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Learning Like Lawyers: Addressing the Differences in Law Student Learning Styles

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LEARNING LIKE LAWYERS:
ADDRESSING THE DIFFERENCES IN LAW STUDENT
LEARNING STYLES

*Eric A. DeGroff and Kathleen A. McKee***

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I. INTRODUCTION

Law schools have stressed to generations of students the importance of learning to “think like lawyers.” Although it is not clear when the phrase first became popular,¹ even a cursory review of texts designed to introduce first-year students to the study of law reflects this theme.² What it actually means to “think like a lawyer” remains ill-defined; however, a growing body of scholarship has begun to examine the process of legal reasoning by focusing on the specific cognitive elements of perceiving, organizing, and transforming new information into meaningful concepts and using information to form judgments and solve problems.³ Based upon a variety of psychological testing instruments, as well as data and observations accumulated over the last two decades, scholars are concluding that lawyers and law students really do tend to learn and think in specific ways.⁴

1. Scholars generally trace the development of the concept back to the introduction by Dean Langdell of the case method and the Socratic approach at Harvard Law School in the 1870s. E.g. Alberto Bernabe-Riefkohl, *Tomorrow's Law Schools: Globalization and Legal Education*, 32 San Diego L. Rev. 137, 161 (1995); see also Frank J. Macchiarola & Joseph Scanlon, Student Author, *Lawyers in the Public Service and the Role of Law Schools*, 19 Fordham. Urb. L.J. 695 (1992) (noting that at the turn of the twentieth century theoretical legal training became the preferred method of teaching, as opposed to apprenticeship); Carrie Menkel-Meadow, *Narrowing the Gap by Narrowing the Field: What's Missing From the MacCrate Report—of Skills, Legal Science and Being a Human Being*, 69 Wash. L. Rev. 593 (1994).

2. E.g. Ruggero J. Aldisert, *Logic for Lawyers: A Guide to Clear Legal Thinking* 1 (3d ed., Contemporary Med. Educ. 1997); Patrick M. McFadden, *A Student's Guide to Legal Analysis: Thinking Like a Lawyer* xv (Aspen Publishers 2001); Ruta K. Stropus & Charlotte D. Taylor, *Bridging the Gap Between College and Law School: Strategies for Success* 17 (Carolina Academic Press 2001).

3. See e.g. Vernelia R. Randall, *The Myers-Briggs Type Indicator, First-Year Law Students and Performance*, 26 Cumb. L. Rev. 63, 76 (1995) (using the Myers-Briggs Type Indicator (MBTI) to identify “preferred patterns of . . . information processing, idea development, and judgment formation” among first-year law students at the University of Dayton); see also Robin A. Boyle, Karen Russo, & Rose Frances Lefkowitz, *Presenting a New Instructional Tool for Teaching Law-Related Courses: A Contract Activity Package for Motivated and Independent Learners*, 38 Gonz. L. Rev. 1 (2002) (reporting the assessment of learning styles of law students at St. John's University using the Productivity Environmental Preference Survey (PEPS)); John H. Reese & Tania H. Reese, *Teaching Methods and Casebooks*, 38 Brandeis L.J. 169 (2000) (discussing a three-year learning style research project at the University of Denver using the Kolb Learning Style Inventory (LSI)); John Sonsteng et al., *Learning by Doing: Preparing Law Students for the Practice of Law, The Legal Practicum*, 21 Wm. Mitchell L. Rev. 111 (1995) (describing a legal practicum implemented at William Mitchell School of Law with teaching materials based in substantial part on the “learning cycle” theories of David Kolb and Madeline Hunter).

4. See e.g. Chris Guthrie, *The Lawyers' Philosophical Map and the Disputant's Perceptual Map: Impediments to Facilitative Mediation and Lawyering*, 6 Harv. Negot. L. Rev. 145, 156 (2001) (observing that “[m]ost lawyers . . . approach the world in an abstract, analytical way” and “are deemed so rational and analytical, in fact, that ‘brain researchers have selected lawyers when they wished to test an occupational group that is characteristically analytical in its preferred mode of thought’”) (quoting Graham B. Strong, *The Lawyer's Left Hand: Nonanalytical Thought in the Practice of Law*, 69 U. Colo. L. Rev. 759, 761 (1998)); see also Susan Daicoff, *Articles Lawyer, Know*

This article describes the authors' study of law student learning styles and the relationship of learning styles to students' apparent aptitude for legal study, as measured by their scores on the Law School Admission Test (LSAT),⁵ and to their academic success in law school as measured by their first-year grades. Findings of this study indicate that a significant relationship exists between learning styles, or learning modes,⁶ and LSAT scores. A similar, though less pronounced, correlation was found between learning modes and academic success in the first year of law school.⁷ On the basis of this research, the authors believe that the ability of students to "think like lawyers" may well be related to their capacity to "learn like lawyers."

Law schools devote considerable resources to selecting and retaining qualified students.⁸ Starting with a pool of applicants who are all sufficiently intelligent and motivated to complete an undergraduate

Thyself: A Review of Empirical Research on Attorney Attributes Bearing on Professionalism, 46 Am. U. L. Rev. 1337, 1408 (1997) (reporting a disproportionately high percentage of "thinkers" among lawyers and law students, as compared with the general population and with other college students); David A. Kolb, *The Kolb Learning Style Inventory, Version 3.14* (Hay Group, 1999) (noting that those who choose law-related careers tend to fall within the "Assimilating" learning style as measured by the LSI); Don Peters, *Forever Jung: Psychological Type Theory, the Myers-Briggs Type Indicator and Learning Negotiation*, 42 Drake L. Rev. 1, 17 (1993) (reporting that 82% of men and 77% of women of the more than 600 University of Florida law students tested with the MBTI preferred a "thinking" orientation); Larry Richard, *The Lawyer Types*, 79 ABA J. 74, 76 (1993) (noting that 81% of male lawyers tested through use of the MBTI reported a preference for "thinking" over "feeling", as did 66% of female lawyers tested).

5. The authors have used the expression "apparent aptitude" because of the numerous examples of students who have performed well academically despite having relatively low LSAT scores. Nevertheless, LSAT scores have been sufficiently validated as a predictor of law school performance that they are universally used by law schools in making admission decisions. *Infra* nn. 15-17 and accompanying text.

6. The distinction between learning styles and learning modes, as measured by the Kolb Learning Style Inventory, is explained at *infra* § II.C.2.

7. These findings are generally consistent with those of Professor Randall, whose research at the University of Dayton also demonstrated a relationship between learning styles, as measured by the MBTI, and the success of first-year law students. Randall, *supra* n. 3. A number of additional studies, some of which are cited in this article, have demonstrated that student learning styles affect learning outcomes in particular courses or areas of study; but the authors are not aware of other research evaluating the effect of learning styles on law school success generally, nor of any studies correlating learning styles and LSAT results. Dr. Alice Kolb, whose husband designed the LSI used in the present study, indicated that she had no knowledge of studies correlating learning styles and LSAT scores. E-mail from Dr. Alice Kolb, Pres., Experience Based Learning Systems, Inc., to the Authors (June 7, 2004, 1:53 p.m. EST) (copy on file with Authors).

8. Law school administrators are sensitive to both the practical and moral imperative that admission decisions not be driven by a school's financial interests to the detriment of those admitted. Even if that were not so, Standards 501(b) and 505 of the American Bar Association's (ABA) Standards for Approval of Law Schools expressly prohibit schools from admitting or readmitting students "who do not appear capable of satisfactorily completing [their] educational program[s] and being admitted to the bar." Am. B. Assn., *Standards: Rules of Procedure for Approval of Law Schools* 43 (2003).

degree, most law schools accept fewer than half of those who apply.⁹ Then, after selecting only the most qualified candidates from their applicant pool, a growing majority of law schools offer support programs for those whose academic credentials place them toward the bottom of their class or who encounter academic difficulties following admission.¹⁰

All of these efforts are intended to ensure that accepted students can successfully complete their legal education and qualify for admission to the bar. Nevertheless, law schools inevitably lose a percentage of students academically¹¹ and share the frustration of those who fail in their first attempt at the bar exam.¹² For some reason, an educational program that seems to connect for a majority of students apparently leaves others mystified. Beyond the obvious losses to the students themselves, the reputation¹³ and revenue¹⁴ of the law schools also suffer when students fail.

Virtually all law schools consider LSAT scores and other objective criteria in making admission decisions. LSAT scores, in combination with applicants' undergraduate grade point averages (UGPAs), have proven to be valid predictors of success both in law school¹⁵ and on the

9. See U.S. News & World Rpt., *America's Best Graduate Schools 2007: Top 100 Law Schools*, http://www.usnews.com/usnews/edu/grad/rankings/law/brief/lawrank_brief.php (accessed Nov. 12, 2006) (gives the acceptance rates of the top 100 law schools in the nation).

10. See Richard Cabrera & Stephanie Zeman, Student Author, *Law School Academic Support Programs – A Survey of Available Academic Support Programs for the New Century*, 26 Wm. Mitchell L. Rev. 205 (2000) (describing findings of a survey of ABA-approved law schools in which over 90% of the 151 respondent schools reported having some type of academic support program, with many having multiple programs).

11. It was recently reported that approximately 40% of the 181 ABA-approved law schools had attrition rates over 10%, and approximately 20% of the schools had attrition rates exceeding 15%. Michael Hunter Schwartz, *Teaching Law Students to Be Self-Regulated Learners*, 2003 Mich. St. DCI. L. Rev. 447, 449 n. 1 (2003) (citing Am. B. Assn. & L. Sch. Admis. Council, *Official Guide to ABA-Approved Law Schools* (Wendy Margolis et al. eds., L. Sch. Admis. Council 2003)).

12. In the most recent data available on-line, the ABA reports that 23% of those who sat for the bar for the first time in 2001 failed the exam. Am. B. Assn., *2001 Bar Passage Rates for First-Time Test Takers*, <http://abanet.org/legaled/statistics/barchart.html> (accessed Apr. 4, 2005).

13. See Am. B. Assn. & L. Sch. Admis. Council, *Official Guide to American Bar Association Approved Law Schools* (2005) (reporting annually on a variety of statistical indicators including attrition rates and first-time bar pass rates); *Special Report: America's Best Graduate Schools 2004*, U.S. News & World Rpt. 69 (Apr. 12, 2004) (ranks law schools annually, based in part upon bar pass rates and other statistical indicia. Although the ranking process has been roundly criticized, the results are considered relevant by many potential students.)

14. In addition to the immediate loss of tuition revenue from students academically dismissed, high attrition and low bar pass rates can make student recruitment more challenging.

15. E.g. Linda F. Wightman, *Beyond FYA: Analysis of the Utility of LSAT Scores and UGPA for Predicting Academic Success in Law School* 3 (L. Sch. Admis. Council Research Rpt. Series, Aug. 2000) (noting that "[b]oth test scores and undergraduate grades have been shown to be correlated with law school academic performance as measured by first-year grade-point average both in research studies . . . and in annual Law School Admission Council Correlation Studies"). Both scores

bar exam.¹⁶ Most schools, however, are not in a position to restrict admission to just those students with exceptional LSAT scores.¹⁷ Even if they could, an appropriate concern for diversity or for a school's unique mission, or market niche, may justify admission of students with more modest academic qualifications.¹⁸ As a result, certain questions naturally arise. First, what specific characteristics or skills does the LSAT measure that correlate with law school success? Second, is it possible to develop those attributes in students who enter law school with lower LSAT scores and, if so, how can that be done?

The Law School Admission Council (LSAC or "Council"), which designs, validates, and administers the test, has explained that the LSAT is structured "to measure skills that are essential for success in law school," including "the ability to read and comprehend complex texts with accuracy and insight, organize and manage information and draw reasonable inferences from it, reason critically, and analyze and evaluate the reasoning and argument of others."¹⁹ More specifically, the test is organized in three sections designed to assess: (1) reading comprehension, including the ability to determine the relationships among the various parts of a passage; (2) logical reasoning, including comprehension of arguments and the ability to draw reasonable

(LSAT and UGPA), in combination, have been further correlated to cumulative law school grade point averages. *Id.* at 2.

16. Linda F. Wightman, *LSAC National Longitudinal Bar Passage Study* viii (L. Sch. Admis. Council Research Rpt. Series, 1998) (available at <http://www.lsacnet.org/Research/LSAC-National-Longitudinal-Bar-Passage-Study-ES.htm>) (noting that "[b]oth law school grade-point average (LGPA) and Law School Admission Test (LSAT) score were the strongest predictors of bar examination passage for all groups studied").

17. In the ABA's most recent statistical report on approved law schools, the 25th percentile LSATs ranged from a high of 169 to a low of 141 among law schools in the 50 states and the District of Columbia. Am. B. Assn. & L. Sch. Admis. Council, *supra* n. 13, at 64–73.

18. A 1997 study by Professor Wightman demonstrated that reliance on LSAT scores and UGPAs to the exclusion of other factors would exclude large numbers of minority applicants from legal education. Linda F. Wightman, *The Threat of Diversity in Education: An Empirical Analysis of the Consequences of Abandoning Race as a Factor in Law School Admission Decisions*, 72 N.Y.U. L. Rev. 1 (1997). The Law School Admission Council has also found that "students of color enter . . . law school with academic credentials, as measured by UGPA and LSAT scores, that [are] significantly lower than those of [Caucasian] students." Wightman, *supra* n. 16, at ix. The Council opines that minority students' "eventual bar passage rates justify] admission practices that look beyond those measures." *Id.* The specific mission or market niche of a law school may also recommend selection of particular students whose academic credentials do not match those of the rest of the class. Regent University, for example, in addition to desiring a diverse student body in terms of race, nationality and gender, seeks to admit Christian men and women who are committed to using their legal education for a life of service. Regent U. Sch. of L., *Mission Statement* <http://www.regent.edu/acad/schlaw/welcome/mission.cfm> (accessed Nov. 12, 2006).

19. Law School Admission Services, *The Law School Admission Test 2* (1991) (quoted in Kenneth M. Wilson and Donald E. Powers, *Factors in Performance on the Law School Admission Test 1* (L. Sch. Admis. Council Research Rpt. Series, Mar. 1994).

conclusions from evidence or premises; and (3) analytical reasoning, including the ability to understand the structure of relationships and draw conclusions about that structure.²⁰

These skills capture the essence of what it means to do legal analysis or to “think like a lawyer”; these are all activities that attentive and expectant first-year students are invariably told by their professors they must learn to do. Law professors, however, were typically high achievers in law school themselves, and most probably found legal analysis relatively natural. It is one thing to engage in the analytical process oneself and quite another to teach the process to others. One of the challenges for legal educators—particularly with students whose LSAT scores suggest they are less gifted in analytical processing—is to understand the components of legal analysis and explain them to those for whom the process may seem less obvious.²¹

This study was motivated by the authors’ desire to understand how to assist “at-risk” students who enter law school with low LSAT scores or who, for some reason, have difficulty understanding the concept of legal analysis. Findings of this study support the growing notion that learning style theory may provide a key to reaching such students. Section II of this article discusses some of the apparent causes of academic difficulties among law students and outlines relevant learning style theories. Section III describes the methodology used for this study and summarizes the authors’ findings. Section IV discusses some of the newly developing strategies for enhancing law student learning and assesses the success of those strategies. Section V concludes with a brief summary and specific suggestions for further research.

II. LEARNING STYLES AS A KEY TO UNDERSTANDING LAW SCHOOL LEARNING DIFFICULTIES

A. *The Challenge of Legal Education*

Professor M. H. Sam Jacobson of Willamette College of Law has written cogently on learning style theory and law school pedagogy.²² Her

20. *Id.*

21. E.g. Paula Lustbader, *Construction Sites, Building Types, and Bridging Gaps: A Cognitive Theory of the Learning Progression of Law Students*, 33 Willamette L. Rev. 315, 321 (1997) (arguing that “those who teach law are also those who excelled in law school. Even when law teachers want to be more explicit, they often cannot break down the reasoning process to the degree necessary to communicate it effectively to some students. As experts, law teachers have internalized so much of the information and process that they are not consciously aware of all that goes into their analysis.”).

22. M.H. Sam Jacobson, *A Primer on Learning Styles: Reaching Every Student*, 25 Seattle U. L. Rev. 139 (2001).

description of today's law student population resonates with what law faculty across the country have observed.²³ Law students, she notes, are increasingly products of the television and computer age and have a different way of learning than many of their professors.²⁴ Today's students are less prone to have mastered previous learning tasks primarily through books and are more likely to have grown accustomed to the color, sound, and motion of visual entertainment.²⁵ They are also more diverse in ethnicity and gender than their counterparts thirty years ago and accordingly have more diverse ways of thinking.²⁶

The prior learning experiences of today's law students and, in some cases, their excessive childhood and adolescent exposure to visual stimulation, affect both the way they receive and absorb information and the way they process that information cognitively. Jacobson and others have noted that today's law students increasingly lack the capacity to engage in active learning.²⁷ Professor Michael Richmond of Nova University Law Center attributes this phenomenon, in part, to changes in pedagogical approaches for children and young adults.²⁸ About the time Dean Langdell was changing the face of legal education at Harvard University with the Socratic Method, Richmond explains, educators from primary schools to undergraduate universities were moving in the opposite direction, toward a more passive educational approach.²⁹

23. *Infra* nn. 110–112.

24. *Id.* at 140. The findings of this study and others support Professor Jacobson's assertion that many of today's law students have learning style preferences that differ from those of their professors. See *infra* nn. 111–113 and accompanying text.

25. *Id.*

26. *Id.* at 140, n. 3. Jacobson reports that, in the academic year 1971–72, the national law student population was 91% male and 94% Caucasian. The small, six percent minority population was two-thirds African American. *Id.* By contrast, in 2005 the first year enrollment class was only 53.1% male and 78.3% Caucasian. Am. B. Assn., *Legal Education Statistics*, <http://www.abanet.org/legaled/statistics/stats.html> (accessed Jan. 11, 2006). Other commentators have similarly noted the differences in law school culture created by today's dramatically increased diversity. See e.g. Filippa Marullo Anzalone, *It All Begins With You: Improving Law School Learning Through Professional Self-Awareness and Critical Reflection*, 24 Hamline L. Rev. 324, 329–30 (2001); see also Jeffrey A. Van Datta, *Collaborative Problem Solving Responsive to Diverse Learning Styles: Labor Law as an Active Learning Experience*, 24 N.C.C. L.J. 46 (2001). Evidence suggests that ethnic and cultural background may influence student learning styles. *Infra* § III.C.5(b).

27. Jacobson, *supra* n. 22, at 144–45; see also Michael L. Richmond, *Teaching Law to Passive Learners: The Contemporary Dilemma of Legal Education*, 26 Cumb. L. Rev. 943, 944 (1995–96); Craig Anthony Arnold, *How Do Law Students Really Learn? Problem-Solving, Modern Pragmatism, and Property Law*, 22 Seattle U. L. Rev. 891, 891 (1999) (stressing that legal education “requires student participation and mental activity—active, not passive, learning”).

28. Richmond, *supra* n. 27 at 944.

29. *Id.* at 955. See also Gerald F. Hess, *Listening To Our Students: Obstructing and Enhancing Learning in Law School*, 31 U.S.F. L. Rev. 941, 943 (1997) (suggesting that “[a]ctive learning promotes higher level thinking (analysis, synthesis, and evaluation) and develops [relevant] skills”).

Students, who are accustomed to receiving input passively from television and other visual media, or through less demanding learning environments in secondary and undergraduate school, may be ill-prepared for the interactive learning process required in law school.³⁰ Mastery of subject matter in the typical law school requires a student's active participation in questioning, sorting, relating, prioritizing, culling, and synthesizing facts and theories and in the development of analytical constructs.³¹ Memorization skills that may have served in undergraduate school are insufficient for the volume of new material a student encounters in law school and are ill-suited for the higher-level thinking required.³²

Another result of early childhood immersion in computers and visual instruction may be an increased prevalence of visual learners in today's law school classes.³³ Visual learners tend to be holistic, right-brained thinkers rather than sequential, logical thinkers.³⁴ In contrast, research has shown that lawyers are predominantly left-brained, sequential thinkers.³⁵ The need for logical analysis in the law school classroom is obvious; it is, therefore, not surprising that Professor Jacobson has found that visual learners are "disproportionately represented in the bottom of the [law school] class."³⁶

Other scholars have suggested that poorly developed language skills—perhaps another byproduct of the television and video age—may also play a significant role in the lack of analytical skills among today's

30. Richmond, *supra* n. 27, at 956–57; see also Robert C. Clark, *The Rationale for Computer-Aided Instruction*, 33 J. Leg. Educ. 459 (1983); Paul T. Wangerin, *Learning Strategies for Law Students*, 52 Alb. L. Rev. 471, 76–77 (1987).

31. See Jacobson, *supra* n. 22, at 151–52. See also Arnold, *supra* n. 27, at 894 (emphasizing the importance of "engag[ing] with and us[ing] the [substantive course] material").

32. Legal scholars have expressed widespread agreement that undergraduate programs often do not prepare students well for the sort of active learning required in law school. *E.g.* Lustbader, *supra* n. 21, at 338 (opining that an undergraduate education that rewards "memorizing and regurgitating predigested, prepackaged, and organized information" does not prepare students adequately "to read critically, synthesize rules, or analyze material to the extent required in law school"); see also James Jay Brown, *Forging an Analytical Mind: The Law School Classroom Experience*, 29 Stetson L. Rev. 1135, 1137 (2000) (suggesting that undergraduate school does not "particularly assist in making [students] self-reliant or primarily responsible for [their] own education").

33. Jacobson, *supra* n. 22, at 151–52; Richmond, *supra* n. 27, at 956. Professor Robin Boyle, of St. John's University School of Law, observed that more than one-fifth of an 83-member class at St. John's "expressed a strong preference for learning visually." Robin A. Boyle, *Employing Active-Learning Techniques and Metacognition in Law School: Shifting Energy from Professor to Student*, 81 U. Det. Mercy L. Rev. 1, 20 (2003).

34. Jacobson, *supra* n. 22, at 152; see also Jane M. Healy, *Endangered Minds* 125 (Simon & Schuster, 1990).

35. Guthrie, *supra* n. 4, at 156 (reporting that 90% of the lawyers sampled were left-brained).

36. Jacobson, *supra* n. 22, at 152.

students:

Since it has long been recognized that problems with verbal precision can result from deficits in the left hemisphere, language therapists speculate among themselves about how much the overwhelming visual presence of television and video may be exacerbating the problem by neglecting left-hemisphere language areas. . . .

Slipping syntax leads to fuzzy thought. Difficulties using grammatical language to identify relationships between ideas may account for many of the problems in logical thinking, science, and math that are becoming so evident in our . . . schools.³⁷

These observations highlight only a few of the academic challenges reflected in a typical law school. The pressures and demands of law school also exacerbate problems of poor time management, poor study skills, inadequate self-discipline, poorly developed reading and writing skills, and a growing incidence of learning disabilities. Law professors cannot hope to address all of these difficulties in the normal course of classroom teaching.³⁸ However, the findings of this study suggest that attention to student learning styles may facilitate the development of logical reasoning skills both in the classroom and in academic support programs.

B. *The Goal of Legal Education*

There is considerable overlap among authors regarding what skills need to be developed in law school to prepare students for the challenge of legal practice.³⁹ The Task Force Report of the American Bar Association (ABA) Section on Legal Education and Admissions to the Bar, issued in 1992, delineated what it deemed to be basic lawyering skills and professional values that students should have developed by the time

37. Healy, *supra* n. 34, at 110. Dr. Healy, who published her work in 1990, was actually describing her observations of high school students. The high school students of the late 1980s whom Dr. Healy was describing, however, would have accounted for a large percentage of law students admitted during the past ten years.

38. Fortunately, programs that address poor study skills, reading and writing deficiencies, and time management issues are becoming more common among law schools. See generally Richard Cabrera & Stephanie Zeman, *Law School Academic Support Programs: A Survey of Available Academic Support Programs for the New Century*, 26 Wm. Mitchell L. Rev. 205 (2000) (reporting how widely available such programs have become); Leslie Yalof Garfield & Kelly Koenig Levi, *Finding Success in the "Cauldron of Competition": The Effectiveness of Academic Support Programs*, 2004 BYU Educ. & L.J. 1 (a recent and comprehensive study analyzing the effectiveness of academic support programs).

39. See e.g. Paul T. Wangerin, *supra* n. 30; see also Matthew J. McCloskey, Student Author, *Visualizing the Law: Methods for Mapping the Legal Landscape and Drawing Analogies*, 73 Wash. L. Rev. 163 (1998); Paul T. Wangerin, *Skills Training In "Legal Analysis": A Systemic Approach*, 40 Miami L. Rev. 409 (1986).

they are ready to represent their first clients professionally.⁴⁰ These fundamental skills and values include: (1) problem solving; (2) legal analysis and reasoning; (3) legal research; (4) factual investigation; (5) communication; (6) counseling; (7) negotiation; (8) litigation and alternative dispute resolution procedures; (9) organization and management of legal work; and (10) recognizing and resolving ethical dilemmas.

In practical terms, students who have acquired these skills and professional values in the course of their legal education should have mastered the controlling principles of individual areas of substantive law. They should also have a basic understanding of how the different areas of substantive law relate to each other and impact each other within the seamless web of law as a whole. The ultimate goal is students' mastery of a fully integrated body of skills and knowledge that support effective legal analysis, problem solving, and advocacy on behalf of clients in real-world situations.⁴¹

In sum, legal education requires the integration of substantive law, practical lawyering skills and diverse learning strategies. Ideally, the end product is a student who is proficient in carrying out the mental processes of decoding,⁴² cataloging,⁴³ retrieving,⁴⁴ and encoding⁴⁵ relevant legal concepts and related factual information. How does one create a learning dynamic that supports these skills and competency objectives among students as diverse as the typical law school class? Educational psychologists and learning theorists suggest that one step is to recognize that the students' different modes of absorbing (decoding) and processing (cataloging) information require different instructional strategies. The disparate ways in which students absorb and process

40. Am. B. Assn. Sec. of Leg. Educ. & Admis. to the B., *Legal Education and Professional Development—An Education Continuum, Report of the Task Force on Law Schools and the Profession: Narrowing the Gap* 7–10 (Am. B. Assn. 1992) [hereinafter “MacCrate Report”]. The focus of the MacCrate Report was to “seek . . . to define the lawyering skills and professional values with which every lawyer should be familiar prior to assuming the full responsibilities of a member of the legal profession—i.e. prior to accepting the ultimate responsibility for representing a client or, in those contexts in which a lawyer acts without a client (such as situations in which a lawyer serves as an advisor to a governmental agency or legislative committee), prior to accepting the ultimate responsibility for making professional judgments or giving legal advice.” *Id.* at 7–10.

41. *Id.* at ch. 4–5.

42. “Decoding” involves the processing of substantive law and related factual information.

43. “Cataloging” involves identifying relationships between decoded information and creating a coherent framework within which to file it.

44. “Retrieval” entails the recall of relevant legal concepts when presented with a particular legal issue or problem.

45. “Encoding” requires the selection of legal concepts relevant to a particular legal issue or problem and the framing of an appropriate strategy to respond to the problem.

information account for what are commonly called “learning styles.”⁴⁶

C. *The Relevance of Learning Styles to Legal Education*

1. *Definition and Classification of Learning Styles*

Though no one definition fully captures the concept, “learning style” has generally been described as the way in which students perceive, absorb, and process new information.⁴⁷ Learning style theories have gained a significant following over the past forty years among academics⁴⁸ and increasingly among corporate and government trainers.⁴⁹ More recently still, learning style theories have caught the attention of legal educators.⁵⁰

There seems to be general agreement in the psychological literature that individuals do differ in the ways in which they prefer to gather and absorb data, and in how they process such data. Similarly, there is a measure of agreement that these differences are important and may have

46. See *infra* nn. 47–51 and accompanying text.

47. Scholars tend to define the term broadly or narrowly depending upon which aspect of the learning process is their focus. See generally Kim Buch & Susan Bartley, *Learning Style and Training Delivery Mode Preference*, 14 J. Workplace Learning 5, 6 (2002) (defining the term as the way in which people “take information in and how they transform the information into meaning”); Susan Sunny Cooper, *Learning Styles*, “General Concepts for Learning Styles,” <http://www.lifecircles-inc.com/learningstyles.htm> (Nov. 2001) (explaining that the concept of “learning style” includes “the way in which [an] individual . . . responds to and works on a learning task”); Jacobson, *supra* n. 22, at 142 (defining learning styles as “those cognitive, affective, and psychological behaviors that indicate how learners interact with and respond to the learning environment and how they perceive, process, store, and recall what they are attempting to learn”).

48. E.g. Cooper, *supra* n. 47; see also Charles R. Beck, *Matching Teaching Strategies to Learning Style Preferences*, 37 Teacher Educator 1 (2001); Francisco Cano-Garcia & Elaine Hewitt Hughes, *Learning and Thinking Styles: an Analysis of Their Interrelationship and Influence on Academic Achievement*, 20 Educ. Psychol. 413 (Dec. 2000); Matthew J. Cook, *An Exploratory Study of Learning Styles as a Predictor of College Academic Adjustment*, <http://www.matthewjcook.com/research/lr.html> (1997); Robert Loo, *The Distribution of Learning Styles and Types for Hard and Soft Business Majors*, 22 Educ. Psychol. 349 (2002); N. Van Zwanenberg, L.J. Wilkinson & A. Anderson, *Felder and Silverman’s Index of Learning Styles and Honey and Mumford’s Learning Styles Questionnaire: How Do They Compare and Do They Predict Academic Performance?*, 20 Educ. Psychol. 365 (2000).

49. E.g. Buch & Bartley, *supra* n. 47; see also Charles S. Claxton & Patricia H. Murrell, *Education for Development: Principles and Practices in Judicial Education* (JERITT Monograph Three 1992).

50. E.g. Danielle C. Istl, *The Law School Experience: Staying Grounded and Enjoying the Journey*, 80 U. Det. Mercy L. Rev. 485, 488 (2003); see also Robin H. Boyle & Rita Dunn, *Teaching Law Students through Individual Learning Styles*, 62 Alb. L. Rev. 213 (1988); Paul S. Ferber, *Adult Learning Theory and Simulations—Designing Simulations to Educate Lawyers*, 9 Clin. L. Rev. 417 (2002); Paula Lustbader, *Seven Principles for Good Practice in Legal Education— Principle 7: Good Practice Respects Diverse Talents and Ways of Learning*, 49 J. Leg. Educ. 448 (1999); Randall, *supra* n. 3; Michael Hunter Schwartz, *Teaching By Design: How Learning Theory and Instructional Design Can Inform and Reform Law Teaching*, 38 San Diego L. Rev. 347 (2001).

consequences for how successfully different students, for example, perform on a variety of educational programs.⁵¹

A wide variety of learning theories exist, with many focusing on distinct phases of the learning process. Jacobson's *Primer on Learning Styles*⁵² summarizes and classifies learning theories according to relevant personal characteristics, including intelligence, personality, and information processing preferences.⁵³ Jacobson explains that learning is influenced by these and other personal characteristics, which suggests that some of these characteristics are more malleable than others.⁵⁴ She organizes her presentation according to the degree to which each of the relevant personal characteristics is subject to change or growth.⁵⁵

Jacobson begins her presentation of characteristics by discussing intelligence, which she claims is a key determinant, not only of the amount of information a student may be capable of learning, but also of the method by which the student can effectively learn.⁵⁶ Although the so-called "intelligence quotient" (IQ) is typically measured by linguistic reasoning and mathematical or logical reasoning, the work of Harvard University professor Howard Gardner suggests that a number of different intelligences actually exist.⁵⁷ Unfortunately, data regarding student IQ levels would likely be of little use in identifying strategies to enhance academic performance in law school. A professor's knowledge of his students' intelligence levels and types might be helpful in

51. Zwanenberg, Wilkinson & Anderson, *supra* n. 48, at 366; *see also* Beck, *supra* n. 48; Jacobson, *supra* n. 22, at 142-43.

52. Jacobson, *supra* n. 22.

53. *Id.* at 145-63.

54. *Id.* at 146.

55. *Id.* at 146-69. Jacobson's assertion that factors affecting learning may vary in the degree to which they can be changed or accommodated is widely, though not universally, accepted. Jonassen and Grabowski, for example, suggest that mental abilities (intelligence), cognitive controls, and cognitive styles are fundamental and stable traits. However, they refer to learning styles as "preferences" and thus seem to imply that learning styles are more flexible. David H. Jonassen & Barbara L. Grabowski, *Handbook of Individual Differences, Learning, and Instruction* (Lawrence Erlbaum Assocs. 1993). Claxton and Murrell clearly support Jacobson's view, likening learning style models to the layers of an onion, with the more fixed and permanent personality traits at the core and the more flexible instructional preferences at the outer edges. Charles S. Claxton & Patricia H. Murrell, *Learning Styles: Implications for Improving Educational Practices* 7 (Assn. for the Study of Higher Educ. 1987).

56. Jacobson, *supra* n. 22, at 146-49. *See also* Jonassen & Grabowski, *supra* n. 55, at vii-x (noting the interrelationships among mental abilities, cognitive controls and learning styles); Claxton & Murrell, *supra* n. 55, at 7 (stressing the influence each level of personal characteristics has upon the others).

57. Gardner's synthesis of pre-existing research led to his suggestion that intelligence may be linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, interpersonal, intrapersonal or naturalist in nature. Jonassen & Grabowski, *supra* n. 55, at 44-45.

identifying compatible teaching techniques,⁵⁸ but intelligence is generally considered fairly constant and not susceptible to significant improvement in adult learners.⁵⁹ It is therefore unlikely that professors could adopt teaching techniques that would significantly enhance student IQs.

Next, Jacobson addresses the personality type characteristic, which is also considered relatively stable for adult learners.⁶⁰ The Myers-Briggs Type Indicator (MBTI), which is based on the personality classifications of Carl Jung,⁶¹ is “the most widely used psychological profiling system in business and government”⁶² and also has become a favorite tool among legal scholars interested in learning theories.⁶³ Despite its popularity as an educational tool, researchers have questioned its utility in addressing concerns in a law school setting.⁶⁴ First, because the MBTI was designed to measure personality attributes rather than cognitive style, it reflects learning and processing techniques only indirectly.⁶⁵ Second, although the MBTI reflects how personality influences learning, according to

58. Zanglein and Stalcup propose a number of specific techniques that can be used to reach students with each of the intelligences identified by Gardner. Jayne Elizabeth Zanglein & Katherine Austin Stalcup, *Te(a)chnology: Web-Based Instruction in Legal Skills Courses*, 49 J. Leg. Educ. 480, 488–89 (1999). Even if diverse students can be “reached” in a classroom setting, however, both the LSAT and the bar exam focus primarily on linguistic and logical skills, and those mental abilities are likely the most critical in facilitating the logical analysis necessary for success in law school.

59. Jacobson, *supra* n. 22, at 146 (citing H. J. Eysenck, *Know Your Own IQ* 17–19 (Bell 1962), for the proposition that I.Q. is relatively static, but noting that opinions differ and that some scholars believe that intelligence may be taught and enhanced).

60. Jacobson, *supra* n. 22, at 149; *see also* Claxton & Murrell, *supra* n. 55, at 7 (explaining that personality traits, which lie at the core of their learning style framework, “are the most stable and thus are the least subject to change”).

61. Jacobson, *supra* n. 22, at 148–49. Claxton & Murrell explain that the MBTI was expressly designed “as an aid in applying Jungian theory in counseling, education, and business.” Claxton & Murrell, *supra* n. 55, at 13.

62. *See* Cooper, *supra* n. 47, at 7.

63. *See e.g.* Randall, *supra* n. 3; *see also* Peters, *supra* n. 4; Richard, *supra* n. 4.

64. M.H. Sam Jacobson, *Using the Myers-Briggs Type Indicator to Assess Learning Style: Type or Stereotype?*, 33 Willamette L. Rev. 261, 262–69 (1997) (questioning the efficacy of the MBTI for assessing learning styles in law school, and recommending the Honey & Mumford Learning Styles Questionnaire as an alternative).

65. *Id.* at 301. *See also* Cooper, *supra* n. 47, at 30 (noting that the MBTI “provides understanding of many aspects of behavior, of which learning is an important one,” but that Kolb’s Learning Style Inventory “is more specifically directed at learning”).

Interestingly, research has shown some consistent relationships between learning styles as measured by the LSI and personality types as measured by the MBTI. For example, concrete learners as measured by the LSI seem to correlate to “feeling” personalities as measured by the MBTI; abstract learning relates to “thinking”; active learning is more common among extroverts; and reflective learning more common to introverts. Among the learning styles measured by the LSI, Accommodators relate to extrovert-sensors, Assimilators to introvert-intuitives, Divergers to introvert-feelers, and Convergents to extrovert-thinkers. Jonassen & Grabowski, *supra* n. 55, at 252; Loo, *supra* n. 48, at 351.

Jacobsen, it does not directly measure how students absorb and process information, which are the key components of the learning process.⁶⁶ Third, because personality traits are relatively fixed, they probably do not reflect an area in which a professor could encourage significant growth and development in adult students.⁶⁷ Accordingly, if one is seeking strategies to enhance students' capacity to learn, a focus on personality types would not likely be fruitful.

The third personal characteristic in Jacobson's presentation, information processing preference, is unlike the previous two characteristics in that it appears to be both amenable to classroom accommodations and an area in which adult learners may be capable of positive change. Jacobson describes "information processing" as a two-phase procedure that actually involves information absorption, as well as information processing.⁶⁸

In the first phase, students absorb information through their senses. Verbal learners, for example, are effective at absorbing information through written text. Because information in law school is provided largely through printed texts, adept verbal learners are typically strong law students.⁶⁹ Visual learners, who are typically right-brained, holistic thinkers, tend to absorb information "in its entirety, rather than in parts," and in the form of pictures or impressions.⁷⁰ Oral learners absorb material most effectively by talking it out; they are most likely to be successful when they have the opportunity to participate frequently and voluntarily in classroom discussions.⁷¹ Aural learners absorb information most effectively by listening and typically thrive when exposed to lectures, class or group discussions, or recordings.⁷² Tactile, or kinesthetic, learners benefit from physical touch or practical application and typically enjoy simulation courses or externship experiences.⁷³ Suggestions as to how students can take advantage of their preferred learning styles, and how professors can communicate effectively to all five types of learners, are readily available.⁷⁴ However, the authors have

66. Jacobson, *supra* n. 64, at 301.

67. Some have also questioned whether individual personality traits can be meaningfully accommodated in the typical one-semester law school class. See e.g. Reese & Reese, *supra* n. 3, at 176.

68. Jacobson, *supra* n. 22, at 150-59.

69. *Id.* at 151.

70. *Id.* at 152.

71. *Id.* at 154-55.

72. *Id.* at 155.

73. *Id.* at 155-56.

74. See e.g. M.H. Sam Jacobson, *Learning Styles and Lawyering: Using Learning Theory to Organize Thinking and Writing*, 2 J. ALWD 27, 46 (2004); see also Peter Dewitz, *Reading Law: Three Suggestions for Legal Education*, 27 U. Toledo L. Rev. 657 (1996); Paula Lustbader, *Teach in Context:*

found no research indicating that professors could facilitate meaningful change among their students with respect to these preferences. Furthermore, information absorption alone is merely the beginning of the learning process.

The second phase of the learning process is information processing. To be used effectively, new information must not only be perceived and absorbed, but internalized and placed appropriately into context. Individuals vary with respect to their habitual mode of processing information, and educational psychologists have classified these distinctions in a variety of ways discussed in the following paragraphs.⁷⁵

One model of information processing is based specifically upon hemispheric brain dominance, categorizing learners according to which hemisphere of the brain the individual typically relies upon in sorting and classifying information. Jacobson notes that the left brain primarily governs language and writing, and it processes information analytically and linearly.⁷⁶ The right brain primarily controls spatial construction and processes information synthetically and creatively.⁷⁷ Although problem-solving and communicating in a legal context may involve both logical and creative processes, legal analysis typically calls for a logical and sequential, or left-brain, function. Therefore, right-brain learners are often disadvantaged in a law school environment.⁷⁸

Other information processing models conceptualize the process in different terms, but are essentially consistent with a left-brain/right-brain distinction. Witkin's model of field dependence and field independence,⁷⁹ Pask's model of holistic and serialist processing,⁸⁰ and Ausubel's model of sequencing⁸¹ all reflect distinct but compatible

Responding to Diverse Student Voices Helps All Students Learn, 48 J. Leg. Educ. 402 (1998).

75. See generally Jacobson, *supra* n. 22, at 157–63.

76. *Id.* at 157–58. Studies over a substantial period of time have reflected that a large majority of lawyers are dominantly left-brained. Guthrie, *supra* n. 4, at 156; see also *supra* n. 4 and accompanying text.

77. Jacobson, *supra* n. 22, at 157–58.

78. *Id.* at 160. See also *supra* nn. 35–36 and accompanying text.

79. “Field independent” processing features analysis and structuring of incoming information, while “field-dependent” processing creates a “totality of impressions in context but without structure.” *Id.* at 161 (citing H.A. Witkin, *The Nature and Importance of Individual Differences in Perception*, J. Personality 145, 145–70 (1949) and H.A. Witkin et al., *Field-Dependent and Field-Independent Cognitive Styles and Their Educational Implications*, 47 Rev. Educ. Res. 1, 2–6 (1977)).

80. “Holistic” processing reflects global processing, reliance on illustration, and analogy. “Serialist” processing entails linear processing of incoming data and step-by-step analysis. *Id.* at 161 (citing Gordon Pask, *Styles and Strategies of Learning*, 46 British J. Educ. Psychol. 128, 128–48 (1976)).

81. *Id.* at 162–63 and n. 87 (discussing Ausubel's findings that “some learners are ‘top down’ sequencers, who process information best if they have the general concepts first as an anchor to the facts,” while others “are ‘bottom up’ sequencers who process information best if they have the facts

frameworks with respect to the acts of perceiving, receiving, and sequencing incoming data.

2. *The Kolb Learning Style Inventory*

Of the more than two dozen diagnostic instruments published since 1960, the two most widely used to assess learning styles in academic settings are the Myers-Briggs Type Indicator and the Kolb Learning Style Inventory (LSI).⁸² The authors elected to use the LSI because it specifically assesses cognitive learning preferences.⁸³ Originally published by David Kolb in 1976, the LSI was designed to help assess a variety of personal preferences including personal learning styles, problem solving, and career selection.⁸⁴ The instrument was revised in 1985 to address shortcomings identified in early critiques. And the format and design of the assessment were modified again—though without substantive change—in 1999. The authors used the third (1999) version of the LSI (LSI3).⁸⁵

The LSI3 consists of twelve sentences, each of which includes a stem and four possible endings. The respondent must prioritize four endings for each stem according to which ending best reflects the way in which he or she typically approaches the learning process; for example, *When I learn* is followed by four potential endings: *I am happy*, *I am careful*, *I am fast*, or *I am logical*. Responses are scored, and the scores are plotted on *x* and *y* axes that represent personal preferences with regard to information acquisition and information processing.⁸⁶ The *y* axis measures

first from which the general concepts follow,” and noting that sequencing “may be connected with right-brain/left-brain functions”) (citing David P. Ausubel, *The Psychology of Meaningful Verbal Learning: An Introduction to School Learning* 79–81, 214–15 (Grune & Stratton 1963)).

82. J. P. Ogilvy, *The Use of Journals in Legal Education: A Tool for Reflection*, 3 Clin. L. Rev. 55, 69 (citing George H. Jensen, *Learning Styles*, in *Applications of the Myers-Briggs Type Indicator in Higher Education* 181 (Judith A. Provost & Scott Anchors eds., Consulting Psychologists Press 1987). See also Ann Shalleck, *Clinical Contexts: Theory and Practice in Law and Supervision*, 21 N.Y.U. Rev. L. & Soc. Change 109, 173 n. 141 (1993). Other prominent learning style instruments include those of Dunn & Dunn and Honey & Mumford, as well as the Productivity Environmental Preference Survey (“PEPS”). See Boyle & Dunn, *supra* n. 50; Boyle, Russo & Lefkowitz, *supra* n. 3; Harold Hence, *Learning Theory: Applying Kolb’s Learning Style Inventory with Computer Based Training* 7–8 (2001) (unpublished project paper for course in learning theory) (copy on file with Authors); Jacobson, *supra* n. 22; Jonassen & Grabowski, *supra* n. 55, at 268–69; see also Christine R. Brew, *Kolb’s Learning Style Instrument: Sensitive to Gender*, 62 Educ. & Psychol. Measurement 373 (April 2002).

83. As others have noted, the LSI “focuses on student learning preferences at [the] cognitive level,” while the MBTI “approaches student preferred learning styles at the psychological-personality level.” Reese & Reese, *supra* n. 3, at 176.

84. See Cooper, *supra* n. 47, at 14.

85. Kolb, *supra* n. 4.

86. *Id.* at 6.

preferences for perceiving and acquiring information in terms of polar opposites—concrete experience (CE) versus abstract conceptualization (AC).⁸⁷ The x axis measures preferences with respect to translating the respondent's experience into learning through terms that are also polar opposites—reflective observation, or watching and listening (RO) versus the testing of implications through active experimentation (AE).⁸⁸ The polar opposites on the x and y axes (RO, CE, AC and AE) are referred to as preferred “learning modes.”⁸⁹ The x and y coordinates are plotted, and the intersection of those two coordinates determines respondents' learning styles.

Learning styles thus encompass both information acquisition and information processing preferences. The four learning styles, as shown below on Chart 1, are designated Diverging, Assimilating, Converging, and Accommodating.⁹⁰ The Diverging learning style, emphasizing concrete experience and reflective observation, reflects relative strengths of imaginative ability and feeling.⁹¹ Divergers typically learn by listening and sharing and tend to be creative thinkers.⁹² The learning style is labeled “Diverging” because those who prefer that style tend to “perform better in situations that call for generation of ideas.”⁹³ Divergers typically have “broad cultural interests” and “tend to specialize in the arts.”⁹⁴

For Assimilators, emphasis is on abstract conceptualization, reflective observation, and the development of theories and ideas.⁹⁵ Assimilators are typically analytic learners, who absorb and process information sequentially, and are often skilled verbal learners.⁹⁶ The Converging style primarily relies on the learning strengths of abstract conceptualization and active experimentation. This style typically leads to skilled problem-solving, decision-making, and an emphasis on

87. David A. Kolb, *Facilitator's Guide to Learning* 14 (Haygroup, 2000).

88. *Id.*

89. Findings of the present study indicate that “learning mode” may, in some cases, be a more powerful predictor than “learning style.” See *infra* nn. 119–127 and accompanying text.

90. Commentators sometimes refer to the “learning styles” in terms of “quadrants,” which reflect spatially the location of each learning style on Kolb's learning style chart (see *infra* Chart 1). Beginning with the upper right-hand quadrant, commentators number the quadrants sequentially in clockwise order, so that learning styles and quadrants compare as follows: Quadrant 1 = Diverging; Quadrant 2 = Assimilating; Quadrant 3 = Converging; and Quadrant 4 = Accommodating.

91. Kolb, *supra* n. 4, at 5, 7.

92. *Id.*

93. Alice Y. Kolb & David A. Kolb, *Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education* 11 (unpublished ms. 2002) (copy on file with Authors).

94. *Id.*

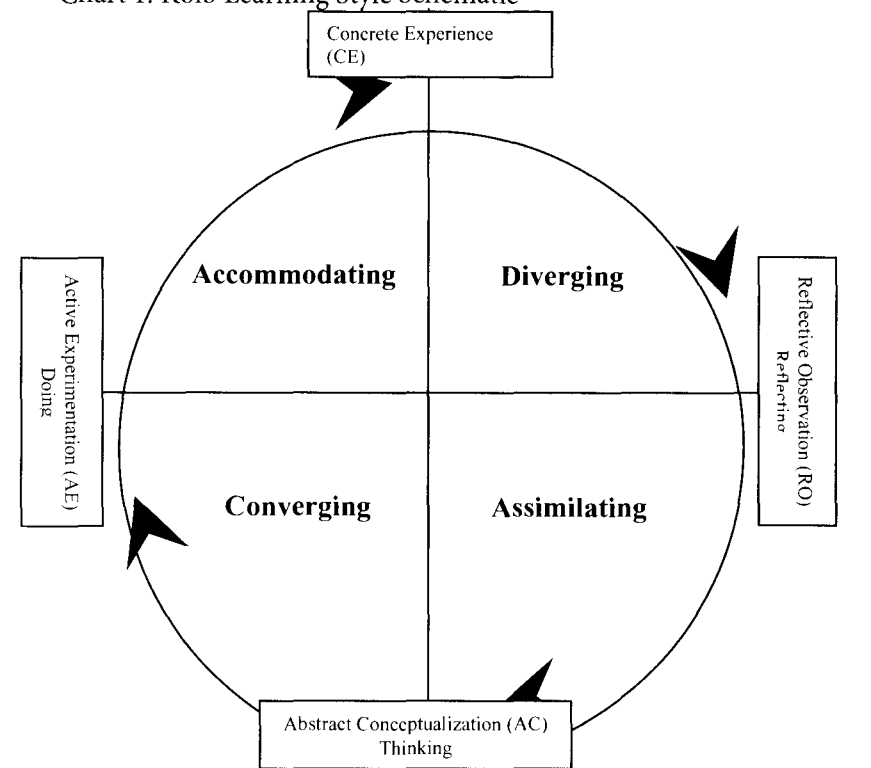
95. Kolb, *supra* n. 4, at 7.

96. *Id.*

practical uses for ideas.⁹⁷ The Accommodating style has its strengths in concrete experience and active experimentation. Those who prefer this style tend to be experimenters who are effective in carrying out plans and tasks and who prefer a “hands-on” learning experience.⁹⁸

Although the LSI is subject to the same criticism as any self-reporting test instrument,⁹⁹ Kolb reports extensive use of the various versions of the test in educational research and asserts that substantial evidence exists to support their validity and reliability.¹⁰⁰ According to Kolb, test-related reliability of the LSI3, with an eight week interval between tests, varies from .91 to .99.¹⁰¹

Chart 1: Kolb Learning Style Schematic¹⁰²



97. *Id.*

98. *Id.*

99. Kolb himself has noted that results of the LSI “are based solely on the way learners rate themselves,” and not on the basis of observable standards or behavior. Curtis Kelly, *David Kolb, The Theory of Experiential Learning and ESL*, 3 Internet TESL J., “Limitations of Kolb’s Theory and Inventory” (Sept. 1997), <http://iteslj.org/Articles/Kelly-Experiential/>.

100. Kolb, *supra* n. 87, at 69–70.

101. *Id.* at 70.

102. Kolb, *supra* n. 4 at 3 (as modified by the Authors). Copyright 1999 Experience Based Learning Systems, Inc. All rights reserved. Reprint permission requests must be made in writing to the publisher, Hay Group, 116 Huntington Avenue, Boston, MA 02116.

III. RESEARCH DESIGN, METHODOLOGY, AND FINDINGS

A. Research Design

The present study was designed to use correlation research to assess relationships among learning styles, LSAT scores, and law school GPAs.¹⁰³ The primary purpose of the study was to investigate whether certain learning styles or learning modes, as reflected in the LSI3, are more compatible than others with legal analytical processes. Specifically, the study was intended to determine whether the learning styles and learning modes of students entering law school correlate with: (1) those students' analytical skills as measured by their LSAT scores and (2) their success in the first year of law school as measured by their first-semester and first-year grade point averages. A secondary purpose of the study was to determine whether learning styles or modes vary according to factors such as gender or ethnicity.

Although the LSAT is universally used in making decisions on law school admissions, it provides only a single numeric to reflect performance on at least three distinct test components, each of which measures different skills.¹⁰⁴ Accordingly, a low LSAT score may help identify students who are potentially at risk, but it is of little or no value in constructing appropriate academic interventions. If, however, a relationship exists between learning styles and success on the LSAT, then assisting students in developing learning styles more conducive to legal analysis may be a key to reaching at-risk students. It is not entirely clear to what extent adult learners can replace previously acquired learning preferences, but evidence suggests that students can achieve some balance in learning modes and acclimate to new learning environments at least to a degree.¹⁰⁵

103. Correlation is a statistical technique that measures and describes the relationship between variables. In correlation research, as opposed to experimental research, the analyst tries not to influence any of the variables, but measures them and looks for relationships among the variables. Alfred P. Rovai, *Instructor Notes: Bivariate Regression and Correlation 1* (unpublished ms.) (copy on file with Authors).

104. See *supra* nn. 19–20 and accompanying text.

105. See e.g. Charalampos Mainemelis, Richard Boyatzis & David Kolb, *Learning Styles and Adaptive Flexibility: Testing Experiential Learning Theory* (Sage Publications 2002) (implying that a student can choose which set of learning abilities to use in a specific learning situation); see also Martin Delahoussaye, *The Perfect Learner: An Expert Debate on Learning Styles*, Training 4 (Proquest Education Journals, May 2002) (suggesting that people can either “play to their strengths” and restrict their learning situations to suit those strengths, or “work to become better all-round learners;” also noting that the latter is the more difficult, and ultimate, challenge); Jacobson, *supra* n. 22, at 146 (asserting that learning style is amenable to change); Loo, *supra* n. 48, at 350 (suggesting that “[t]he effective learner . . . can use each of the four styles effectively . . . rather than relying upon their preferred style”); Alfred P. Rovai, Louis B. Gallien, Jr. & Mervyn J. Wighting, *Graduate Student*

B. Research Methodology

1. Participants

Study participants consisted of a sample of 177 first-year law students, which represented more than 98% of the first-year law school class at Regent University in the fall semester, 2003.¹⁰⁶ Participants included 83 females (46.9%) and 94 males (53.1%). With respect to ethnicity, the population consisted of 16 African-Americans (9.0%), 134 Caucasians (75.7%), and 27 other (15.3%, primarily Hispanic and Asian). Participants' ages ranged from 20 to 58 years.¹⁰⁷

2. Setting

For students who took part in Regent University's summer academic success program prior to the fall semester, the LSI3 was administered at the beginning of the first summer session, before any substantive legal instruction was given. For all other entering first-year students, the questionnaire was administered during an early stage of new student orientation, prior to the beginning of fall semester classes. Administering the test in these settings minimized any influence the incoming students might otherwise have received from exposure to law school course work or from the instruction in study skills given during the latter part of Regent's new student orientation.

3. Data Collection

In addition to respondents' scores on the LSI3 questionnaire, data was collected from student admissions files on individual factors such as citizenship, gender, ethnicity, undergraduate major, number of years since the last degree was completed, undergraduate GPA (UGPA), and LSAT score. Students who had taken the LSAT more than once were credited with the average score as indicated on their LSAC report. At the end of each semester, grades were collected from the Law School Records and Registration Office and recorded for each student.

Academic Achievement and Learning Style Preferences: A Comparison of Graduates from Predominantly [Caucasian] and Historically [African American] Colleges and Universities 9 (unpublished ms. Sept. 3, 2004) (copy on file with Authors) (citing J.K. Pinto, M.A. Geiger & E.J. Boyle, *A Three Year Longitudinal Study of Changes in Student Learning Styles*, 35 J. College Student Dev. 113 (Mar. 1994) (determining that learning style preferences may be subject to permanent change over time)).

106. Three of the 180 entering students did not complete the questionnaire, including one re-admitted student who was technically considered a member of the first-year class but had taken law classes in a previous year.

107. $M = 26.68$; $SD = 6.81$ years.

4. *Quantitative Methods*

A correlation design was used to determine the predictive value of LSAT scores, learning styles, and learning modes with respect to first-semester and first-year grade point averages. Analysis of variance (ANOVA) and canonical correlation analysis (CCA) were used to analyze the data. For the CCA analysis, canonical functions or sets of weights were calculated because the smaller of the two variable sets (*i.e.*, achievement) possessed only two variables. Two canonical variants were obtained for each of the two canonical functions, one representing achievement and the other representing learning mode.

C. *Research Findings*

1. *General Characteristics of the Sample Population*

Means with standard deviations in parentheses for pooled data ($N = 177$) were as follows: (1) LSAT, 151.60 (4.96); (2) undergraduate GPA, 3.18 (.45); (3) first-semester law school GPA, 2.60 (.67);¹⁰⁸ (4) first-year law school GPA 2.70 (.54); (5) CE learning mode, 22.62 (6.33); (6) AC learning mode, 34.56 (7.45); (7) RO learning mode, 29.83 (7.37); and (8) AE learning mode, 32.99 (6.73).¹⁰⁹ Table 1 (below) displays the descriptive statistics for each variable disaggregated by gender and ethnicity, while Table 2 shows the descriptive statistics disaggregated by learning style.

108. The mean first-semester law school GPA becomes 2.66 (.54) if GPAs of 0.00 are removed.

109. LSAT scores can range from 120 to 180 points; UGPA, FSGPA and FYGPA can range from 0 to 4; and each of the four learning mode scores can range from 0 to 48. In Tables 1 and 2 above, N refers to the total number of individuals sampled, while n refers to the number of individuals in specific subsets.

Table 1: Descriptive Statistics Disaggregated by Gender and Ethnicity

Variable	FEMALE		MALE		CAUCASIAN		AFRICAN AMERICAN		OTHER	
	M	SD	M	SD	M	SD	M	SD	M	SD
LSAT	150.7	4.63	152.5	5.21	152.2	4.76	148.5	4.24	151.0	5.94
UGPA	3.25	.42	3.12	.45	3.22	.44	2.89	.42	3.15	.40
FYGPA	2.58	.57	2.80	.49	2.77	.50	2.32	.57	2.59	.59
FSGPA	2.56	.53	2.81	.50	2.74	.50	2.40	.50	2.61	.59
CE	22.87	6.50	22.38	6.33	22.28	5.72	24.71	7.26	23.04	8.61
AC	33.10	7.92	35.45	6.90	34.89	7.23	33.07	7.43	32.52	8.45
RO	29.51	7.86	30.09	7.13	29.36	7.37	32.00	8.27	30.81	7.47
AE	34.51	6.12	32.08	7.04	33.47	6.96	30.21	7.11	33.63	4.96

Note: $N = 177$; female, $n = 83$; male, $n = 94$; Caucasian, $n = 134$; African American, $n = 16$; other, $n = 27$.

UGPA = undergraduate GPA, FYGPA = first-year GPA, FSGPA = first-semester GPA.

Table 2: Descriptive Statistics Disaggregated by Learning Style

Variable	Accommodating		Diverging		Converging		Assimilating	
	M	SD	M	SD	M	SD	M	SD
LSAT	150.24	4.62	149.41	3.75	152.98	5.63	151.76	4.68
UGPA	3.15	.42	3.19	.40	3.21	.47	3.16	.44
FSGPA	2.50	.58	2.48	.50	2.78	.49	2.73	.53
FYGPA	2.55	.58	2.52	.50	2.78	.51	2.73	.55

Note: $N = 177$; accommodating, $n = 19$; diverging, $n = 23$; converging, $n = 56$; assimilating, $n = 79$.

Of the 177 respondents, 79 (45%) reflected a preference for the

Assimilating learning style (Quadrant Two); 56 (31%) for the Converging style (Quadrant Three); 23 (13%) for the Diverging learning style (Quadrant One); and 19 (11%) for the Accommodating style (Quadrant Four). Thus, just over three-fourths of all respondents were classified as either Assimilators or Convergents (Quadrants Two or Three). These results are consistent with those of Professors John and Tania Reese, at the University of Denver, who also reported a three-to-one split of Assimilators and Convergents over Accommodators and Divergers,¹¹⁰ thereby reflecting a “heav[y] bias[.]” among law students “toward traditional abstract intake.”¹¹¹

Among Regent Faculty members who completed the LSI3 questionnaire, 22 of 27 (81%) showed a preference for the Assimilating learning style, and the remaining five (19%) were classified as Convergents. The faculty generally exhibited high scores for abstract conceptualization.¹¹² These results suggest that faculty learning styles are compatible with those of a majority of their students, but that a sizeable minority of students—approximately one in four—have learning styles that differ from those of the faculty.¹¹³

2. LSAT as a Predictor of Law School Performance

Study results affirmed the reliability of the LSAT as a predictor of first-semester and first-year law school performance. Chart 2 (below) reflects a significant positive correlation between LSAT scores and end-of-year GPAs, with a correlation coefficient of .50.¹¹⁴ This correlation

110. Professors John H. Reese and Tania H. Reese reported that 26% of the 66 law students tested at the University of Denver were in the top two quadrants (Divergers and Accommodators), about equally divided between the two categories, while 74% were in the bottom two quadrants (Assimilators and Convergents), also divided about evenly between the two. Reese & Reese, *supra* n. 3, at 177. Since publishing their initial report, the Reeses have continued their assessment of law student learning styles and reportedly have data encompassing at least a ten-year period. E-mail from Dr. Tania H. Reese, Professor, University of Denver College of Law, to the Authors (Feb. 22, 2005, 12:53 p.m. EST) (copy on file with Authors).

111. Reese & Reese, *supra* n. 3, at 177. The common trait among Assimilators and Convergents is a preference for abstract conceptualization as a mode of taking in and absorbing new information, as evidenced by relatively high scores for abstract conceptualization (AC) and relatively low scores for concrete experimentation (CE).

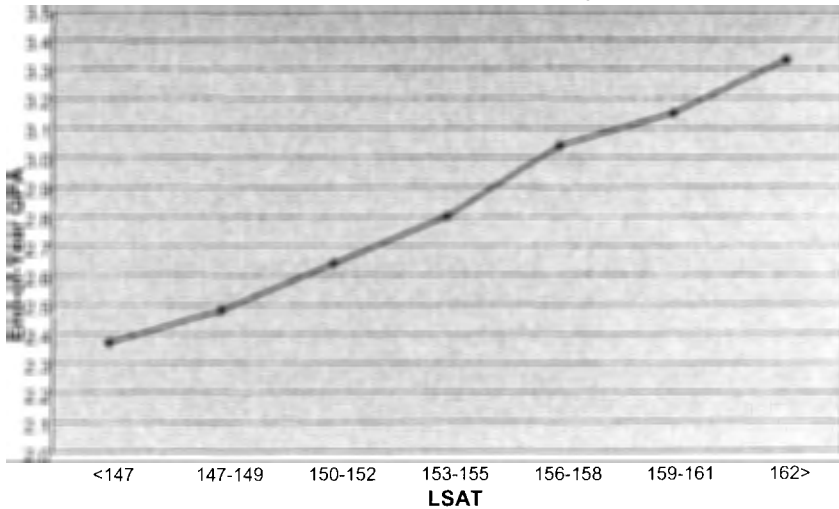
112. Faculty testing was done at a law faculty retreat in the fall of 2004 and precise data—other than a tabulation of faculty learning styles—was not collected.

113. Scholars who have tracked student and faculty learning style data have reported “an increasing disparity between faculty and students” in colleges and universities generally. Charles C. Schroeder, *New Students—New Learning Styles*, “Faculty Characteristics and New Students: A Mismatch?” <http://www.virtualschool.edu/mon/Academia/KierseyLearningStyles.html> (last updated Mar. 7, 2004).

114. The strength, or degree, of correlation between two variables is called the correlation coefficient. The correlation coefficient is typically expressed as a number between -1 and 1.

coefficient suggests that 25% of the variation in first-year GPAs was explained by variations in students' LSAT scores.¹¹⁵ The relationship between LSAT scores and first-semester GPAs was also significant, and only slightly less pronounced ($r = .43$).¹¹⁶

Chart 2: End-of-Year Grade Point Averages by LSAT



Interestingly, the overall GPA for first-year students rose slightly in the second semester, from 2.66 for the fall semester alone to 2.69 for the year as a whole. However, the average GPA for students with LSAT scores of less than 147 actually fell from 2.44 in the fall semester to 2.37 at the end of the year. Students in most other LSAT ranges experienced at least modest improvement in average GPAs.¹¹⁷ The correlation between students' LSAT scores and the degree of increase or decrease in their second-semester GPAs was not found to be statistically significant.

115. A correlation coefficient of .50 means that 25% (.50 x .50) of the variation in one variable is explained by variation in the other variable.

116. Data relating first-semester GPAs and LSAT scores remains on file with the authors.

117. Although GPAs also fell in the second semester for students with LSAT scores of 153-155 (-.03) and 159-161 (-.04), the decline for students with scores of less than 147 (-.07) was the most dramatic. Average GPAs for the following groups of students improved from the end of the first semester to the end of their first year of study: LSATs 147-149 (+ .02); LSATs 150-152 (+ .06); LSATs 156-158 (+ .18); LSATs 162 and above (+ .05) The overall change in average GPAs was + .03.

3. *Correlation Between LSAT Scores and Learning Styles or Learning Modes*

(a) *LSAT Scores and Learning Styles*

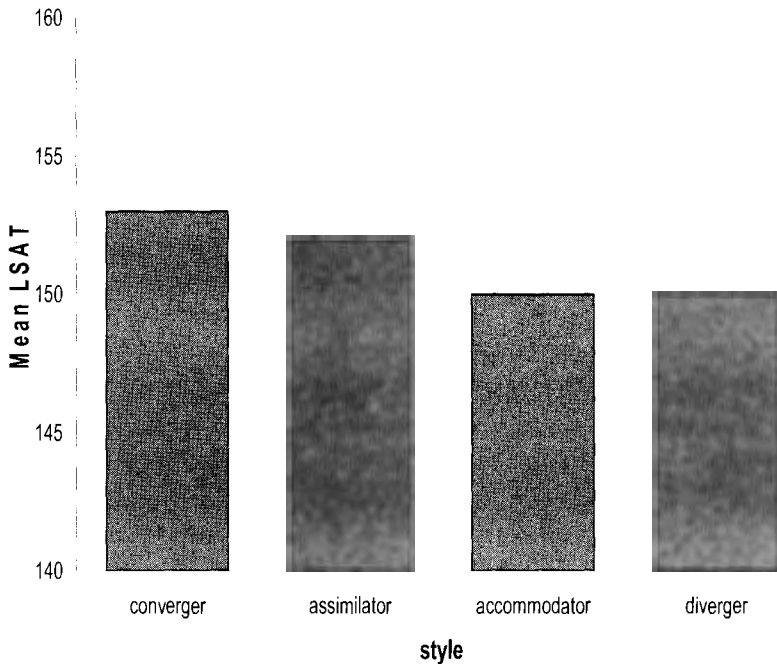
LSAT scores varied by learning style in a manner that was generally consistent with what the authors expected based on the nature of the LSAT and the skills it tests.¹¹⁸ Chart 3 (below) shows that students who preferred Converging and Assimilating learning styles had higher LSAT scores, on average, than those who preferred Diverging or Accommodating styles.¹¹⁹ Given the element of abstract conceptualization (AC) common to both the Assimilating and Converging learning styles and the emphasis in the LSAT on logical reasoning such a similarity in scores was not surprising.¹²⁰

118. See *supra* nn. 19–20 and accompanying text.

119. One-way ANOVAs were conducted to evaluate the relationship between learning style and LSAT scores, undergraduate GPA, and first-semester law school GPA. Only the ANOVA for LSAT scores was significant, $F(3, 173) = 3.11$, $p = .028$, $\eta^2 = .05$. The strength of relationship as evaluated by η^2 was small, with learning style accounting for only five percent of the variance in LSAT scores. Follow-up Tukey's Honest Significant Difference tests were conducted to evaluate pairwise differences among the group means. The only meaningful difference was that the Converging learning style scored significantly higher than the Diverging learning style.

120. Kolb reports that, among respondents in various professions or courses of study, attorneys and physical science majors have fallen predominantly within the Assimilating learning style (Quadrant Two), while engineers and computer science majors have generally shown a preference for the Converging learning style (Quadrant Three). Kolb, *supra* n. 4, at 14.

Chart 3: LSAT Scores by Learning Style



The correlation between LSAT scores and learning styles was not statistically significant when the four learning styles were considered individually. However, there was a low but significant relationship between LSAT scores and learning styles when Assimilators and Convergents ($M = 152.13$, $SD = 5.07$) were grouped together and compared with Accommodators and Divergers as a whole ($M = 149.88$, $SD = 4.23$), $\eta^2 = .20$, $p = .01$. Among the sample population in the present study, more than 80% of respondents who had LSAT scores over 152 were either Assimilators or Convergents.

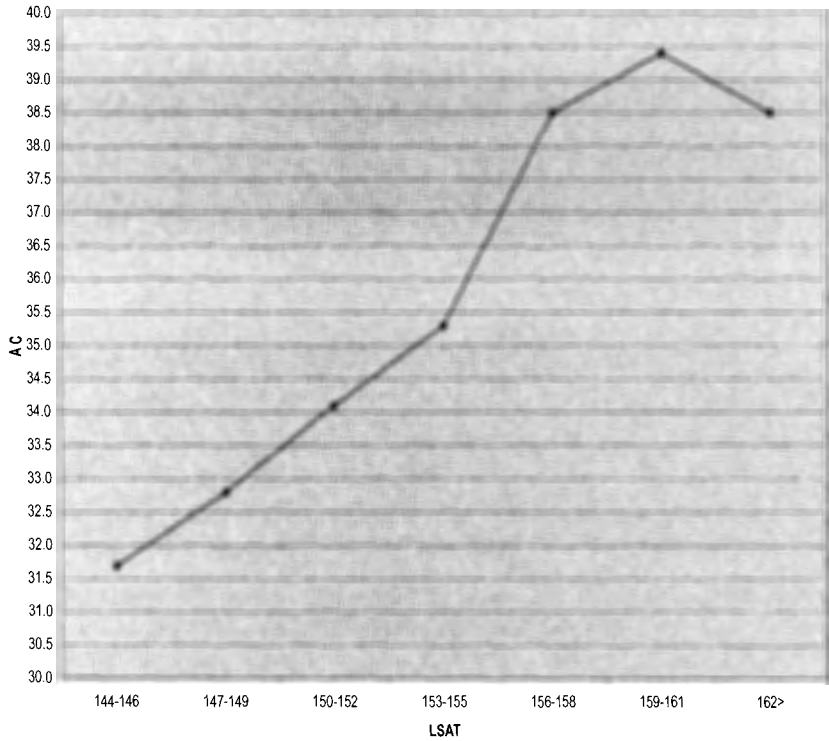
(b) *LSAT Scores and Learning Modes*

Correlations between LSAT scores and learning *modes* were more pronounced than were those between LSAT scores and learning *styles*. Particularly noteworthy were the statistically significant positive correlation between abstract conceptualization (AC) and LSAT scores,¹²¹ and the significant negative correlation between reflective observation

121. $r = .32$, $p < .001$.

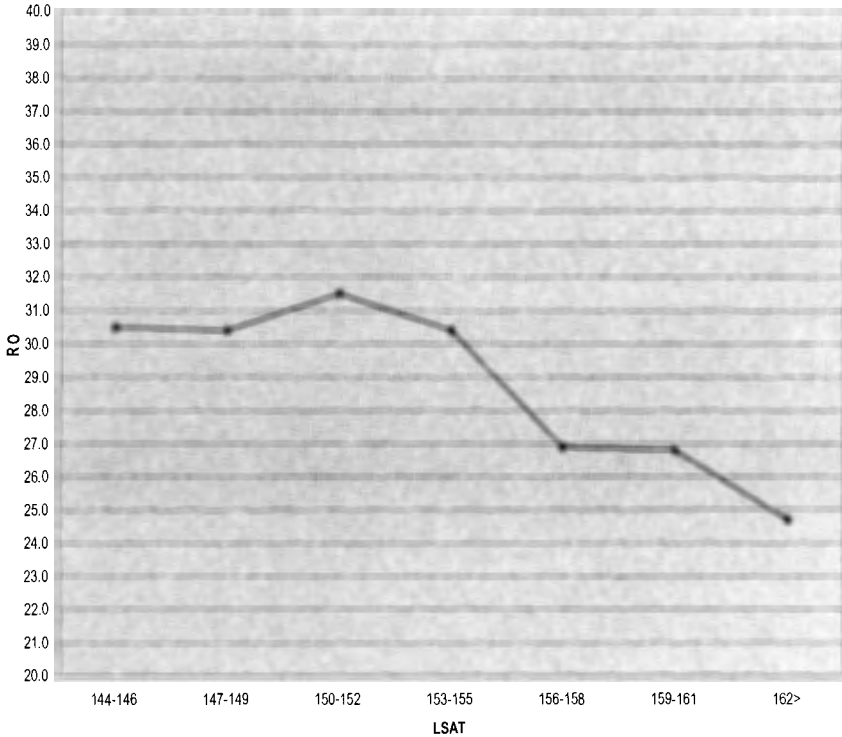
(RO) and LSAT scores.¹²² Charts 4 and 5 (below) reflect both correlations. The negative correlation between preferences for reflective observation (RO) and LSAT scores was somewhat surprising, given the fact that the Assimilating learning style, which is the most common style among attorneys who have taken the LSI, combines a positive RO score and a strong AC score. A substantial majority of the law faculty (81%)—and 45% of the law student respondents in this study—preferred an Assimilating learning style.

Chart 4: AC Scores by LSAT



122. $r = -.22, p = .004$.

Chart 5: RO Scores by LSAT



4. *Learning Styles and Learning Modes as Predictors of Law School Performance*

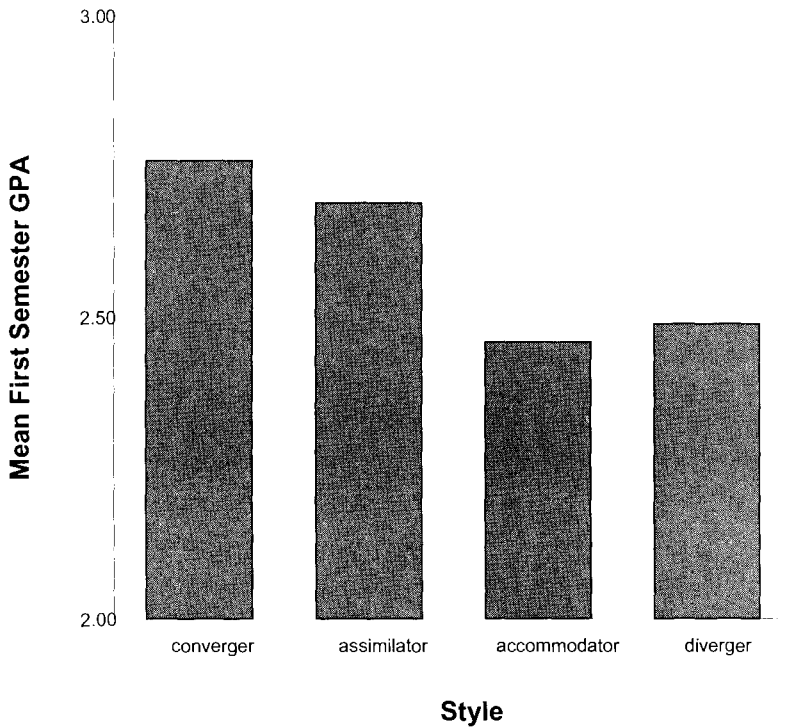
(a) *Law School GPA as a Function of Learning Style*

A multiple regression analysis was conducted to evaluate how well learning style served as a predictor of first-year law school GPA. Chart 6 (below) reflects the clear relationship between learning styles and first-semester grades.¹²³ Interestingly, this relationship was essentially the same as that between learning styles and average LSAT scores (reflected in Chart 4), with both the highest average GPA and the highest LSAT scores related to the Converging learning style (Quadrant Three), as well as both the lowest GPA and lowest LSAT scores associated with the Diverging style (Quadrant One). The relationship between learning style and law school GPA was not, however, statistically significant.¹²⁴

123. This relationship remained substantially unchanged when students' second-semester grades were included.

124. $F(3, 173) = 2.31, p = .08$.

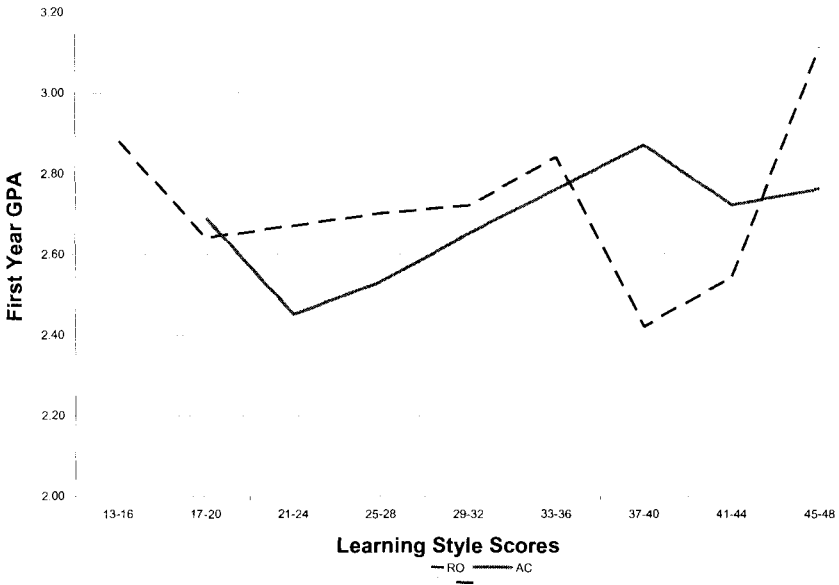
Chart 6: First-Semester Grades by Learning Style



(b) Law School GPA as a Function of Learning Mode

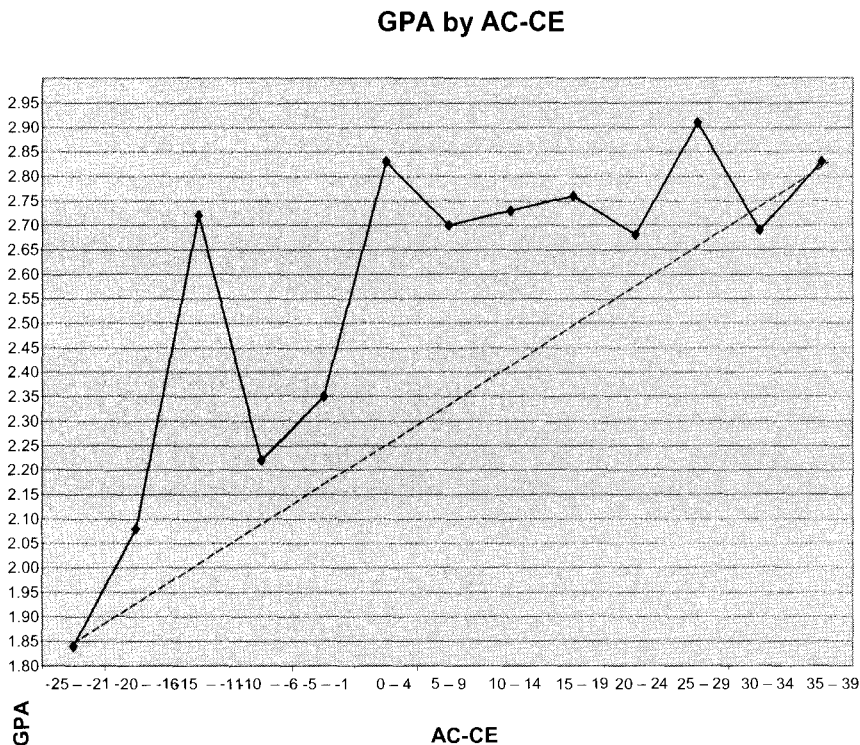
The study also evaluated learning mode as a possible predictor of first-year law school performance. Study results showed a strong positive correlation between abstract conceptualization (AC) and first-year GPA, and a clear, though less pronounced, negative correlation between reflective observation (RO) and first-year GPA. Chart 7 (below) reflects end-of-year GPAs as a function of learning modes AC and RO.

Chart 7: First-Year GPA by Learning Modes AC and RO



Given the apparent relationship between preferences for abstract conceptualization (AC) and law school GPA, the authors also examined the relationship between the end-of-year GPAs and respondents' AC-CE scores. The AC-CE scores are used to plot respondents' information acquisition mode, and ultimately determine respondents' learning styles, on the LSI3. Chart 8 (below) reflects a low, but significant, positive correlation between the students' AC-CE scores and their first-year grades, $r = .20$, $p = .01$.

Chart 8: Law School GPAs by AC-CE Score



A canonical correlation analysis using learning modes AC, CE, and RO as variables demonstrated that learning mode was a statistically significant predictor of law school grades at the low end.¹²⁵ Students with

125. Canonical Correlation Analysis (CCA) was used to examine simultaneously the relationship between a set of two achievement variables and a set of three learning mode variables. The AE learning mode variable was not included in the model because the bivariate correlations between AE and the two achievement variables were not significant. Moreover, including all four learning mode variables in the CCA model produced an ill-conditioned cross-product matrix, suggesting a problem with multi-collinearity when all four learning modes were included. Evaluations of CCA assumptions regarding normality, linearity, within-set multicollinearity, and homoscedasticity for the analyzed model were satisfactory. Additionally, no within-set multivariate outliers were present at $p < .001$.

The first canonical correlation coefficient was .40 and the second was .17. CCA revealed that relationships were significant with both canonical correlations included, $\chi^2(6) = 29.63, p < .001$. Upon removal of the first canonical function, χ^2 values were not significant, $\chi^2(2) = 4.45, p = .11$.

Results of the CCA are displayed in the table below. Included are the standardized canonical coefficients, structure coefficients (*i.e.*, canonical loadings), squared structure coefficients, communality coefficients, adequacy coefficients, and redundancy coefficients for both canonical functions. Since the canonical communality coefficients were 95% or greater for all variables, except

both a weak AC learning mode and a strong RO learning mode were more likely to have both weaker LSAT scores and lower first-year GPAs.¹²⁶ Likewise, students with stronger CE learning modes and weaker AC and RO learning modes tended to have lower first-year grades.¹²⁷ The scatter plot in Chart 9 (below) illustrates these findings.

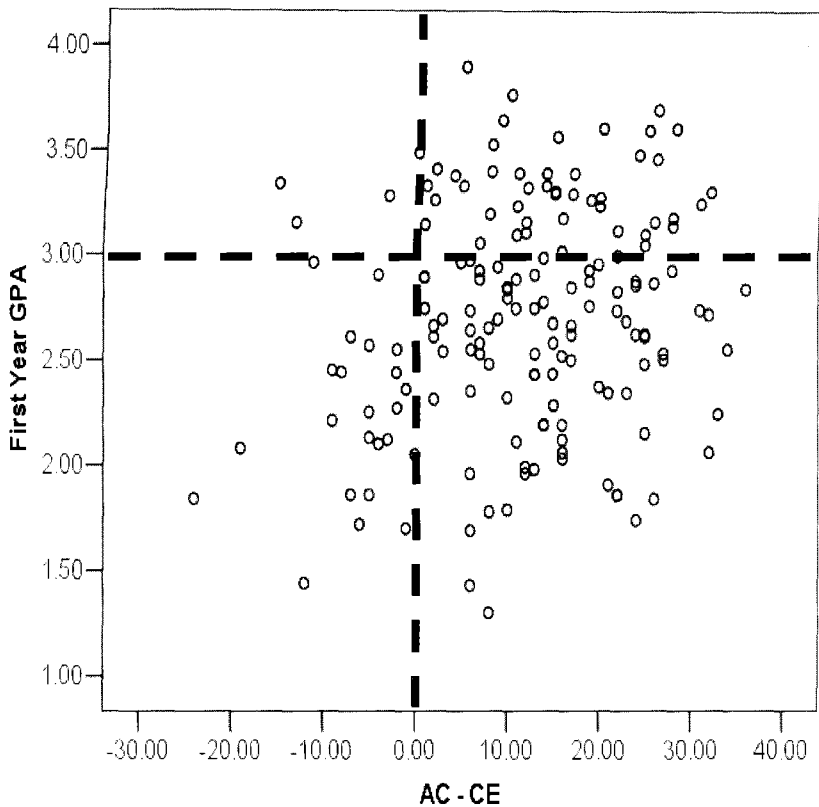
While GPAs for students with positive AC-CE scores varied considerably, there were very few students with AC-CE scores below zero whose first-year GPAs exceeded 3.0. These findings suggest that: (1) student proficiency with abstract conceptualization alone is not sufficient to guarantee strong academic performance, but (2) at least a minimal level of proficiency with abstract conceptualization is important to law school success. Respondents in this study who fell below a threshold level of skill or comfort with abstract conceptualization had difficulty achieving more than marginal success. However, for those with higher, positive AC-CE scores (or for those who achieved success), other factors (e.g. intelligence, personality, motivation, study skills, and environmental preferences) apparently assumed a larger role in their performance.

for the RO learning mode, which was 59%, the canonical variates obtained in this CCA have relatively less to do with the RO learning mode.

126. Using a cutoff structure coefficient of .30, both LSAT and first-year GPA in the achievement set were correlated with the achievement variate in the first canonical function. LSAT was 96% useful and first-year GPA was 10% useful in explaining variance in the achievement variate. In the learning mode set, both the AC and RO learning modes were correlated with the learning mode variate. The AC learning mode was 81% useful and the RO learning mode was 42% useful in explaining variance in the learning mode variate.

127. Using a cutoff structure coefficient of .30, only first-year GPA in the achievement set was related to the achievement variate in the second canonical function, while the CE, AC, and RO modes in the learning mode set were related to the learning mode variate. First-year GPA was 90% useful in explaining variance in the achievement variate. CE, AC, and RO modes were 100%, 14%, and 17% useful, respectively, in explaining the learning mode variate.

Chart 9: GPA by AC-CE Score – Scatter Diagram



5. Correlation Between LSAT Scores, Law School GPA, or Learning Styles by Ethnicity and Gender

(a) LSAT Scores and Law School Grades By Gender and Ethnicity

Study findings were consistent with LSAC studies reporting higher average LSAT scores for males than for females.¹²⁸ First-semester and first-year grades reflected the same gender bias. The study employed one-way ANOVAs to evaluate the relationship between gender and LSAT scores, undergraduate GPAs, and first-semester and first-year law school GPAs. The ANOVA for LSAT scores was significant, with males scoring

128. Susan P. Dalessandro, Lisa A. Stilwell & Lynda M. Reese, *LSAT Performance with Regional, Gender, and Racial/Ethnic Breakdowns: 1997–1998 Through 2003–2004 Testing Years 1–2* (L. Sch. Admis. Council Research Rpt. Series, Dec. 2005).

higher than females across each measure.¹²⁹ However, the strength of the relationship as evaluated by η^2 was small, with gender accounting for only three percent of the variance in LSAT scores. The ANOVAs for undergraduate GPA and first-semester and first-year law school GPAs were only significant for first-semester and first-year law school GPAs, again demonstrating higher scores for males than females.¹³⁰ The strength of relationship as evaluated by η^2 was again small, with gender accounting for only five percent and four percent, respectively, of the variance in first-semester and first-year law school GPAs.

Results were also consistent with LSAC studies showing higher LSAT scores for Caucasians than African Americans.¹³¹ The study used one-way ANOVAs to evaluate the relationship between ethnicity (Caucasian, African American, and Other) and LSAT scores, undergraduate GPA, first-semester and first-year law school GPAs. The ANOVA for LSAT scores was significant, showing stronger performances by Caucasians than by African Americans.¹³² However, the strength of the relationship as evaluated by η^2 was small with ethnicity accounting for only four percent of the variance in LSAT scores. The ANOVAs for undergraduate GPA and first-semester and first-year law school GPAs were also significant, showing stronger average performance by Caucasians than by African Americans.¹³³ As with other variables differentiated by race and gender, the strength of relationship as evaluated by η^2 was small to moderate, with ethnicity accounting for four percent and six percent of the variance in first-semester and first-year law school GPAs, respectively. Tukey's Honest Significant Difference tests were conducted to evaluate pairwise differences among the group means. The only significant difference was that Caucasians scored significantly higher than African Americans.

D. Learning Styles By Gender and Ethnicity

Study findings did not reveal significant differences in learning styles between males and females nor among ethnic groups. The study employed two-way contingency table analyses to determine if the proportion of first-year law students by learning style (Accommodating, Diverging, Converging, and Assimilating) differed by ethnicity

129. $F(1, 175) = 4.70, p = .03, \eta^2 = .03$.

130. Undergraduate GPA: $F(1, 175) = 2.79, p = .09, \eta^2 = .02$; first-semester GPA: $F(1, 175) = 8.30, p = .004, \eta^2 = .05$; first-year GPA: $F(1, 164) = 7.18, p = .008, \eta^2 = .04$.

131. *Supra* n. 18.

132. LSAT: $F(2, 174) = 3.61, p = .03, \eta^2 = .04$.

133. Undergraduate GPA: $F(2, 175) = 4.82, p = .009, \eta^2 = .05$; first-semester GPA: $F(2, 174) = 3.20, p = .04, \eta^2 = .04$; first-year GPA: $F(2, 163) = 5.31, p = .006, \eta^2 = .06$.

(Caucasian, African American, and Other) or by gender. Proportions by learning style and ethnicity were not significantly different,¹³⁴ nor were proportions by learning style and gender.¹³⁵ Though not statistically significant, study results did reflect a pattern concerning ethnicity and learning style that might merit further research.

If one considers students with Accommodating or Diverging learning styles (Quadrants One and Four) to be at greater risk academically (because of their relatively low abstract conceptualization (AC) scores and the comparatively low pattern of LSAT scores and law school GPAs associated with those learning styles), then it appears that, on average, minority students including African Americans and Asians might be at greater risk academically than Caucasians. Table 3 and Chart 10 (below) reflect the learning styles of Caucasians, African Americans, and Asians among the sample population. Among the African American students in the sample population, 33% were Accommodators or Divergers, compared with 22% of Caucasians. Among the small number of Asians in the sample population, more than half (55%) were Accommodators or Divergers.¹³⁶

Table 3: Learning Style by Ethnicity

Ethnicity by Learning Style Crosstabulation

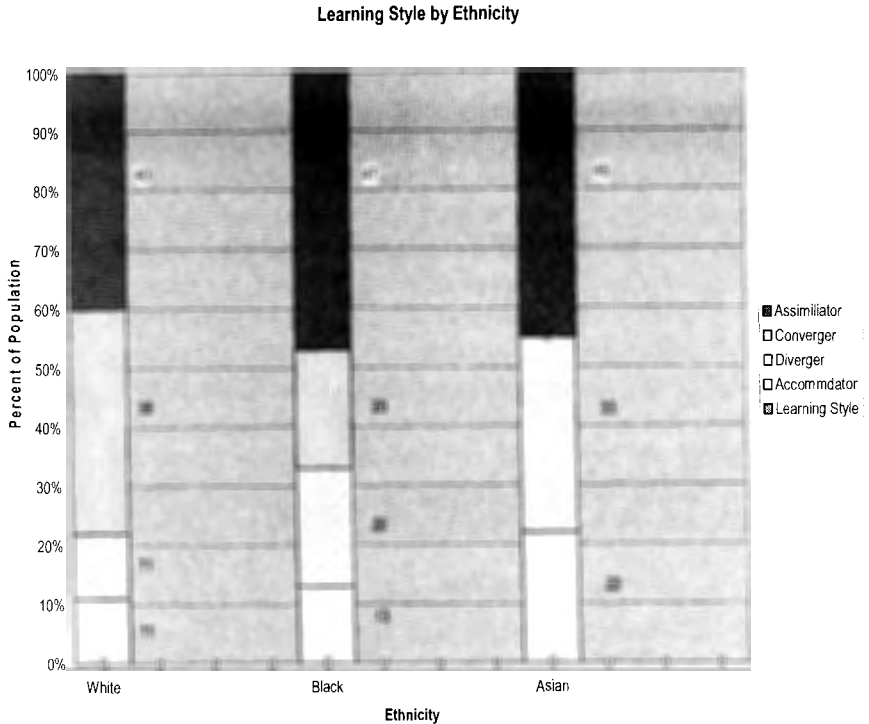
Count	Learning Style				Total
	Accommodator	Diverger	Converger	Assimilator	
Ethnicity White	14	14	47	59	134
Black	2	4	3	7	16
Other	3	5	6	13	27
Total	19	23	56	79	177

134. Pearson $\chi^2(6, N = 177) = 5.32, p = .50$.

135. Pearson $\chi^2(3, N = 177) = 4.84, p = .18$.

136. The evidence that predominant learning styles may differ by race is consistent with the findings of Drs. Rovai, Gallien and Wighting, who reported that "on average, African American graduate students attending a [predominantly Caucasian college or university] possess a stronger preference for the dependent learning style, a less significant preference for the independent learning style, and achieve lower course grades than their Caucasian peers." Rovai, Gallien, Wighting, *supra* n. 105, at 15-16.

Chart 10: Learning Style by Ethnicity



IV. STRATEGIES FOR ENHANCING THE LEARNING PROCESS

A. Clarifying the Desired Outcome

The literature on legal education in general is extensive, as legal professionals (professors, lawyers and judges) have analyzed and criticized the methodologies and outcomes of legal education for more than a century.¹³⁷ Within this field of literature, a new focus has begun to

137. See generally Charles D. Kelso & M. Jane Kelso, *The Future of Legal Education for Practical Skills: Can the Innovations Survive?*, 1977 BYU L. Rev. 1007; Duncan Kennedy, *How the Law School Fails: A Polemic*, 1 Yale L. Rev. L & Soc. Action 71 (1970); Karl N. Llewellyn, *On What Is Wrong With Legal Education*, 35 Colum. L. Rev. 651 (1935); Karl N. Llewellyn, *Lawyer's Ways and Means, and the Law Curriculum*, 30 Iowa L. Rev. 333 (1945); Jenny Morgan, *The Socratic Method: Silencing Cooperation*, 1 Leg. Educ. Rev. 151 (1989); C. A. Peairs, Jr., *Essay on the Teaching of Law*, 12 J. Leg. Educ. 323, 336 (1960) (citing W. Jethro Brown, *The American Law School*, 21 L. Q. Rev. 69 (1905)); David H. Vernon, *Education for Proficiency: The Continuum*, 33 J. Leg. Educ. 509 (1983); Andrew S. Watson, *The Quest for Professional Competence: Psychological Aspects of Legal Education*, 37 U. Cin. L. Rev. 93 (1968).

emerge. A handful of legal professionals have incorporated principles of educational psychology and learning theory in their analysis of teaching lawyering skills and competencies.¹³⁸ Their focus is not on teaching methodology alone, but on the student's role as an active or passive participant in the learning process.¹³⁹ Having identified autonomous or active student learning as a desirable characteristic of legal education, these authors explore the factors that facilitate that dynamic. From this discussion, literature on student learning styles in legal education has emerged.¹⁴⁰

A summary review of this literature reveals two recurrent themes—a call to reassess law school curriculum content¹⁴¹ and a mounting criticism of traditional law school pedagogy.¹⁴² Critics of the traditional law school approach have questioned such common practices as the technique of case analysis,¹⁴³ the use of the Socratic Method,¹⁴⁴ the emphasis on the adversarial or advocacy element of lawyering,¹⁴⁵ and even the details of teaching methods, such as the efficacy of relying on students volunteering in class¹⁴⁶ and the use of lecturing as a tool for teaching substantive law.¹⁴⁷

138. See *supra* nn. 50–51 and accompanying text.

139. See *supra* nn. 27–33 and accompanying text.

140. *Supra* § II.C.

141. See *infra* nn. 176–181 and accompanying text and Table 4.

142. See e.g. Harry W. Jones, *Notes on the Teaching of Legal Method*, 1 J. Leg. Educ. 13 (1948); see also Leslie E. Gerwin and Paul M. Shupack, *Karl Llewellyn's Legal Method Course: Elements of Law and its Teaching Materials*, 33 J. Leg. Educ. 64 (1983); Joseph W. Little, *Skills Training in the Torts Course*, 31 J. Leg. Educ. 614 (1981–82); Kurt A. Strasser, *Teaching Contracts—Present Criticism and a Modest Proposal for Reform*, 31 J. Leg. Educ. 63 (1981).

143. E.g. Jacobson, *supra* n. 22, at 164 n. 98 (opining that the “traditional heuristic for reasoning by analogy [IRAC] is not helpful for many students because what constitutes ‘application’ is uncertain and because it does not model analogistic reasoning”); see also Kelso & Kelso, *supra* n. 137; Karl N. Llewellyn, *On the Problem of Teaching “Private Law”*, 54 Harv. L. Rev. 775 (1941); Karl N. Llewellyn, *On What Is Wrong with So-Called Legal Education*, 5 Colum. L. Rev. 651 (1935); Gene R. Shreve, *Bringing the Educational Reforms of the Cramton Report into the Case Method Classroom—Two Models*, 59 Wash. U. L.Q. 793 (1981).

144. E.g. Thomas L. Shaffer & Robert S. Redmount, *Legal Education: The Classroom Experience*, 52 Notre Dame Law 190 (1976); Robert S. Redmount, *Law Learning, Teacher-Student Relations, and the Legal Profession*, 59 Wash. U. L.Q. 853 (1981); see also J.T. Dillon, *Paper Chase and the Socratic Method of Teaching Law*, 30 J. Leg. Educ. 529 (1980); Jones, *supra* n. 142.

145. E.g. Jack Himmelstein, *Reassessing Law Schooling: An Inquiry into the Application of Humanistic Educational Psychology to the Teaching of Law*, 53 N.Y.U. L. Rev. 514 (1978); see also Watson, *supra* n. 137; Gerwin & Shupack, *supra* n. 142.

146. E.g. Robert L. Mennell, *The Unspoken Challenge: Involving the “Quiet Student”*, 31 J. Leg. Educ. 209 (1981) (noting that there are various reasons for students' non-participation in class ranging from timidity to overconfidence).

147. E.g. Norman Redlich, *Law Schools as Institutional Teachers of Professional Responsibility*, 34 J. Leg. Educ. 215 (1984); see also Vernon, *supra* n. 137 (suggesting that the subject of professional responsibility is best taught by example and not merely by lecture).

Those who have considered the question of learning style have criticized the predominant law school approach for its “general orient[ation] toward only one type of learner.”¹⁴⁸ Its “exclusive focus on linguistic and logical skills,”¹⁴⁹ they say, gives an undue advantage to students of particular personality types or learning styles and creates unnecessary obstacles for a growing number of law students with non-traditional traits.¹⁵⁰ To reach these non-traditional students, professors must learn to teach in a manner compatible with a broader variety of learning styles.¹⁵¹

Despite the growing criticism, the traditional method of legal instruction still finds substantial support. Its proponents believe that the Socratic Method, however flawed, remains “the best means for teaching law students to analyze effectively, think independently, and express themselves verbally.”¹⁵² Proponents also argue that any changes in law school pedagogy should be driven, not merely by a desire to make legal instruction easier to comprehend, but by the need to equip students for the “complex learning and analysis” that is ultimately required in the practice of law.¹⁵³ Because legal education is meant to prepare students for the legal profession, law schools must both impart to and require of their students an exceptional level of legal and analytical skill:

[L]egal education is not an end in itself; it is meant, in general, to prepare students for law practice in some form. Thus, assuming threshold rules of fairness in law school admissions (e.g., the

148. Ogilvy, *supra* n. 82, at 69 n. 33 (citing Cynthia Kelley, *Education for Lawyer Competency: A Proposal for Curricular Reform*, 18 New Eng. L. Rev. 607, 621 (1983) (finding clear preferences among law students, law faculty and appellate court judges for the “Assimilator” and “Converger” learning styles, which stress abstract theoretical thinking)).

149. Zanglein & Stalcup, *supra* n. 57, at 489 (quoting Howard Gardner, *Frames of Mind: The Theory of Multiple Intelligences* 31 (Basic Books, 1983)).

150. See also Randall, *supra* n. 3, at 102 (indicating that a substantial number of students do not possess a learning style that is conducive to traditional legal education).

151. Evidence does suggest that student achievement is higher when students’ learning styles are congruent with those of their professors. Thus, to reach the largest number of the students in a class, law professors are often encouraged by learning theorists to “balance the repertoire of teaching styles and techniques.” Boyle, *supra* n. 33, at 18; see also Arnold, *supra* n. 31, at 899; Boyle & Dunn, *supra* n. 50 (citing research in widely diverse learning environments including college classes in anatomy, bacteriology, marketing, mathematics, physiology and social sciences, in which study findings reflected improvement in grade point averages where teaching styles were congruent with students’ learning styles); Lustbader, *supra* n. 50 at 454; but see Cooper, *supra* n. 47, at 5 (citing Stellwagen’s findings that teaching to different learning styles had no apparent effect).

152. Ruta K. Stropus, *Mend It, Bend It, and Extend It: The Fate of Traditional Law School Methodology in the 21st Century*, 27 Loy. U. Chi. L.J. 449, 450 (1996).

153. Jacobson, *supra* n. 22, at 169–70 (encouraging law professors to teach to different learning styles, but opining that doing so “is not enough” because legal educators must also guide their students through the learning cycle to the mastery of more sophisticated legal reasoning).

admissions process does not exclude minorities on the basis of their race or women on the basis of their gender), any argument for changing law school pedagogy must be rooted in some claim about the nature of law practice¹⁵⁴

The authors of this report believe that there is truth in both positions. Law schools arguably have an obligation to assist all, regardless of their race or gender, who desire a legal education and have the capacity for it—even if it means rethinking classroom techniques with which professors may have become comfortable. Ultimately, however, all law students must acquire proficiency in legal analysis in order to practice law competently. Making the learning experience easier, therefore, cannot be the ultimate goal. As Peter Honey has suggested, teaching exclusively to our students' preferred learning styles "would be convenient and comfortable for the learner" but would lack the challenge that makes learning both meaningful and effective.¹⁵⁵ The final objective must be, instead, to facilitate improvement in our students' capacity to "think like lawyers." If professors are asked to accommodate diverse learning styles in their classrooms, it must be for the ultimate purpose of moving students toward a greater capacity for legal reasoning.

Other commentators have made precisely the same point:

[T]he most realistic approach to the accommodation of learning styles in teaching programs should involve empowering students through knowledge of their own learning styles to adjust their learning behavior to the learning programs they encounter. This suggestion is not to say that we believe teachers should not consider the learning styles when developing and delivering instructional programs. Rather, we believe in assisting students to know themselves and to operate in a metacognitive fashion to make adjustments in their learning behaviors.¹⁵⁶

154. Cynthia V. Ward, *A Response to Professor Vernellia R. Randall's The Myers-Briggs Type Indicator, First Year Law Students and Performance*, 26 *Cumb. L. Rev.* 111, 112 (1995–96) (raising the fundamental question of whether it is "the obligation of law schools . . . to make available a legal education to every person who wants one" or whether "there are legitimate ways of screening out some students in favor of others, either by denying admission to some or by styling the law-school learning environment so that certain kinds of persons will do better than others").

155. Delahoussaye, *supra* n. 105, at 31.

156. Neil D. Fleming & Colleen Mills, *Not Another Inventory, Rather a Catalyst for Reflection*, 11 *To Improve Acad.* 137 (1992) (available at <http://www.ntlf.com/html/lib/suppmat/74fleming.htm>) (emphasis added).

This, then, raises a critical question: how can law faculty facilitate student efforts to adjust their learning behaviors to the demands of legal analysis?

B. Newly-Developing Experiential Strategies

1. Experiential Learning Theory

The test instrument used in this study was based on a learning theory that could hold a key to promoting the desired learning adjustments—Kolb’s “Experiential Learning Theory.”¹⁵⁷ Experiential Learning Theory is based on the work of cognitive theorists, such as Bloom, and also on the insights of learning theorists, such as Mezirow and Freire, who were among the first to speak of learning as an iterative process that proceeds in a cycle beginning with experience.¹⁵⁸ Kolb “refined the [cyclical] concept” of learning by distinguishing the acts of perceiving and processing as separate aspects of the cycle.¹⁵⁹ Kolb theorizes that there are actually four stages in the learning process, each represented by one of the four learning styles designated in the LSI3.¹⁶⁰ Together, the four stages of learning entail both information absorption (encoding) and information processing (cataloging)—a cognitive sequence that “results from the combination of grasping experience and transforming it.”¹⁶¹ Kolb asserts that learning is most effective when it involves the student in each of the four phases.¹⁶² Although a learning experience may begin with any one of the phases, a “well-rounded learning process” would “cycle through all phases,”¹⁶³ and a strong learner would “master the entire learning cycle.”¹⁶⁴

157. See Kelly, *supra* n. 99.

158. *Id.* at “Background: 20th Century Theories of Learning.”

159. *Id.*

160. See *supra* Chart 1.

161. Kolb, Boyatzis & Mainenelis, *supra* n. 105, at 3 (citing David A. Kolb, *Experiential Learning: Experience as the Source of Learning and Development* 41 (Prentice-Hall, 1984)). According to Kolb, each of the four learning phases engages a different set of learning skills. Abstract conceptualization (AC) requires logical analysis, systematic planning and intellectual understanding. Reflective observation (RO) involves careful observation, suspension of judgment, consideration of issues from different perspectives, and looking for relationships and order. Concrete experience (CE) focuses on experiential learning, interpersonal relationships, and sensitivity to the feelings of others. Active experimentation (AE) involves an orientation to action and acceptance of risk. Given the range of skills covered by Kolb’s learning cycle, students who develop a level of comfort in all four phases of the cycle are also arguably developing the fundamental skills and values that are prerequisite to competent representation of clients, as illustrated in table 2 of the appendix.

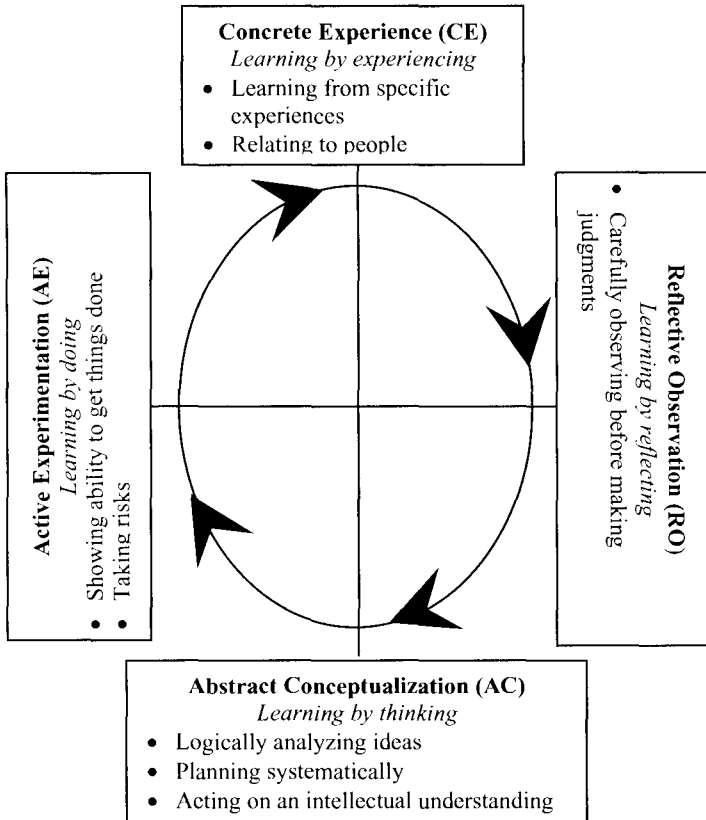
162. Kolb, *supra* n. 87, at 13–16; see also Kolb & Kolb, *supra* n. 93, at 6.

163. Kolb, *supra* n. 4, at 4.

164. Jacobson, *supra* n. 22, at 172.

Chart 11 (below) illustrates the relationship of the four learning phases in Kolb's scheme. The process, in skeletal form, consists of (1) having an experience, (2) reflecting upon or reviewing the experience, (3) drawing conclusions from the experience, and (4) doing something with the experience, such as planning the next steps or applying it to solve a problem.

Chart 11: The Kolb "Experiential Learning" Cycle¹⁶⁵



Kolb's Experiential Learning Theory is relevant to the present research because it posits that students are capable of becoming "more proficient" in aspects of the learning cycle if properly introduced to new learning constructs.¹⁶⁶ Although adult learning preferences tend to remain relatively stable, there is evidence that learning styles reflect "a

165. Kolb, *supra* n. 4, at 4.

166. Kelly, *supra* n. 99, at "Applications."

combination of nature and nurture,”¹⁶⁷ and thus are flexible to a degree that varies among individuals.¹⁶⁸

Kolb suggests that the key to promoting growth and adaptability in learning style (characteristics which he referred to as “learning sophistication”)¹⁶⁹ is to facilitate an initial connection with new material for the students by presenting the material in a manner “consistent with their learning preferences.”¹⁷⁰ Once presented with material in a way they readily comprehend, students can follow the sequence of the learning cycle as they process the same material in different ways through exercises that employ various learning modes. Ultimately, according to the theory, students can become more proficient in the full range of learning skills and thus become more balanced, sophisticated learners. Thus, Kolb reasons that it is most effective to design curriculum and conduct the classroom “so that there is some way for learners of every learning style *to engage with the topic.*”¹⁷¹ When curricular development and classroom instruction encompass the entire learning cycle, “every type of learner has *an initial way to connect* with the material and then begin to stretch his learning capability in other learning modes.”¹⁷²

2. *The 4MAT Approach*

Kolb is not alone in promoting this approach. Bernice McCarthy, creator of the more recent “4MAT System,” has combined the work of Kolb on learning styles and the scholarship of various authorities on hemispheric brain dominance to produce a similar approach that distinguishes eight specific learning steps.¹⁷³ McCarthy’s eight-step learning sequence grew out of her observation that “each of [Kolb’s] four learning styles quadrants has right-mode, left-mode, and whole-brained learners,” with a “strong tendency toward left-mode dominance in

167. Reese & Reese, *supra* n. 3, at 181 (noting the general consensus that “[l]earning style is a combination of nature and nurture which may change with age and experience”).

168. *Supra* nn. 74–75 and accompanying text; *see also* Kolb & Kolb, *supra* n. 93, at 15, 21 (describing learning style as a “dynamic state,” but noting that “individuals [reportedly] vary in their ability to move about the learning space from their home region”).

169. David A. Kolb, Richard E. Boyatzis & Charalampos Mainemelos, *Experiential Learning Theory: Previous Research and New Directions in Perspectives on Thinking, Learning, and Cognitive Styles* 242 (Robert J. Sternberg & Li-Fang Zhang eds., Lawrence Erlbaum Assocs. 2000).

170. Experience Based Learning Systems, Inc., *Frequently Asked Questions*, “Why did Kolb develop the Learning Style Inventory?” <http://learningfromexperience.com/faq/> (accessed Nov. 12, 2006).

171. *Id.* (emphasis added).

172. *Id.* (emphasis added).

173. Bernice McCarthy, *A Tale of Four Learners: 4MAT’s Learning Styles*, 54 *Educ. Leadership* 46 (Mar. 1997).

Quadrants Two and Three [Assimilators and Convergers]” and a predominance of “right-mode processing in Quadrants One and Four [Divergers and Accommodators].”¹⁷⁴ The ultimate goal of the 4MAT System is the same as Kolb’s. By sequencing instructional units so that each series of lessons includes both left-brain and right-brain activities in each of the four learning styles, professors presumably can assist their students to develop strengths in learning styles with which they initially are less proficient. “Over time, and with experience, practice, and encouragement, students become comfortable with learning styles that aren’t naturally their own. . . . The 4MAT framework is designed to help students gain expertise in every learning style.”¹⁷⁵

3. *Accommodating Diverse Learning Styles*

To accommodate disparate learning styles in the typical first-year law school course may, at first, seem daunting, but those who promote such an approach suggest that it “need not be a burdensome or overwhelming task.”¹⁷⁶ Many professors, in fact, are probably already teaching in diverse learning modes simply to make their classes more interesting.¹⁷⁷ As Professor Jacobson has suggested, accommodating diverse learning styles “only requires that professors be aware of how different students learn and that professors acknowledge the different paths that students take in the way that professors manage their classrooms”¹⁷⁸

The difference is that, in applying Experiential Learning Theory or the related 4MAT System, professors would become more consistent and intentional in this regard.¹⁷⁹ Each class period or series of lessons on a

174. *Id.* This finding is consistent with other studies showing that lawyers, who tend to be “thinkers” rather than “feelers,” also tend to be predominantly left-brain. See *supra* n. 4 and accompanying text.

175. McCarthy, *supra*, n. 173, at 49. Professor McCarthy explains that activities focused on Quadrant One (those most appropriate for students with a Diverging learning style) could emphasize discussion, listening, and sharing. Quadrant Two activities (geared toward students with an Assimilating learning style) could include reading, group discussions, and audio and visual experiences. Quadrant Three activities (those associated with a Converging learning style) could include workbooks, manuals, demonstrations, hands-on activities, and field experience. Activities geared toward Quadrant Four learners (Accommodators) might include games, simulations, independent study and problem-solving activities.

176. Jacobson, *supra* n. 22, at 173.

177. *Id.* at 156.

178. *Id.* at 173.

179. Those who have implemented an experiential, or “integrated”, approach in law school classes report that they now place greater emphasis on simulation exercises and other hands-on experiences. Carol Chomsky & Maury Landsman, *Introducing Negotiation and Drafting Into the Contracts Classroom*, 44 St. Louis U. L.J. 1545 (2000); Nancy M. Maurer & Linda Fitts Mischler, *Introduction to Lawyering: Teaching First-Year Students to Think Like Professionals*, 44 J. Leg. Educ. 96 (1994).

given topic could involve a multifaceted strategy, creating opportunities for all students to practice and master all phases of the learning cycle in the classroom. Specific classroom activities might range from case analysis and legal concept mapping to small and large group discussions, role playing, and simulations. Materials distributed in class would vary in form to include narrative materials, charts, outlines, and models. Student counseling and academic assistance programs could provide a forum for those students who require one-on-one assistance. Additionally, students, professors, and academic support personnel should bear in mind that the ultimate goal is not simply to make learning easier, but to strengthen student proclivity toward those learning styles or modes most compatible with the study and practice of law. The findings of this study suggest that the specific goal should be to help students strengthen their proficiency with abstract conceptualization.¹⁸⁰

One might ask whether disparate learning styles could be accommodated naturally—and the most useful learning styles strengthened—through students' selection of courses that emphasize their particular preferences and proficiencies. Oral advocacy or clinical programs, for example, would likely enhance and reward the learning styles of Accommodators and Divergers, who reflect a propensity for concrete experience (CE). Unfortunately, such practical skill or clinical programs are generally elective courses, limited in number and available only in the second or third year of study. The typical first-year curriculum consists almost exclusively of substantive courses that emphasize the development of legal reasoning skills. Thus, students in the first year, who may most desperately need to round out their repertoire of learning styles, are not exposed to courses that naturally utilize skills from different phases of the learning cycle.

A review of course syllabi for a single semester at Regent University revealed that the majority of the courses—and especially the first-year courses—focus on skills associated with the AC and RO phases of the learning cycle. Those few courses that address skills associated with all four phases of the learning cycle were elective courses available only in the second or third year of study, and many had restrictions on enrollment (see Table 4 below).

180. See *supra* nn. 125–127 and accompanying text.

Table 4: Learning Phases Addressed in the Typical Law School Curriculum

Course Title	Learning Phases Reflected In Course Objectives			
	AC	RO	CE	AE
Administrative Law	X	X		X
Appellate Advocacy	X	X		X
Business Associations	X	X		X
Christian Foundations of Law*	X	X		X
Civil Procedure*	X	X		
Conflict of Law	X	X		
Constitutional Law	X	X		
Constitutional Criminal Procedure	X	X		
Criminal Pretrial Practice	X	X		
Contracts*	X	X		
Criminal Law*	X	X		
Drafting Contracts	X	X		
Employment Discrimination	X	X		
Evidence	X	X		
Externships:				
ACIJ	X	X		X
Gov't./Judicial	X	X	X	X
Legal Aid	X	X	X	X
Family Law	X	X		
Family Mediation	X	X	X	X
Family Mediation Clinic	X	X	X	X
First Amendment Law	X	X		
Gov't. Contract Law	X	X		
Health Care Law	X	X		
Jurisprudence	X	X		
Juvenile Law	X	X		
Legal Analysis, Research and Writing*	X	X		X
Litigation Clinic	X	X	X	X
Negotiations	X	X	X	X
Patent Law	X	X		
Professional Responsibility	X	X		
Property I*	X	X		
Qur'anic Law	X	X		
Real Estate Transactions	X			
Remedies	X	X		
Sports Law	X			
Tax: Estate & Gift	X	X		
Tax: Individual	X	X		
Torts:				
Advanced	X	X		
Torts I*	X	X		
Trial Practice	X	X	X	X
UCC II: Secured Trans.	X	X		
UCC III: Negotiable Instruments	X	X		
Virginia Civil Procedure	X	X		
Wills, Trusts & Estates	X	X		

* 1L Courses

C. Assessing the Merits of Experiential Learning Theory in a Law School Environment

Proponents of integrated learning theories assert that their implementation “will . . . move law students to a higher, more evolved level of thinking.”¹⁸¹ Unfortunately, as sound as the Experiential Learning Theory and 4MAT System might seem, there is little empirical evidence that these approaches have produced lasting results in a law school setting in terms of improving students’ analytical skills. The authors’ personal experience with both American and international law students suggests that students understand substantive material better when instruction reflects an experiential approach that appeals to multiple learning styles. Nonetheless, whether those students actually become more proficient or comfortable with Quadrant Two or Quadrant Three learning styles as a result of such instruction—so that they can utilize improved reasoning skills in other classes or settings—has not, to the author’s knowledge, been empirically tested in a law school environment.

The dearth of relevant data is not surprising, given that Experiential Learning Theory and the related 4MAT System have only recently gained the attention of legal educators. The 4MAT approach has almost exclusively been applied in a K-12 environment,¹⁸² and much of the “change” discussed in the related literature refers to changes in the attitudes of teachers and administrators, not to changes in student learning styles. Those who have used the 4MAT System in higher education suggest that it is “appropriate for adult learners.”¹⁸³ However, the authors are aware of only two instances in which 4MAT has been used in the context of legal instruction—once in a law school setting¹⁸⁴

181. Jacobson, *supra* n. 22, at 143.

182. See Bernice McCarthy, *The 4MAT System: Teaching to Learning Styles with Right/Left Mode Techniques* (EXCEL 1987); Bernice McCarthy, *The 4MAT Workbook: Guided Practice in 4MAT Lesson and Unit Planning* (EXCEL 1987); Bernice McCarthy, *Using the 4MAT System to Bring Learning Styles to Schools*, 48 *Educ. Leadership* 31 (1990) (commenting on research conducted in seventeen primary and secondary public school districts).

183. Cooper, *supra* n. 47, at 31.

184. Cynthia Kelly, *Using 4MAT in Law School*, 48 *Educ. Leadership* 40 (1990) (describing Professor Kelly’s use of 4MAT in an upper-level Professional Responsibility course at Loyola University School of Law). Professor Kelly notes that her approach represents a departure from traditional law school teaching, and from her law professors who had “almost always approached teaching from a Quadrant Two perspective.” *Id.* at 40. Kelly reports that she has also used the 4MAT model as a framework for counseling law students, having observed that “students with Quadrant One learning preferences [Divergers] are the most frustrated during their first year of law school.” *Id.* The frustration of students with Diverging learning styles is not surprising, given that respondents in the present study who displayed a Diverging learning style had the lowest average grades in their first semester and first year of law school. See *supra* nn. 123–124 and accompanying text and Chart 6.

and once in paralegal instruction.¹⁸⁵

The Kolb model, by contrast, has been tested many times in the context of higher education and even professional schools. Additionally, it has been used by a number of legal educators, primarily in skills-related or clinical programs.¹⁸⁶ However, of more than 1000 entries in a 2000 bibliography documenting research efforts in college or graduate-level settings, only five of those studies assessing Kolb's theories were conducted in a law school environment.¹⁸⁷ The result, then, is a modest level of experience with integrated learning in law school settings, most of which has been favorable, but little empirical evidence of actual, long-term change.

Even the studies conducted in law school contexts have not specifically addressed whether teaching that incorporates multiple learning styles actually enhances students' capacity for abstract conceptualization. In fact, recent research by Kolb and others in a non-law school setting could be taken to suggest that the capacity of adult learners to adopt stronger abstract learning skills may be limited.

The study in question was conducted in 1999¹⁸⁸ using the LSI concurrently with a related instrument called the Adaptive Style Inventory (ASI).¹⁸⁹ The ASI was designed by Kolb and Boyatzis to measure the extent to which learners adapt their learning styles in response to different learning situations.¹⁹⁰ Kolb and his fellow researchers were surprised to find that learners with strong abstract

185. Barbara A. Nagle & Patricia Lechman-Woznick, Student Author, *Learning Styles and Paralegal Studies*, 11 J. Paralegal Educ. & Prac. 67 (1995).

186. See Anzalone, *supra* n. 26 (noting the efforts that have been made to address disparate learning styles in upper level and clinical courses); Paul Bateman, *Toward Diversity in Teaching Methods in Law Schools: Five Suggestions From the Back Row*, 17 QLR 397, 398 (1997) (lamenting that law professors "rarely" use methods other than the Socratic Method in first-year classes); Chomsky & Landsman, *supra* n. 179, at 1546 (discussing the use of a drafting and negotiation exercise designed for a first-year Contracts course); Steven Hartwell, *Six Easy Pieces: Teaching Experientially*, 41 San Diego L. Rev. 1011 (2004) (discussing the benefits of an experiential teaching approach in law school clinical programs); Maurer & Mischler, *supra* n. 179, at 107 (describing simulation exercises used in a first-year elective course called Introduction to Lawyering); Myron Moskovitz, *Beyond the Case Method: It's Time to Teach With Problems*, 42 J. Leg. Educ. 241 (1992) (suggesting that the problem method should be used as the primary method of instruction "in the standard large class and the standard core course, in every year of law school").

187. Kolb, Boyatzis, & Mainemelis, *supra* n. 166, at 234 (citing Alice Kolb & David A. Kolb, *Bibliography of Research on Experiential Learning Theory and the Learning Style Inventory* (1999)). See also Kolb & Kolb, *supra* n. 93 (a supplemental list of over 180 works completed from 2001 through early 2004 contained no references to studies conducted in a law school setting); Alice Kolb & David Kolb, *Experiential Learning Theory Bibliography* 3-23 (2004) (copy on file with Authors).

188. Charalampos Mainemelis, Richard E. Boyatzis & David A. Kolb, *Learning Styles and Adaptive Flexibility: Testing Experiential Learning Theory*, 33 Management Learning 5 (1999).

189. The Adaptive Style Inventory ("ASI") was developed by Kolb and Boyatzis in 1993.

190. *Id.* at 11.

learning styles showed “less adaptive flexibility” on the ASI than did those with more balanced learning styles, or even those with strong learning preferences other than abstract conceptualization.¹⁹¹ One wonders whether the reverse might also be true—whether it might be more difficult for adult learners to move in the direction of abstract learning styles rather than develop strength in other facets of the learning cycle.

If the goal of legal education is to produce students proficient in abstract conceptualization—students who can “think like lawyers”—then the utility of an experiential approach to legal education merits further research. Teaching to multiple learning styles in a law school classroom may well make the material easier for some students to grasp, but whether this approach leads to long-term change in learning proficiencies has yet to be determined.

V. CONCLUSION AND RECOMMENDATIONS

The results of this study affirm the reliability of the LSAT as a predictor of first-year law school performance. The results also support the hypothesis that a relationship exists between learning mode, as measured by the LSI3, the LSAT scores, and first-year law school grades. Study respondents who expressed a low preference for abstract conceptualization tended to perform poorly on the LSAT and tended to perform marginally, at best, in their first-year of law school.¹⁹² Although high abstract conceptualization scores did not guarantee academic success, low scores were associated with both low LSAT scores and low first-year GPAs at a statistically significant level.¹⁹³

Although not statistically significant, study results reflected a distinct pattern concerning ethnicity and learning mode. Minority students, particularly African Americans and Asians, tended to reflect Quadrant One and Four learning modes at higher rates than did their Caucasian peers. A larger sample, gathered over a longer period, might indicate whether the pattern is, in fact, statistically significant. If such a pattern persists, then any teaching method that helps facilitate student competency with abstract thinking and learning might be particularly helpful in promoting the long-term success of minority law students.

191. *Id.* at 19–22. Kolb and his associates had hypothesized that specialized learning styles would show less adaptive flexibility on the ASI generally, but found that only those respondents with abstract learning styles exhibited limited adaptability. *Id.* at 12–13.

192. *See supra* nn. 114–116 and accompanying text; charts 7, 9–11.

193. *See supra* nn. 126–127 and accompanying text.

To the authors' knowledge, the present study demonstrates for the first time a significant link between cognitive learning styles and law school performance. The findings suggest that a minimal level of proficiency with abstract learning styles is a key factor in achieving law school success. Prior research has indicated that learning styles may be at least marginally adaptable. Experiential Learning Theory—as well as the more recent 4MAT System—may provide specific guidance to facilitating greater abstract learning proficiency in students.

Significant gaps remain, however, in what the research can demonstrate. First, the authors know of no research showing to what degree current law school pedagogy influences positive change in student learning styles.¹⁹⁴ The authors' limited testing of law school graduates who have failed the bar exam (in some cases, repeatedly) suggests that their learning preferences fall disproportionately in Quadrants One and Four (Accommodators and Divergers), both of which are relatively weak in abstract conceptualization. These experiences suggest that students can successfully complete a rigorous, three-year law school program without undergoing significant change in their learning styles. They also suggest that failure to adapt more fully to abstract learning modes while in law school may adversely affect student performance on the bar exam. A longitudinal study measuring changes in student learning preferences between the time they enter law school and the time they graduate would help determine the general effect of law school teaching and the adaptability of students with particular learning modes. An analysis of bar passage rates by learning mode would also address a significant gap in the current literature.

The effect of an experiential teaching approach in strengthening abstract learning skills likewise merits further study. It remains unclear to what degree learning style change can be promoted by an experiential teaching approach, and to what extent abstract conceptualization skills are even subject to improvement. If two or more sections of a selected substantive class at the same school could be taught differently—one using an experiential mode and the other a more traditional approach—

194. The authors' limited testing of law school graduates who have failed the bar exam (in some cases, repeatedly) suggests that their learning preferences fall disproportionately in Quadrants One and Four (Accommodators and Divergers), both of which are relatively weak in abstract conceptualization. These experiences suggest that students can successfully complete a rigorous, three-year law school program without undergoing significant change in their learning styles. They also suggest that failure to adapt more fully to abstract learning modes while in law school may adversely affect student performance on the bar exam. This conclusion presumes, of course, that those students preferred Quadrant One or Four learning styles when they began their legal education. To the authors' knowledge, longitudinal (before and after) assessments of law student learning styles have never been done.

assessing the learning styles of students in both sections before and after the course could help assess whether an experiential approach facilitates greater development of an analytical learning style.

VI. APPENDIX

Table 1: Standardized Canonical Coefficients, Structure Coefficients, Squared Structure Coefficients, Community Coefficients, Adequacy Coefficients, and Redundancy Coefficients for Canonical Functions I and II

Variable	Canonical Function I			Canonical Function II			
	Coefficient	r_s	r_s^2	Coefficient	r_s	r_s^2	h^2
Achievement set							
LSAT	-1.10	.98	.96	.37	-.20	.04	1.00
First-year GPA	.23	-.32	.10	-1.13	-.95	.90	1.00
Adequacy	.41			.44			
Redundancy	.06			.01			
Learning Mode Set							
CE	-.20	.02	.0004	.99	1.00	1.00	1.00
AC	-.89	-.90	.81	.01	-.37	.14	.95
RO	.31	.65	.42	-.02	-.41	.17	.59
Adequacy	.53			.47			
Redundancy	.08			.01			

Note: $N = 166$. r_s = structure coefficient; r_s^2 = squared structure coefficient; h^2 = canonical communality coefficient.

Table 2

Learning Stages and Fundamental Lawyering Skills and Values			
AC	RO	CE	AE
·Legal Research and Analysis ·Legal Research	·Problem solving ·Fact investigation	·Communication ·Negotiation ·Counseling	·Litigation and ADR ·Organization of legal work ·Recognizing and resolving ethical questions.