding Identity Sampling and Cultural Repertoires: Advancing a Historicizing and Syncretic System of Teaching and Learning in Justice Pedagogies*, *in* CULTURALLY SUSTAINING PEDAGOGIES 247 (Django Paris & H. Samy Alim eds., 2017) (discussing "the power and possibility of culturally sustaining pedagogy (CSP) in the long arc toward educational equity and dignity").

Perhaps it is useful in law school curriculum design to know whether the usual suspect of taking courses in bar-tested subjects relates to bar passage in the context of a particular law school. But this knowledge is of little help in designing a bar preparation program. Regardless of whether it is wise to map a law school curriculum to bar subjects, bar preparation programs already use bar subjects. Moreover, as described below, research shows what bar takers do in individual bar preparation has a great deal more to do with bar results than what their law school does in the three years prior. In effect, curriculum mapping is likely to tinker around the edges of a bar pass problem.[46] Research on the subject continues.[47]

3. Examiners Studies

For findings not tied to unique law school conditions, there are a small number of multi-site bar studies commissioned by bar examiners[48] and the Law School Admission Council.[49] Examiners studies look at data from bar takers who attended various law schools.

Significant among them is a study commissioned by the California Bar in 2018. Researchers made a predictive model using the usual independent

46 Studies have found "[t]here is little to no correlation between the number of upper division bar courses and bar passage." *Raising the Bar*, 4 ACCESSLEX INST., no. 3, Summer 2021, at 6 (2021), https://www.accesslex.org/resources/raising-the-bar-summer-2021 [https://perma.cc/JF77-LTDC] (citing ACCESSLEX INST., ANALYZING FIRST-TIME BAR EXAM PASSAGE ON THE UBE IN NEW YORK STATE (2021), https://www.accesslex.org/NYBOLE [https://perma.cc/2PYP-U856]; and then citing Rush & Matsuo, *supra* note 36).

47. *E.g.* Catharine Skipp, *School of Law Receives Grant to Study Bar Exam Preparation*, NEWS@THEU (Dec. 14, 2022), https://news.miami.edu/stories/2022/12/school-of-law-receives-grant-to-study-bar-exam-preparation.html [https://perma.cc/JA6L-65JT] (noting a "Bar Success Research Grant Program funds well-designed and rigorous studies of the bar examination process and results").

48. *See* ROGER BOLUS, PERFORMANCE CHANGES ON THE CALIFORNIA BAR EXAMINATION: PART 2, at 54 (2018), http://www.calbar.ca.gov/Portals/0/documents/admissions/Examinations/Bar-Exam-Report-Final.pdf [https://perma.cc/5SDV-3MDU] (noting the study found no correlation between participating in a clinical program and future bar passage); *see also* ACCESSLEX INST., *supra* note 46, at 2 (surveying first-time and second-time bar takers in New York).

49. *See* WIGHTMAN, *supra* note 34, at 1 ("Issues related to achieving diversity in legal education and the legal profession have been the subjects of scholarly research and discussion for the past decade or more."); *see also* LISA C. ANTHONY ET AL., L. SCH. ADMISSION COUNCIL, NO. TR 13-01, PREDICTIVE VALIDITY OF THE LSAT: A NATIONAL SUMMARY OF THE 2011 AND 2012 LSAT CORRELATION STUDIES (2013), https://www.lsac.org/data-research/research/predictive-validity-lsat-national-summary-2011-and-2012-lsat-correlation [https://perma.cc/ZKN9-U2HD] ("Since the [LSAT] was first administered, the sponsors of the test have carried out predictive validity studies to evaluate the effectiveness of the test as well as other predictors in determining first-year law school performance.").

variables of LSAT, UGPA, CGPA, and demographics.[50] The model explained 52.3% of the variation in bar exam scores.[51] As in the Cincinnati single-site study, law school CGPA was the most predictive variable.[52]

A remarkable finding from the California Bar study, emphasized by Ruiz[53] but otherwise largely neglected, was that the law school attended by a bar taker accounted for only 2% of the variation in bar scores.[54] How do we explain this finding? Are we stuck with it? Does it mean that nothing a law school does will ever make a difference?

Reassuring answers to these questions can be found in a notable study commissioned by the New York Board of Law Examiners (NYBOLE) in 2016 and reported in 2018.[55] NYBOLE commissioned the AccessLex Institute to conduct a two-year study identifying drivers and barriers associated with first- and second-time bar passage on the Uniform Bar Exam in New York.[56] Looking beyond the usual suspects, the NYBOLE study included in the mix other independent variables representing learning activities, personal circumstances, and context mediators.[57] The researchers used logistic regression analysis to compare these variables to first- and second-time bar passage.[58]

With these variables in the mix, the two main predictors of bar success were found to be (1) hours spent on bar study and (2) use of effective learning strategies in bar study.[59]

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50. *See* BOLUS, *supra* note 48, at 32, 35 ("In terms of the *interrelationships* among these antecedent measures, we first observed that the correlations among entering law school credentials and law school grades were statistically significant but small.").

51. *See id.* at 39 (providing a table with values of regression models testing the cumulative impact of potential predictors of CBX performance).

52. *See id.* at 41 ("What is readily apparent from the results was the overwhelming importance of the aggregate performance in law school as measured by the students' cumulative GPA upon graduation.").

53. *See* Ruiz, *supra* note 21, at 151 (explaining LSAT scores have some predictive value, but CGPA has a much more significant impact on predicting bar exam success).

54. *See* BOLUS, *supra* note 48, at 40 (noting the "[c]onsideration of the law school that students attended generally added an additional 2% to the explanatory power of the models").

55. ACCESSLEX INST., *supra* note 46, at 2.

56. *See id.* at 29 (reporting the number of simulated bar exams taken was "not significantly correlated with first-time or second-time bar exam passage").

57. *See id.* at 38–41 (accounting for non-academic factors, including debt, unemployment, and mindset).

58. *See generally id.* (explaining the researcher's use of comparative analysis by race and gender).

59. *Id.* at 2–3.

Weekly average hours spent studying in the month leading up to the exam was a significant predictor for first-time takers ($p = 0.001$) and second-time takers ($p = 0.023$).[60] Because study participants provided responses on their first and second attempts, AccessLex established that increasing study hours had a causal effect on second-time bar passage.[61]

Quality of study was "equally paramount."[62] Study methods were found to mediate the impact of increased study time.[63] That finding is consistent with research outside legal education, showing that study time only emerges as predictive of academic performance when the quality of study is considered.[64]

The NYBOLE study helps explain why the law school a student attended was found to be so inconsequential in the California Bar study. To put it plainly, it is the learner, not the law school, who determines success on the bar exam. The NYBOLE study showed what learners do during bar preparation has more to do with bar performance than what law schools do in the three years prior to the exam.[65] Whether a bar taker benefits from their legal education during bar preparation depends on whether they make good use of their legal education.

This is not to say that what law schools do does not or cannot matter. Rather, it tells us the best way a law school bar preparation program can assist learners pass the bar is to help them take up effective independent learning strategies. It is not about learning law; it is about learning how to learn law. Thus, as Schulze advised, a law school bar preparation program should not reteach law; it should teach how to learn law.[66]

The NYBOLE study reached another important but underappreciated finding about the relationship between personal circumstances and bar

60. *See id.* at 78, 83 (providing a table which contains bar passage model summaries with direction of influence).

61. *See id.* at 3 (determining "studying strategically is critical for bar success").

62. *See id.* (explaining some students focused on outlining or making flash cards instead of watching review videos).

63. *Id.*

64. *See* E. Ashby Plant et al., *Why Study Time Does Not Predict Grade Point Average Across College Students: Implications of Deliberate Practice for Academic Performance*, 30 CONTEMP. EDUC. PSYCH. 96, 111–15 (2005) (suggesting students should take "active steps to ensure their practice time will be of high quality").

65. *See* ACCESSLEX INST., *supra* note 46, at 47–48 (underscoring the importance of treating bar preparation like a full-time job and completing as many practice questions as possible).

66. Louis N. Schulze, Jr., *Using Science to Build Better Learners: One School's Successful Efforts to Raise its Bar Passage Rates in an Era of Decline*, 68 J LEGAL EDUC. 230, 243 (2019).

outcomes. Variables like household size and employment were found to be significant for first-time takers *but not second-time takers*.[67] Qualitative evidence showed that second-time takers better managed and optimized their study practices to overcome still-existing personal circumstances and commitments.[68] Among participants who failed their first attempts, those who managed challenges to increase study hours were up to 19% more likely to pass on their second attempts.[69] Ultimately, it was not the absence of personal difficulties but the overcoming of personal difficulties with effective learning strategies that led to bar passage. If use of effective learning strategies can supersede personal circumstances enough to render them insignificant to bar passage, programs that focus on individual learning activities may empower learners to overcome personal challenges more than those that focus on the challenges themselves.

B. *Interpreting Bar Research with Learning Science*

In the NYBOLE study, second-time takers who participated in focus groups described improving their study approach by outlining rather than merely watching lecture videos.[70] In legal education, "outlining" refers to making a structured, hierarchical, detailed representation of a learner's mental schema in a domain of law.[71] The term is something of a misnomer because a learner's "outline" of their legal knowledge should be comprehensive in scope and depth. Because schema-development improves complex problem-solving,[72] we would expect that outlining would improve bar performance more than passively watching lecture videos.

Many second-time takers in the NYBOLE study were not more likely to pass when they "tailor[ed] their bar preparation activities to fit their individual learning styles."[73] This too, is unsurprising. Learning styles are a

67. ACCESSLEX INST., *supra* note 46, at 5–6.

68. *Id.* at 5.

69. *Id.* at 13.

70. *Id.* at 3.

71. *See Outlines: They Can Save or Break You in Law School,* THOMSON REUTERS, https://lawschool.thomsonreuters.com/survival-guide/outlines-they-can-save-or-break-you/ [https://perma.cc/B7WM-6FF2] (providing tips to assist students in formulating their own approach to outlining).

72. R. Taconis et al., *Teaching Science Problem Solving: An Overview of Experimental Work*, 38 J. RSCH. SCI. TEACHING 442, 446, 463 (2001).

73. ACCESSLEX INST., *supra* note 46, at 3.

debunked but persistent neuromyth.[74] There is no evidence that individuals have learning styles in which they learn more effectively.[75] Further, the unreliability of learner intuitions about what helps them learn is well-established.[76] It should be expected bar takers who follow notoriously unreliable intuitions when deciding how to change their study practices are likely to change for the worse. Thus, bar takers need direction from learning experts in what learning strategies are most effective.

Cognitive science has resoundingly established learning activities that feel useful to learners are often not useful at all. Passive learning activities are ineffective but feel comfortable, while high-difficulty, error-generating learning activities are effective but feel uncomfortable.[77] Consequently, learners' perceptions of the effectiveness of their own learning activities tend to be opposite from the truth.[78]

For instance, passively reading a text seven times does not result in more retention than reading it once,[79] while retrieval practice results in much greater retention.[80] However, if you ask learners if it was helpful to read a text multiple times, they will eagerly affirm that it was very helpful.[81] The growing recognition from multiple readings felt reassuring to them, but recognition is not retention. Meanwhile, if you ask learners how helpful it was to undertake retrieval practice several times after reading a text once, they will—perhaps grumpily—report that it was far less helpful than

74. Cynthia Nebel, *Catering to Learning Styles Isn't Just Ineffective: It Can Harm Learning*, LEARNING SCIENTISTS BLOG (2022), https://www.learningscientists.org/blog/2021/9/16-1 [https://perma.cc/2A6C-4Y4N].

75. *See generally* Harold Pashler et al., *Learning Styles: Concepts and Evidence*, 9 PSYCH. SCI. PUB. INT. 105 (2008) (evaluating the effects of learning styles on student's performance).

76. *E.g.,* Henry L. Roediger, III & Jeffrey D. Karpicke, *Test-Enhanced Learning: Taking Memory Tests Improves Long-Term Retention*, 17 PSYCH. SCI. 249, 254 (2006) (finding students improperly believe repeated studying is the best method due to short term results).

77. *See generally* PETER C. BROWN ET AL., MAKE IT STICK: THE SCIENCE OF SUCCESSFUL LEARNING (2014) (compiling empirical evidence from multiple research studies on learning and memory); Janet Metcalfe, *Learning from Errors*, 68 ANN. REV. PSYCH. (2017) (analyzing whether error avoidance during learning is a productive strategy).

78. *See* Roediger & Karpicke, *supra* note 76, at 254 (assessing the effectiveness of traditional learning methods).

79. *See* E. Tulving, *Subjective Organization and Effects of Repetition in Multi-Trial Free-Recall Learning*, 5 J. VERBAL LEARNING & VERBAL BEHAV. 189, 193 (1966) (explaining the mechanical repetition of reading a text does not lead to better recall of the material).

80. Roediger & Karpicke, *supra* note 76, at 254.

81. *See, e.g., id.* (showing individual learners cannot identify the lack of efficacy associated with mechanical reading).

rereading would have been.[82] Being unable to recall everything from the text felt discouraging to them. But ultimately, when you test the two groups of learners, their performance will defy their perceptions of their own learning. Those who undertook retrieval practice and reported it unhelpful will significantly outperform those who reread and reported it helpful.[83]

Consequently, surveying learners about what learning activities they find helpful (or asking bar takers how they improved their study practices) is a great way to design comfortably ineffective programs. Rather, program designers must take responsibility for being the ones who know how learning works. Certainly, they should engage with learners about learner experiences and perceptions because circumstances, attitudes, and relationships mediate learning. But when it comes to what individual learning strategies to promote, it is better for program designers to lead with cognitive science than follow the learner's gut.

The NYBOLE study recommended helping bar takers reduce employment hours and leisure activities to make more time for study.[84] Programs that go that route should be cautious about learners self-reporting their study time and effort. Learners tend to overestimate and overreport how much they study.[85] They do so not because they are deceitful but because they are human and subject to perception bias. Learners also self-handicap.[86] They make external attributions in advance to explain potential future failures, which justify lesser effort and thus bring the failures to fruition.[87] They do so not because they want to fail, but because they are

82. *See, e.g., id.* (acknowledging test-taking enhances retention and gives students an opportunity to discuss what they have learned).

83. *See, e.g., id.* (explaining individuals that took part in recall activities and reported it unhelpful will out-perform those who took part in re-reading activities and reported it helpful).

84. ACCESSLEX INST., *supra* note 46, at 6, 48.

85. *See* Biwer et al., *supra* note 10 at 198 (noting participants in the study self-reported their learning strategy and may have felt inclined to favor the strategies the program found more effective).

86. *See* Cathy R. Thomas & Shannon A. Gadbois, *Academic Self-Handicapping: The Role of Self-Concept Clarity and Students' Learning Strategies*, 77 BRIT. J. EDUC. PSYCH.101, 111–12 (2007) (linking "self-handicapping" to students' goal-structure, personal circumstances, and self-esteem).

87. J. G. Simon & N. T. Feather, *Causal Attributions for Success and Failure at University Examinations*, 64 J. EDUC. PSYCH. 46, 46 (1973); *see also* Dale T. Miller, *Ego Involvement and Attributions for Success and Failure*, 34 J. PERSONALITY & SOC. PSYCH. 901, 905 (1976) (explaining individuals do not use the same causal explanations to account for their success and failures); James E. Luginbuhl et al., *Causal Attributions for Success and Failure*, 31 J. PERSONALITY & SOC. PSYCH. 86 (1975) (studying "attributions of success and failure experiences to the four factors of effort, ability, luck, and task difficulty").

human and driven to preserve self-worth.[88] As learners, we are all subject to self-defeating tendencies. Recognizing them is not insulting to the learner. It is an evidence-based step towards being a better educator and supporter of learning.

Interpreting existing bar research against learning science shows that a law school bar preparation program is most likely to improve bar performance by focusing on individual learning activities. These activities should involve extensive time using evidence-based, effective learning strategies, which tend to be high-difficulty, error-generating, and uncomfortable. Put simply, learners who are trained to study long, smart, and hard are most likely to pass.

III. CONCEPTUAL FRAMEWORK: TRAINING TRANSFER

Our project began from the research-based premise that bar outcomes depend most on how learners study. We proceeded with the expectation that the most likely place to look for ways to make significant impacts on bar performance was the personal learning activities of the law school's bar takers. That was not the only focus, but with limited time and resources in a problematic practice setting, we looked there especially. The question for the project became how to train effective learning activities so they transfer to individual bar study.

Training transfer refers to whether, how, and to what extent trainees apply knowledge, skills, and attitudes developed in a training program when they return to their work environments,[89] and whether trainees continue to demonstrate them there.[90] Training transfer is often evaluated in the context of professional development and job trainings,[91] but law school bar preparation programs are not so different. The main concern is the same—will trainees carry what they learn into their daily work? The daily work of

88. *See* Martin V. Covington, *The Self-Worth Theory of Achievement Motivation: Findings and Implications*, 85 ELEMENTARY SCH. J. 5, 16 (1984) (explaining learners' self-worth is often derived from classroom achievement).

89. Asif Ali Rahman, *Tracing the Evolution of Transfer of Training: A Review Article*, 5 ANNALS OF SOC. SCIS. & MGMT. STUD. 71 (2020).

90. *See* Brian D. Blume et al., *Transfer of Training: A Meta-Analytic Review*, 36 J. MGMT. 1065, 1067–68 (2010) (noting the rate of transfer is usually very low in a workplace setting).

91. *See generally* RAMON WENZEL & JOHN CORDERY, TRAINING TRANSFER RESEARCH: A MANAGER'S GUIDE AND BIBLIOGRAPHY (2014) (evaluating training transfer as a part of professional development).

law students is individual and self-directed study.[92] Law school bar preparation programs train law students to do the predominantly independent work of bar preparation with effective learning strategies in the weeks leading up to the exam.[93] It is hoped trainees will carry learning strategies, skills, and attitudes from law school classrooms to the places where the bulk work of bar preparation is done—cafes, breakrooms, libraries, trains, buses, kitchen tables, and offices.

Like job trainings that prepare trainees to perform in the workplace, the bar exam targets professional competencies.[94] From an organizational perspective, the dangers of ineffective trainings are the same for law schools as for any organization—wasted resources and unchanged outcomes.[95]

Conceptualizing bar preparation as training transfer is also justified by how well the analytical frameworks used to evaluate training transfer align with and encompass the many circumstances and concerns of bar preparation training. In our early discussions at the law school around this project, attributions for the bar passage problem abounded. Bar preparation entails challenges, both cognitive and non-cognitive,[96] both individual and environmental.[97] It was no surprise when our talks jumped from the learner to the organization, from cognition to context, from the time before bar preparation to the day of the exam. We needed to turn a critical eye not just to the learner but also to the learning environment that mediated learning activities. We needed an integrative framework appropriate to the problem at hand that would allow us to explore various explanations at various levels

92. Schulze, *supra* note 66, at 239.

93. *See, e.g.,* Leticia Romero, *St. Mary's Law Supports Students All the Way to the Bar Exam*, ST. MARY'S UNIV. (Aug. 1, 2023), https://www.stmarytx.edu/2023/raise-the-bar/ [https://perma.cc/KF5N-V9YW] (explaining the Raise the Bar Program at St. Mary's University, which aims to equip students with the tools to be successful on the bar exam).

94. *See generally* Danette Waller McKinley & Beth E. Donahue, *The Testing Column Measuring Competence: Assessment of Knowledge and Skills on the Bar Exam*, 92 THE BAR EXAM'R 21 (reporting lawyer competencies, such as the ability to identify legal issues and conduct research, are associated with success in early practice).

95. *See generally* WENZEL & CORDERY, *supra* note 91 (explaining the training transfer involves two main processes: generalization and maintenance).

96. Ruiz, *supra* note 21, at 159.

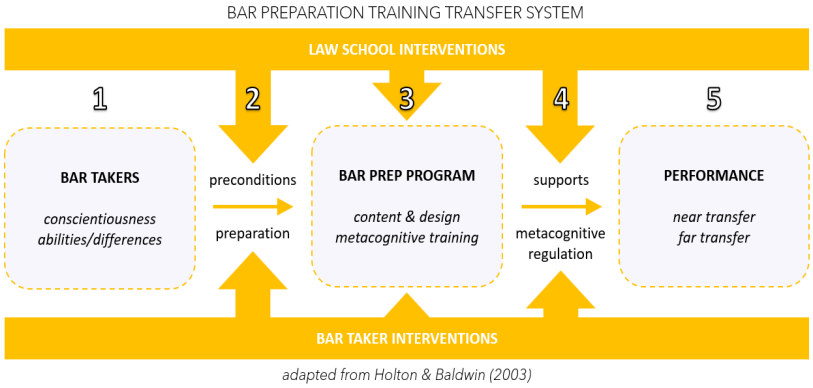
97. *See generally* Scott Devito et al., *Examining the Bar Exam: An Empirical Analysis of Racial Bias in the Uniform Bar Examination*, 55 U. MICH. J. L. REFORM 597 (2022) (assessing the contribution of socioeconomic factors to bar passage rates); Gerald F. Hess, *Heads and Hearts: The Teaching and Learning Environment in Law School*, 52 J. LEGAL EDUC. 75 (2002) (evaluating the effect of the learning environment on a law student's education).

of inquiry coherently. In search of that framework, we found the Holton and Baldwin model.[98]

The Holton and Baldwin model for evaluating training transfer systems takes an "intervention-oriented" perspective.[99] The learner is treated both as an input and as "a unit in the model that may be shaped by interventions."[100]

The organizational environment is treated as a matter of system design. The model organizes the training transfer process into five stages: (1) when learners enter the organizational environment with individual abilities, motivations, differences, and prior experiences; (2) the pre-training stage, when organizational preconditions and learner activities situate learners for training; (3) the training stage, when the learning event occurs according to program content and design; (4) the post-training stage, when learners maintain acquired knowledge and skills with organizational supports; and (5) the moment of individual performance representing near or far transfer.[101]

We adapted and specified the Holton and Baldwin model to the narrow purpose of evaluating a law school bar preparation program.



adapted from Holton & Baldwin (2003)

While Holton and Baldwin envisioned individual learners or teams of learners entering training environments, we focused on individual bar takers.

98. ELWOOD F. HOLTON III & TIMOTHY T. BALDWIN, IMPROVING LEARNING TRANSFER IN ORGANIZATIONS 8 (2003).

99. *Id.*

100. *Id.* at 9.

101. *Id.* at 8.

Bar takers may join informal study groups, but they choose their own learning strategies, take the bar alone, and are assessed on individual performance.

When adapting this model, we altered Stages 1, 3, and 4, while leaving Stages 2 and 5 unchanged, as they suited the bar preparation context. At Stage 1, we replaced Holton and Baldwin's incoming learner characteristic of motivation with conscientiousness for four reasons. First, we treated bar preparation training as occupational training, and conscientiousness has proven to be the best non-cognitive predictor of occupational performance.[102] Second, to the extent bar preparation training is academic in nature, conscientiousness has also proven to be the "most important personality predictor of academic achievement."[103] Third, motivation and conscientiousness constructs correlate so highly it has become questionable whether they are even distinguishable.[104] Fourth, unlike other occupational trainees, bar preparation trainees are mere months away from entering courtrooms as officers with fiduciary and ethical duties to represent their clients with competence, zeal, and attention to procedural and substantive detail. Motivation aside, for them, conscientiousness is a professional duty, with lives and livelihoods at stake.

At Stage 3, with regard to program content and design, we specified the main purpose of law school bar preparation programs—metacognitive training. Law school academic support programs are not tasked with re-teaching law, rather, it is teaching learners how to learn law.[105] For bar-focused learners, key knowledge, skills, and attitudes to transfer from a training program to the work environments of individual bar study are not legal in nature; they are metacognitive.

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102. *See* Michael P. Wilmot & Deniz S. Ones, *A Century of Research on Conscientiousness at Work*, 116 PROC. NAT'L ACAD. SCI. 23004, 23009 (2019) (concluding "the vast treasure trove of findings presented here should motivate every individual, organizational, and societal decision maker to better understand, develop, and apply the valuable human capital resource that is [conscientiousness]").

103. *See generally* Patrick Franzen et al., *Developing and Validating a Short-Form Questionnaire for the Assessment of Seven Facets of Conscientiousness in Large-Scale Assessments*, 104 J. PERSONALITY ASSESSMENT 759 (2022) (arguing conscientiousness is the strongest personality predictor).

104. *See* Brent W. Roberts et al., *What Is Conscientiousness and How Can It be Assessed?*, 50 DEV. PSYCH. 1315, 1324–25 (2014) [hereinafter Roberts et al., *What Is Conscientiousness*] ("One of the long-standing issues for the field of personality psychology is the divide, or lack thereof between traits and motives.").

105. *See* Schulze, *supra* note 66, at 243 ("Instead of considering tactics like reteaching or spoon-feeding doctrine to promote bar passage, law schools should be undoing the learning misunderstandings that so many students bring into their legal education.").

At Stage 4, with regard to the post-training upkeep of knowledge, skills, and attitudes that Holton and Baldwin referred to as maintenance, we specified the mechanism by which metacognitive knowledge and skills transfer to individual study—metacognitive (self-) regulation.[106]

The resulting framework for evaluating a bar preparation training program encompasses inquiries both cognitive and non-cognitive, and both individual and environmental, integrated across the five stages of training transfer.

The framework departs from prior bar preparation research in three ways. First, it treats law school bar preparation programs as training transfer systems, rather than extended legal education. Second, it adopts a systems design perspective, making the learner a unit of analysis, but also situating the learner in the environmental context, which is also scrutinized. Third, the model focuses not on the outcome of bar passage, but on the outcome of training transfer to individual study activity.

Prior bar research overlooks training transfer as a linkage between bar preparation training and bar outcomes. The bar exam itself is not the performance environment to which bar preparation training transfers. Instead, training transfers to individual bar study, which the bar exam later assesses. If the relationship between a law school's bar preparation training program and bar performance is weak, it could mean the trained learning activities are ineffective or the program is ineffective in getting learners to adopt effective activities. To know which, the outcome of transfer must be measured.

IV. METHODS

We had to specify the individual learning activities trained by the program, so we could measure their relationships with bar performance and evaluate their interaction with environmental elements across the five stages of transfer. Our project became two-wave. First, we conducted a preliminary analysis of existing data at the law school to identify, based on best available evidence, what program trainings related most closely to bar performance among the law school's graduates. We then used these preliminary findings to design the second wave—the bulk of our project—

106. *See* Gregory Schraw, *Promoting General Metacognitive Awareness*, 26 INSTRUCTIONAL SCI. (SPECIAL ISSUE) 113, 116 (1998) (noting "metacognition consists of knowledge and regulatory skills that are used to control one's cognition").

where we specified research questions and generated evidence to learn how to optimize transfer of the key program trainings identified in the first wave. In essence, the first wave, and our early findings there, became the basis for our greater project design.

A. *Learning Activities Closely Related to Bar Performance*

Prior to this project, the law school conducted informal surveys of bar takers asking about their study activities, personal circumstances, and use of program resources. However, the surveys were given anonymously, and responses could not be linked to bar outcomes. During our preliminary discussions in anticipation of this project, I recommended the law school make its July 2022 survey non-anonymous so we could learn what variables relate to bar performance. The law school accepted my recommendation. The survey was administered after the July 2022 bar and before bar results were published, with a 33% response rate (n = 54). As explained below, any reliability concerns related to only a third of the law school's bar takers responding were mitigated by the resulting findings being strongly corroborated by prior bar research and learning science. That is, we were reassured when variables found to be predictive were precisely those we should expect to be predictive.

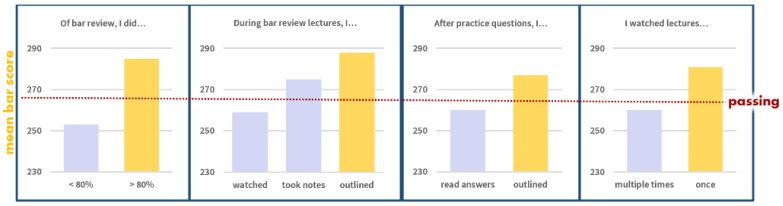
The survey addressed a broad variety of considerations, including employment status, childcare, other life responsibilities, hours of sleep, location of study, presence of a cell phone while studying, utilization of program resources, participation in program events, bar review courses, completion of practice questions, and various other study practices. I compared survey responses to respondents' bar scores using conditional means and regression analysis.

Regression analysis indicated four program-promoted learning activities were most closely related to bar performance: (1) completing at least 80% of bar review (p = <0.001), (2) outlining[107] after completing practice questions

107. *See* Don Macaulay, *Everything You Need to Know About Outlining,* BARBRI (Oct. 17, 2019), https://lawpreview.barbri.com/everything-you-need-to-know-about-outlining/ [https://perma.cc/BZ4D-PJY4] (explaining outlining in bar review involves notating and developing bar review outlines with new understandings, connecting elements of knowledge within a structured, hierarchical, meaning-rich representation of the learner's growing mental schema in a domain of law).

($p = 0.08$),[108] rather than merely reading answer explanations, (3) outlining during bar review videos, rather than watching passively or taking separate notes ($p = 0.02$); and (4) watching lecture videos once, instead of multiple times ($p = 0.01$).

Graph 2: Relationship of Bar Review Activities to Bar Performance



Together in a regression model, these four variables explained 40% of the variance in bar scores ($R^2 = 0.40$). For a handful of low-hanging fruit—specific activities that could be influenced with targeted, manageable program changes and expected to make a difference—40% was not unencouraging. We were not naïve enough to expect a smoking gun; our goal was not to make broad, sweeping program changes. We merely sought an evidentiary basis to focus attention on discrete, targetable matters likely to make a difference. All things being as they were in the organizational context, we wanted to find underleveraged and leverageable variables.

Prior bar research and learning science corroborated each finding. The NYBOLE study told us time spent studying and use of effective learning strategies are generally the best predictors of bar performance.[109] We would thus expect time spent studying to reach 80% bar review completion, and use of effective learning strategies, like outlining, would prove to be key to

108. A p-value of 0.08 indicates there is an 8% probability that it is merely a coincidence our data showed this variable to relate to bar score. In scientific research, a p-value above 0.01 or 0.05 would indicate a lack of statistical significance. For purposes of our improvement project, where our goal was to improve the reliability of the law school's program design decisions, we were comfortable that 8% was better than the usual guesswork of law school decision-making. *See* Brian Beers, *P-Value: What It Is, How to Calculate It, and Why It Matters*, INVESTOPEDIA (Mar. 28, 2023), https://www.investopedia.com/terms/p/p-value.asp [https://perma.cc/JZV6-HFRR] ("When researchers identify an apparent relationship between two variables, there is always a possibility that this correlation might be a coincidence. A p-value calculation helps determine if the observed relationship could arise as a result of chance.").

109. *See* ACCESSLEX INST., *supra* note 46, at 5 (suggesting study time should be spent using meaningful methods specific to the individual, such as flashcards or outlining).

bar performance among the law school's graduates. Because schema-development aids problem-solving,[110] we would expect bar takers who develop subject-matter outlines of legal doctrine, rather than merely watching lecture videos and reading answer explanations, would be more successful at bar exam problem-solving. Passive exposures do not aid encoding,[111] rather it is deep processing that moves information into long-term memory.[112] Thus, we would expect students who watch lecture videos over and over, instead of undertaking one effective viewing with deep processing via outlining, would be less successful.

Incidentally, like all programs that find their way to evidence-based practice, the program's 2022 survey revealed several of the intuitively appealing learning activities promoted by the program were not closely related to bar performance. For example, watching bar review lecture videos on regular, rather than on an increased playback speed, was unrelated to bar score ($p = 0.68$). Respondents who watched lecture videos on an increased speed "almost always" had a mean bar score four points higher than those who sped up the videos "never." Because schema-development helps learners think more quickly,[113] perhaps learners with more organized and robust domain knowledge could process along with lecture videos at higher speeds.

Identifying key learning activities early in our project planning had four benefits. First, the program was able to make real-time improvements, increasing emphasis on the learning activities we identified. Compared to earlier data collection efforts at the law school, we had already taken a step towards connecting specific program design decisions to the best available evidence.

Second, it provided an evidentiary basis to anchor our improvement efforts to a shortlist of manageable considerations. There was strong affirmation in the agreement between our literature review and existing evidence at the law school. Of course, other program activities were

110. Taconis et al., *supra* note 72, at 446, 463.

111. *See* Tulving, *supra* note 79, at 191 (suggesting "mechanical repetition by itself has no effect on recall"); *see also* Roediger & Karpicke, *supra* note 76, at 254 ("Many study conditions and strategies that produce rapid learning and short-term benefits lead to poor long-term performance.").

112. Alan D. Castel et al., *Fire Drill: Inattentional Blindness and Amnesia for the Location of Fire Extinguishers*, 74 ATTENTION PERCEPTION & PSYCHOPHYSICS 1391, 1393–94 (2012).

113. *See* Willingham, *supra* note 2 (noting "research literature from cognitive science shows that knowledge does much more than just help students hone their thinking skills: It actually makes learning easier").

maintained. We did not recommend the program exclude its other features to focus on the four key learning activities. Rather, with evidence to conclude these particular activities weighed heavily on bar performance, we recommended the program give them special attention.

Third, it generated commitment to the project among stakeholders at the law school. Before we designed our project or began data collection, the law school already had a more reliable idea of what to do (and what not to do) with learners. Organizational members saw value being created and redoubled their engagement with the project.

Fourth, our preliminary findings provided an evidentiary basis for project design. We defined training transfer as learners' use of the four key learning activities in individual bar study. Our project became about how the program could clear the way for each of the learning activities to traverse the five stages of transfer. If we could get more bar takers using learning activities most closely related to bar passage in the environmental context, we could reasonably expect to improve bar outcomes. Our project then focused on identifying and removing the main roadblocks to transfer.

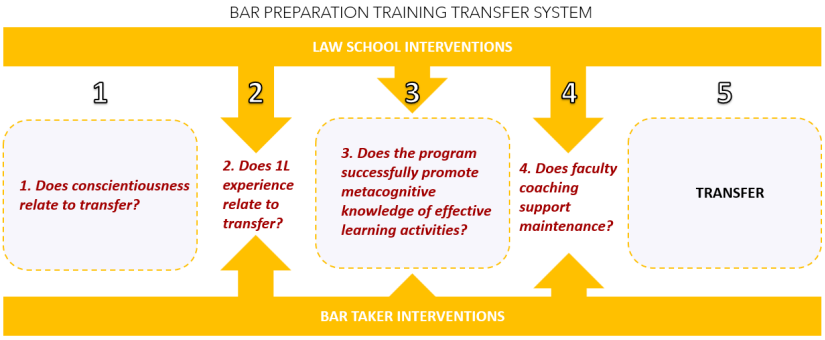
B. *Project Questions*

We sought to generate evidence specific to each stage of transfer and learning activity, so the program would be able to make surgical program changes for the greatest impact. We evaluated how well each key learning activity traversed the five stages of transfer, interacting with environmental elements along the way to either afford or constrain utilization among bar takers. We developed project questions targeting important features of the law school's bar preparation training program at the four stages of transfer, leading to Stage 5 transfer itself.

The questions were specific to the bar preparation training program in place at the law school. For instance, the program's Stage 2 preconditions to training consisted of a 1L academic support course leading to bar-focused training in 2L and 3L. Stage 4 post-training support included faculty coaching, where bar takers were paired with law professors who advised

them throughout bar review. We derived four project questions to test key features of the training program.

Question 1 focused on the Stage 1 incoming learner characteristic of conscientiousness and asked if a relationship between learner conscientiousness and transfer existed. Question 2 focused on learners' pre-training experiences in the organizational environment during Stage 2 and asked if a relationship between 1L experience and training transfer existed. Question 3 focused on Stage 3 program content and design and asked whether the program successfully promoted metacognitive knowledge of effective learning strategies. Question 4 focused on Stage 4 post-training maintenance with organizational supports and asked whether the program's faculty coaching supported maintenance.



adapted from Holton & Baldwin (2003)

Our project questions differed from prior bar-focused research in three ways. First, unlike enrollment studies and usual-suspects studies, we looked at specific learning activities to generate evidence that would support granular design decisions about how to improve the law school's bar preparation program. We thus set the project up for more actionable recommendations. Second, unlike usual-suspects studies, we focused on influenceable variables. LSAT, GPA, and learner demographics are dictated by organizational processes and interests outside the purview of a bar preparation program. On the other hand, a program has the ability to influence how learners study. The study did not set out merely to learn who needs intervention. We wanted to learn how to intervene. Here, too, we set the project up for more actionable recommendations. Third, unlike bar studies that start from scratch and ask first-order questions about what relates to bar passage, our project made it further down the road of

discovery. After relying on the best available evidence to learn what likely matters most in the law school's learning community, we dedicated the bulk of our work to figuring out how to influence it. Our two-wave approach set the project up for more powerful findings. Helping a law school understand what to prioritize is a start, but offering practical guidance on the implementation goes a step further towards ensuring the findings will have a meaningful impact in practice.

C. *Data Collection and Analysis*

Based on the law school's parameters and project timeframe, data collection consisted of three surveys: (1) a survey of 3Ls in the bar preparation program (55% response rate, $n = 76$), (2) a survey of faculty who advise bar takers or serve as coaches for the program (53% response rate, $n = 16$), and (3) a survey of graduates in the midst of bar preparation (21% response rate, $n = 29$). This final survey was given with the expectation of a low response rate. However, we wanted to see if the law school could get a baseline reading of utilization of the key learning activities. And thus, this information could be used to compare to future measures after implementing program changes. Surveys were pre-tested with current students, recent bar takers, and law faculty. Survey items related to the four key learning activities were consistent with the law school's 2022 survey, which provided some criterion-related validity. These items had already proven predictive of bar passage. All surveys included both closed and open-ended questions.

To answer Question 1, we compared conscientiousness scores with responses indicating adoption of each key learning activity. Conscientiousness was measured with the Concise Conscientiousness Measure-Short (CCM-S) developed by Franzen et al.,[114] derived from the scale created by MacCann et al.[115] The CCM-S was included in our 3L survey. To answer Question 2, we compared perceptions of the 1L academic support course to responses indicating adoption of each key learning activity. The learners' primary introduction to the academic support program, which would later deliver bar preparation training, was the program's 1L academic support course. We thus measured 1L

114. Franzen et al., *supra* note 103, at 759, 762.

115. *Id.*; *see generally* Carolyn MacCann et al., *Empirical Identification of the Major Facets of Conscientiousness*, 19 LEARNING & INDIVIDUAL DIFFERENCES 451 (2009) (developing a scale for measuring conscientiousness).

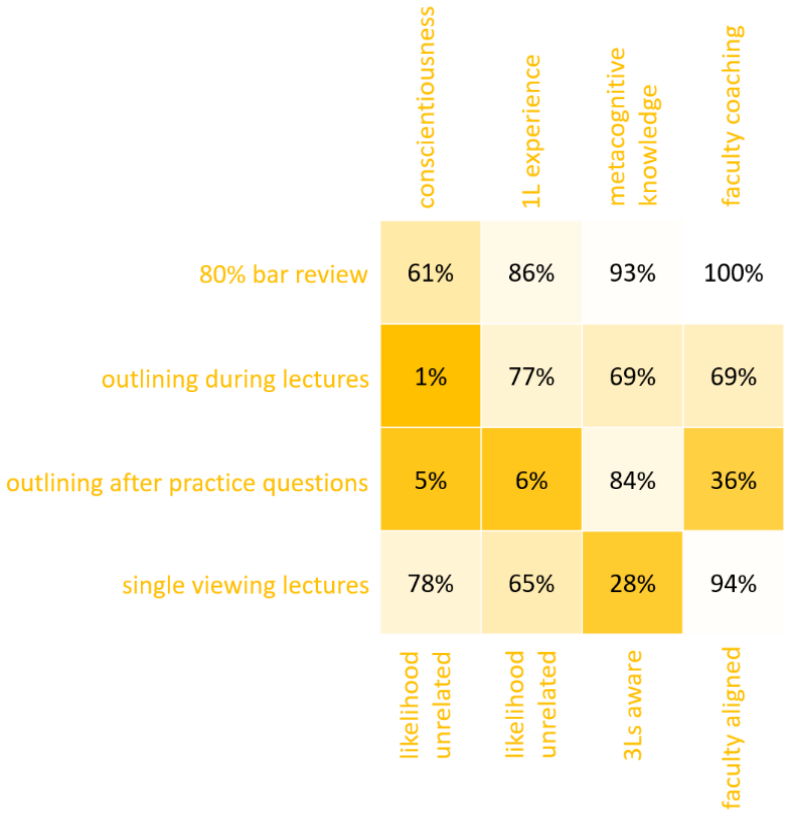
experience by asking 3Ls in the bar preparation program to rate their 1L academic support course as "Very helpful," "Somewhat helpful," or "Not helpful at all." For Question 3, we measured learner awareness and acceptance of the four key learning activities by asking 3Ls in the program what bar takers should do in bar preparation. For example, we asked whether they should view lecture videos once, twice, or more than twice. For Question 4, we surveyed faculty advisers and coaches, and asked if their advice to bar takers was consistent with the four key learning activities.

The relationship between conscientiousness and transfer (Question 1) and 1L experience and transfer (Question 2) was assessed with conditional means and regression analysis. The program's promotion of effective learning strategies (Question 3) and the extent to which faculty coaching supported maintenance (Question 4) were represented with simple percentages. These percentages showed how many 3Ls identified each of the four key learning activities as something bar takers should do in individual bar study and how many faculty advised bar takers consistently with each of the four key learning activities.

V. RESULTS

We sought to specify which stages of transfer interaction with program elements resulted in each key learning activity hitting the most resistance. The program could then make precise and efficient use of its resources by targeting and removing the main roadblocks to transfer. In the heatmap below, dark cells represent the greatest roadblocks to adoption of the learning activities most closely related to bar performance. The first two columns provide p-values converted to percentages, indicating the likelihood two variables are unrelated. Low values indicate a relationship. The second two columns show percentages of students and faculty aligned with each key learning activity.

Graph 3: Relationship of Learning Activities to Bar Passage



Viewing the heatmap horizontally, or row-by-row, it is apparent "outlining after practice questions" is the most impeded learning activity, hitting significant roadblocks at Stages 1, 2, and 4. Completing "80% bar review" has the clearest path through the transfer process. Furthermore, "outlining during lectures" would transfer nicely, if only it could overcome Stage 1 "learner conscientiousness." Similarly, "single-viewing lectures" would transfer well if it could overcome low awareness among 3Ls in the Stage 3 training program.

In viewing the heatmap vertically, or column-by-column, it is evident how elements at each stage of transfer interact with each learning activity.

A. *Stage 1 Learner Conscientiousness*

Conscientiousness is a personality trait, encompassing constructs of self-control, responsibility, propensity to work hard, orderliness, and rule-abidingness.[116] Conscientiousness is a powerful predictor of high-difficulty educational and occupational attainment.[117] We found the two outlining activities—after practice questions and during lecture videos—have a close relationship with conscientiousness, while the other two learning activities do not. Learners with a lesser propensity to work hard are less likely to take up the high-difficulty learning activity of outlining. They are more amenable to completing at least 80% of bar review and viewing lectures only once, perhaps because these recommendations seem like allowances. Eighty percent is, after all, less than the full 100%, and single-viewing lectures seems like less effort than multiple viewings. Meanwhile, among high-conscientiousness learners, viewing lectures multiple times may seem diligent—going above and beyond to guarantee success by outworking the competition. As is often the case, none of these learner intuitions are correct.

Survey remarks from learners with below average conscientiousness scores reflected a commitment to passive learning activities. When asked what bar takers should do after completing practice questions, these learners focused on reading answer explanations, but not following that reading with outlining (e.g., "Review answer explanations," "Look and see why you got them wrong," or "Go over the answers"). Another group of respondents favored vaguely defined follow-up activities focused on repetition (e.g., "Go over them again," "Redo the questions," or "Re-read"). Some believed the rote task of rewriting would help them retain the material (e.g., "Rewrite the model answer" or "Read the answers and rewrite them to memorize it"). Others offered vague responses reflecting uncertainty as to what specific activities to perform (e.g., "Internalize them," "Go over the rules," and "Learn why I got them correct/incorrect"). When asked what to do during bar review lecture videos, these respondents again preferred listening to outlining (e.g., "Focus on listening carefully," "Listen attentively," or "Actively listen, try to take mental notes").

116. Roberts et al., *What Is Conscientiousness*, *supra* note 104, at 1315 (citing Brent W. Roberts et al., *Conscientiousness*, *in* HANDBOOK OF INDIVIDUAL DIFFERENCES IN SOCIAL BEHAVIOR 369 (Mark R. Leary & Rick H. Hoyle eds., 2009)).

117. *See id.* (listing domains associated with conscientiousness).

Moreover, learners who planned to watch lecture videos multiple times essentially relieved themselves of the responsibility to fully engage on their first viewing. One student remarked a bar taker should "watch the first time and then the second time watching take notes." Bar takers with this approach spent dozens of hours passively watching bar review lectures once before they even began to effectively commit information to long-term memory. The opportunity cost to rewatching lectures was many hours not spent on effective learning activities.

B. *Stage 2 Precondition of 1L Experience*

We discovered learners who found 1L academic support unhelpful were unlikely to outline after practice questions. For the same reasons low-conscientiousness learners were more resistant to outlining activities than the other key learning activities, it stood to reason that learners who discounted the program's 1L offerings would be more resistant to the program's later, bigger asks.

Why were these learners more resistant to outlining after practice questions than during bar review lectures? Perhaps they viewed lecture videos as a formal, constitutive part of bar review, while viewing practice questions not built-into the program as optional additions. Going beyond the minimal program requirements with additional practice questions and the high-difficulty task of outlining may be especially distasteful to learners less inclined to appreciate program advice.

C. *Stage 3 Metacognitive Awareness*

3Ls in the training program were largely unaware they should watch lectures only once. As discussed above, the counterintuitive nature of this learning activity likely works against its recognition and adoption.

Other key learning activities enjoyed broad recognition at Stage 3. When asked what bar takers should do during lecture videos, 3Ls foregrounded outlining (e.g., "Update your outline," "Revise bar prep outlines," and "Make notes into the Barbri outline"). When asked what to do after practice questions, again 3Ls focused on outlining (e.g., "Review the correct answer and update your outline," "Read the answers . . . , add into my outline if not done so already," or "Find out why I got the answer wrong and update my outline").

D. *Stage 4 Maintenance with Faculty Coaching*

We found the faculty to be well-aligned with the key learning activities, except outlining after practice questions. Before our first-wave analysis, the program likely did not realize how critical this activity was or promote it as heavily. Faculty remarks shed light on the nature of their misunderstandings. When asked how they would advise a bar taker who reports only reading answer explanations after practice questions and then moving on, some faculty found that approach quite acceptable (e.g., "That's great," "Ok I guess," or "That can be very helpful, but don't get bogged down here"). Some faculty stressed the need to document new understandings (e.g., "I would suggest writing down the rule and exception" or "I would ask them if they then updated their notes, or memorialized aspects of the question formation that they learned from in reading the explanations"). Among them, only one faculty member stressed the need to do so in the structured context of an outline: "I would tell them they need to do more to engage with the material. They need to update their outlines . . . ."

E. *Conclusion*

Our findings revealed specific localities of the greatest roadblocks to utilization of learning activities most closely related to bar performance among the law school's bar takers. Our question then became how to remove those roadblocks.

VI. DISCUSSION AND RECOMMENDATIONS

Our findings sent us back to the literature to develop evidence-based recommendations for the law school. We developed the necessary practical guidance in response to our findings using existing research on conscientiousness, cognition, and metacognition.

A. *Simulate the Conscientious State of Outlining in Context*

Conscientiousness can be changed through intervention.[118] Interventions are more likely to be successful when they target

118. *See* Brent W. Roberts et al., *How to Change Conscientiousness: The Sociogenomic Trait Intervention Model*, 8 PERSONALITY DISORDERS 199, 202 (2017) [hereinafter Roberts et al., *How to Change Conscientiousness*] (noting "the best way to create change in conscientiousness is to change the relevant

conscientious states, rather than attempting to change the overall trait.[119] A conscientious state is an in-the-moment behavior that can be trained by motivating a particular activity in context.[120] We recommended the program add exercises that simulate the conscientious state of outlining in the specific context of lecture videos and practice questions. The recommended outlining simulations involved students watching a lecture video or completing a set of practice questions, deriving new understandings, and making judgments about where and how to integrate those understandings into existing outlines.

Behavioral interventions should be introduced with metacognitive training, where trainees practice conscientious thought processes, "working 'outward' toward the relevant behaviors."[121] We recommended instructors provide deep feedback explicitly modeling the thought processes involved in reaching the result, rather than merely providing sample answers or describing the result that should have been reached in an outlining simulation. Exercises would be designed so that knowledge gleaned from a lecture video or practice question belonged in certain locations in the hierarchical structure of a sample outline. The reasoning involved in reaching the judgment to place the element in its meaningful position would be fully articulated in feedback.

Context factors, such as peer interaction, can influence conscientiousness and should be incorporated in interventions to increase development.[122] Environments inconsistent with conscientiousness will undercut behavioral interventions.[123] Metacognitive training should be situated in learning environments conducive to metacognition.[124] Norms and values around

states associated with conscientiousness and to do so in such a manner that the changes become ingrained and automatic").

119. *Id.* at 201.

120. *See id.* ("A key part of the process is to motivate the individual to change, typically by helping them see that it is in their best interest to do so, by helping them to see that it would lead to the achievement of desirable goals.").

121. Kristin N. Javaras et al., *Psychological Interventions Potentially Useful for Increasing Conscientiousness*, 10 PERSONALITY DISORDERS 13, 19 (2019).

122. *See* Roberts et al., *How to Change Conscientiousness*, *supra* note 118, at 201–02 ("[A] contributor to the development of conscientiousness would be the broad environmental conditions in which the person is embedded.").

123. *See id.* at 202 (acknowledging some scholars suggest early intervention for successful development of conscientiousness).

124. *See* Schraw, *supra* note 106, at 122 (discussing the importance of promoting mastery environments).

effort and goal-orientation should be generated.[125] We recommended learners who integrated knowledge elements correctly in an outlining simulation be asked to share their reasoning with the class. Having peer members in the learning community express understanding around outlining thought processes would help develop social conditions—norms and expectations among learners—that support development of the desired conscientious state.

Interventions should provide sufficient time to practice behavior changes so as to become automatic through spaced practice.[126] We recommended at least three to four outlining simulations be embedded in the program at spaced intervals.

Because learners who found 1L academic support unhelpful were less likely to outline after practice questions, we recommended spending more time simulating this learning activity than others. For instance, if the program could only accommodate three outlining simulations, two of the three would be in the context of completing practice questions.

B. *Share with Learners Cognitive Science on the Ineffectiveness of Repeat Exposures*

Learners find it counterintuitive that multiple exposures are not helpful in committing information to memory,[127] so it is no surprise single-viewing lectures was the least appreciated learning activity among students in the program.

Research shows explicit instruction in learning science helps learners adopt more effective learning strategies.[128] Schulze advocated for explicit metacognitive instruction in legal education.[129] Like lawyers, law students want to see the evidence for themselves, not to be told by an instructor, "Take my word for it." Happily, cognitive science is brimming with studies

125. *See id.* at 123 ("A flexible strategy repertoire can be used next to make careful regulatory decisions that enable individuals to plan, monitor, and evaluate their learning.").

126. *See* Roberts et al., *How to Change Conscientiousness*, *supra* note 118, at 202 ("[E]xperiencing stable, consistent, and supportive environments for a long period of time may be a critical ingredient for the development of conscientiousness-related traits.").

127. *See* Schulze, *supra* note 66, at 231 (providing examples of counterintuitive study techniques).

128. *See* Biwer et al., *supra* note 10, at 188 (highlighting the importance of applying learning strategies to classroom instruction).

129. Schulze, *supra* note 66, at 259–60.

demonstrating repeated exposures do not aid encoding,[130] and deep processing is what moves information into long-term memory.[131] We recommended the program share with learners the evidence of these cognitive phenomena in conjunction with program exercises, such as outlining simulations, that demonstrate the phenomena at work.

Hybrid training approaches are more beneficial to transfer of both metacognitive knowledge and skills than non-hybrid approaches.[132] Non-hybrid training might involve a cognitive strategy, while hybrid training would also involve learning how to use a metacognitive skill to regulate the cognitive strategy.[133] For instance, the program might instruct learners to view lectures only once during outlining simulations, followed by low-stakes quizzing to confirm the efficacy of deep processing during a single viewing of a lecture video.

Because learners tend to slip back into using ineffective, intuition-based learning strategies after being encouraged to use effective, evidence-based strategies,[134] once is not enough for a program to address the topic. The goal is for learners to "make task appraisal a habit of mind" in which they interrupt reflexive behaviors, recognize a need to act strategically, and decide what tools or set of tools fit a particular task.[135] We recommended simultaneous training in metacognitive knowledge be spaced at intervals alongside the outlining simulations, so learners would continually reflect on the nature of their learning during learning activities. We recommended instructors view their work not as applying learning science *to* learners, but as applying learning science *with* learners.

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130. *See, e.g.,* Castel et al., *supra* note 112, at 1391 (discussing the term "inattentional blindness," which involves a failure in long-term retention despite repeated exposure to a subject).

131. *E.g.* Fergus I. M. Craik & Endel Tulving, *Depth of Processing and the Retention of Words in Episodic Memory*, 104 J. EXPERIMENTAL PSYCH. 268, 268 (1975) ("A congruous encoding yields superior memory performance because a more elaborate trace is laid down and because in such cases the structure of semantic memory can be utilized more effectively to facilitate retrieval.").

132. *See* Corinna Schuster et al., *Transfer of Metacognitive Skills in Self-Regulated Learning: An Experimental Training Study*, 15 METACOGNITION & LEARNING 455, 455 (2020) (explaining cognitive strategies are often task-specific, so the learning transfer is limited).

133. *See id.* (finding hybrid training improved students' transfer rates better than non-hybrid training).

134. *See* Biwer et al., *supra* note 10, at 188 ("Many students struggle to sustainably change old learning strategies into more effective ones.").

135. *See* Christopher Hertzog & John Dunlosky, *Metacognitive Approaches Can Promote Transfer of Training: Comment on McDaniel and Bugg*, 1 J. APPLIED RSCH. MEMORY & COGNITION 61, 62 (2012) (recognizing individuals have a "toolbox" of possible relevant cognitive strategies which may be employed for learning retention).

We also suggested in-program quizzes confirming metacognitive knowledge would provide measures of the effectiveness of these interventions and provide beneficial retrieval practice.

C. *Share with Faculty Cognitive Science on Schema-Development Aiding Problem-Solving*

Among the learning activities most closely related to bar performance, outlining after practice questions was the least appreciated by faculty who served as coaches in the program. Like students, teachers tend to operate on deceptive intuitions about learning,[136] and law faculty are no different.

A common misconception is that bar exam practice questions are a numbers game. But a meta-analysis of studies assessing the effects of interventions to improve complex problem-solving in various domains has shown schema-based instruction improves problem-solving more than practice solving problems.[137] Until learners have rich, structured domain knowledge, they are unable to make inferences needed to spot issues in the first place, much less improve at analyzing them effectively.[138] Meanwhile, structured, semantically saturated domain knowledge enables learners to think quickly and clearly about a complex problem.[139] Learners with developed mental schema in a domain are able to see patterns and appreciate deep structures, rather than getting bogged down in the superficial features of a problem.[140] Practice does not make perfect, unless and until structured, deep knowledge is there to make it meaningful and give it traction.

We recommended, as with law students, explicit instruction in the evidence supporting the cognitive phenomena involved would be most beneficial in aligning faculty with program messaging around this key

136. *See* Kelly Macdonald et al., *Dispelling the Myth: Training in Education or Neuroscience Decreases but Does Not Eliminate Beliefs in Neuromyths*, 8 FRONTIERS PSYCH. 1314, 1314 (2017) ("Neuromyths are misconceptions about brain research and its application to education and learning. Previous research has shown that these myths may be quite pervasive among educators.").

137. *See* Taconis et al., *supra* note 72, at 463 (finding a negative effect when subjects only focused on strategic knowledge).

138. *See generally* Willingham, *supra* note 2 (arguing people who have a vast base of factual knowledge have more effective cognitive processing skills).

139. *See id.* at 30 (reporting retention and comprehension depends on background knowledge and the learners' inferences).

140. *See generally* Michelene T. H. Chi & Miriam Bassok, *Learning from Examples Via Self-Explanations*, *in* KNOWING, LEARNING, AND INSTRUCTION: ESSAYS IN HONOR OF ROBERT GLASER 251–82 (Lauren B. Resnick ed., 1989) (designing a learning research study around "how one learns, what one learns, and how one uses what has been learned").

learning activity. Given the limited time and attention law faculty have for learning about learning, we recommended the program construct and refine high-value, efficient, minimal communications requesting faculty coaches advise bar takers about the need to outline after practice questions and providing key takeaways from learning science showing why the learning activity is so critical.

D. *Conclusion*

This project resulted in three recommendations, addressing four main roadblocks to the transfer of four learning activities most closely related to bar performance. Recommendations were presented to the Dean and other stakeholders. They were accepted, and the law school began making plans for implementation.

VII. LIMITATIONS

Under the challenging realities of the project environment, we did not seek to meet a scientific standard of rigor at all costs. We sought as much rigor as we could achieve under the circumstances, while still moving the work forward and producing a useful result. Evidence-based practice often requires compromises between competing principles. We struck a balance between reliability and workability. Ultimately, our practice-oriented goal was to help the law school make decisions about its bar problem that would be *more* reliable than decisions resulting from legal educations traditional decision-making practices, not to defend our findings to a scientific standard of nominal uncertainty.

As for the applicability of this project outside the law school where it occurred, not only do I acknowledge our findings are of very limited usefulness to other law schools, I urge readers not to discount the powerful effects of context variation. Variation among law school environments and ever-changing environmental conditions make our findings highly specific to a certain place and time—a passing moment at one law school in one community of learners. Law school decision-makers should be far more interested in our problem-solving process than our particular findings. The value of this project to other law schools and education organizations is that it is an example of how to venture into evidence-based practice and find their own context-specific answers to their own context-specific and evolving problems.

In terms of limitations on the usefulness of this project to the law school where it occurred, the greatest is time. Our findings and recommendations fit present conditions in the law school organizational system. When the program is changed, the system will churn. System elements and processes will reorient. Moreover, changes in legal education and to the bar exam will moot our findings and recommendations sooner than later. There are no permanent solutions to unstable problems. This project is a model for yearly iterative work, repeating the steps of finding what matters most and figuring out how to influence it best. This sort of project lays groundwork with organizational members and begins to develop capacities to repeat research and design efforts every year.

As for limitations on the reliability of our findings and recommendations in the intended context at the intended time, survey response rates and the size of our datasets are reported above. Again, evidence-based practice is about moving as far as possible towards reliability under the realities of an imperfect practice environment.

One limitation that may have caught the reader's attention is that we relied on the law school's 2022 survey results for initial findings that dictated much of our project design and focus going forward. That survey was not part of this project, pre-tested, or validated. It had a 33% response rate. But, as explained above, prior bar research and learning science strongly corroborated the findings. And, leveraging existing data to move the project beyond preliminary inquiries was a benefit worth the compromise.

In this project, we tried to achieve as much reliability as possible under the challenging realities of the law school environment. We struck a balance in our context. I urge all legal educators to strike a better one in theirs, improve upon our efforts, and let us all know how.

Readers will wonder whether the recommendations resulting from this project were effectively implemented and, if so, whether they impacted bar results. Because my consultancy was limited in time and access, implementation was left to the law school. However, I would urge readers not to discount the approach for not knowing the impact in this one instance. The success of our project has little or nothing to do with the likelihood of success for other improvement projects in other law school contexts that reach other findings for other reasons and take other actions. Such is the messy reality of context-sensitive evidence-based practice. Because every law school's conditions and needs are different, every improvement project also must be. Shortcomings in the execution of the

instant project are attributable to me as the project leader, not to the disciplines involved. Moreover, it is my hope—not my fear—that our earnest but imperfect efforts will be outdone by better situated project teams with strong support from school leadership, broad stakeholder participation, more extensive existing evidence, and project leaders more capable than I. This reporting, like my review of prior bar research above, is offered in the spirit of collective learning and collaboration, not professional competition.

CONCLUSION

In the courtroom, lawyers venerate evidence. In the classroom, they forget they do. Year after year, in law school after law school, smart and experienced faculty and administrators fail to produce steady improvement in learner outcomes. Results seem random. Faculty and staff grow frustrated by a sense of hopeless dysfunction and lack of progress. They experience change fatigue, become disillusioned, and disengage. Leaders throw ideas at the wall while organizational members scramble to operationalize a never-ending series of preferred solutions masquerading as best practices.[141]

Legal education need not be so haphazard. Evidence-based practice can create a sense of progress and purpose by connecting daily work to incremental successes in a law school increasingly perceived by its community members as worthy of collaborative effort towards shared goals. Legal educators can stop making decisions in all directions at once towards every plausible idea, attune the signal in the noise,[142] and anchor decision-making to best evidence.

This project is an example of how a law school begins to architect success by borrowing scientific tools of disciplined observation and inquiry and embarking on an iterative process of continually fitting evolving solutions to ever-changing problems and environments. Following an evidence-based process for collective problem-solving like the one described herein, law schools can impose deliberate change on system outcomes.[143]

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141. *See generally* Chance Meyer & Nicole Noël, *Iterative Design and the Thrill of Praxis*, 5 RAISING THE BAR 11 (2022) (conducting qualitative research on bar passage rates).

142. *See generally* SILVER, *supra* note 6 (examining how humans learn to gain insight on "why some predictions succeed and why some fail").

143. *See generally* Meyer & Noël, *supra* note 141 (explaining design processes that effectuate positive outcomes).

True evidence-based practice (not of the rhetorical or reductive varieties) will continue to be a tough sell in legal education; it goes against traditional values. Historically, lawyers have favored competitive victory through unwavering commitment to a position. We idealize the rogue advocate whose brilliance prevails. But collective-decision making is more reliable when leaders are open to changing their minds based on new evidence and willing to recognize that the brilliance of one person is not enough to solve complex challenges in complex organizations.

Those positioned to benefit from maintaining legal education's traditional modes of decision-making that favor status over evidence may rebuff attempts to initiate evidence-based practice. They proffer common objections like "data isn't everything" and "some things can't be measured." Such objections mistake the tenets and expectations of evidence-based practice. Perfect certainty has never been the goal. The goal is to *reduce uncertainty* as much as possible by relying on disciplined observation and evaluation of evidence. Everything *can* be measured if what we mean by measurement is the reduction of uncertainty. Data *can* be everything—every fleeting impression, every interaction, every shade of human experience—if we learn to capture and code it. In any event, the fact that a more disciplined approach would be imperfect is no reason to favor legal education's normative, arbitrary modes of decision-making.

Evidence-based practitioners know better than anyone their efforts will be partially flawed. The practice entails recursive interrogation of the practitioners' assumptions, positionalities, epistemologies, axiologies, interpretations, and conclusions. But inevitably, problems will be misconceived. Hidden variables will be overlooked. Measurements will be inaccurate and imprecise. Data collection will be incomplete and skewed. Interpretation will be biased. Solutions will be partial, and implementation flawed. But of course, the same can be said of court proceedings. And in the courtroom, difficulties have never warranted the repudiation of evidence-based practice. When the practice is hard, we don't throw up our hands, give up on it, and resort to guesswork. We try harder.