

TRAINING TOMORROW'S LAWYERS: WHAT EMPIRICAL RESEARCH CAN TELL US ABOUT THE EFFECT OF LAW SCHOOL PEDAGOGY ON LAW STUDENT LEARNING STYLES

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I. INTRODUCTION

Generations X and Y, which together account for the vast majority of today's law students, are probably the most thoroughly analyzed population group ever born.¹ By all accounts, they are the most technologically savvy and resourceful generation yet to hit the law school scene.² They have been described as diverse, education-oriented, career-minded, motivated, connected, and self-confident.³ They are also quite unlike previous generations with respect to the way they learn and access information.⁴ As a result of all this, scholars have noted a growing disparity between the learning styles and thought processes of today's students and their

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1. With no clear demarcation between the two subgroups, Generation X has been variously defined as encompassing those born between the early 1960s (as early as 1961 or as late as 1965) and the late 1970s or early 1980s. Generation Y, also known as the Millennial Generation, has been loosely defined as those born between 1977 and anywhere from 1990 to 2003. Together, these two subgroups encompass those who are currently between the age of 16 or 17 and the age of 45 or 50. See, e.g., Joan Catherine Bohl, *Generations X and Y in Law School: Practical Strategies for Teaching the "MTV/Google" Generation*, 54 LOY. L. REV. 775, 778 (2008); Camille Lamar Campbell, *How to Use a Tube Top and a Dress Code to Demystify the Predictive Writing Process and Build a Framework of Hope During the First Weeks of Class*, 48 DUQ. L. REV. 273 (2010); *The "Millenials" Are Coming*, CBS NEWS (Nov. 11, 2007), http://www.cbsnews.com/stories/2007/11/8/60_minutes/main3475200.shtml.
 2. See, e.g., Karla Mari McKanders, *Clinical Legal Education at a Generational Crossroads: Shades of Gray*, 17 CLINICAL L. REV. 223, 225-26 (2010).
 3. *Id.* See also NAS RECRUITMENT COMM'N, GENERATION Y: THE MILLENNIALS: READY OR NOT, HERE THEY COME 12 (2006); Cheryl R. Sturko Grossman, *Learning Work*, Information Brief No. 21 1-2 (2006).
 4. See generally Bohl, *supra* note 1. See also Campbell, *supra* note 1, at 284-85 (stressing the value of understanding generational preferences among adult learners).

professors,⁵ and have questioned whether traditional law school pedagogy is the best approach to reach the current student population.⁶

As with any age group, Generations X and Y have been shaped, in large measure, by their environment. Today's law students are increasingly products of the television and computer age and are accustomed to having instant access to information.⁷ They are less likely to have mastered previous learning primarily through books, and have grown increasingly used to the stimulation of visual learning and entertainment.⁸ They are thus more likely to be visual learners⁹ and holistic, right-brained thinkers rather than sequential, logical thinkers.¹⁰ Unfortunately, if the literature is accurate, they are also less adept than previous generations with the process of organizing and synthesizing information, and are, in fact, less motivated to engage in that process.¹¹ They "have developed a predominantly passive

5. Scholars who have followed student and faculty learning style data have reported "an increasing disparity between faculty and students" in colleges and universities generally. See, e.g., Charles C. Schroeder, *New Students—New Learning Styles, Faculty Characteristics and New Students: A Mismatch?*, VIRTUAL SCHOOL, <http://www.virtualschool.edu/mon/Academia/KierseyLearningStyles.html> (last updated Mar. 7, 2004); see also Eric A. DeGroff & Kathleen A. McKee, *Learning Like Lawyers: Addressing the Differences in Law Student Learning Styles*, 2006 B.Y.U. EDUC. & L.J. 499, 521 (2006) (noting that as many as one-fourth of the law students tested at the authors' institution had learning styles that differed from those of a large majority of the faculty); John H. Reese & Tania H. Reese, *Teaching Methods and Casebooks*, 38 BRANDEIS L.J. 169, 176 (2000) (reporting the same result at the University of Denver School of Law).
6. See, e.g., Aida M. Alaka, *Learning Styles: What Differences Do the Differences Make?* 5 CHARLESTON. L.R. 133 (2011); Gail B. Agrawal, *Symposium: The Future of Legal Education*, 96 IOWA L. REV. 1449 (2011); Lauren Carasik, *Renaissance or Retrenchment: Legal Education at a Crossroads*, 44 IND. L. REV. 735 (2011).
7. See, e.g., M.H. Sam Jacobson, *A Primer on Learning Styles: Reaching Every Student*, 25 SEATTLE U. L. REV. 139, 140 (2001); Bohl, *supra* note 1, at 779-80.
8. *Id.*
9. *Id.* at 151-52. See also Michael T. Richmond, *Teaching Law to Passive Learners: The Contemporary Dilemma of Legal Education*, 26 CUMB. L. REV. 943, 956 (1995-96). Professor Robin Boyle, of St. John's University School of Law, observed some years ago 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).
10. Scholars have long noted that lawyers have been predominantly left-brained thinkers with a strong abstract analytical bent. 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) (reporting that 90 percent of lawyers sampled were left-brained). See also Graham B. Strong, *The Lawyer's Left Hand: Nonanalytical Thought in the Practice of Law*, 69 U. COLO. L. REV. 759, 761 (1998); Susan Daicoff, *Articles Lawyer, Know 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); Jacobson, *supra* note 7, at 152 (noting that visual learners are "disproportionately represented in the bottom of the [law school] class").
11. See, e.g., Christine N. Coughlin, Lisa T. McElroy & Sandy C. Patrick, *See One, Do One, Teach One: Dissecting the Use of Medical Education's Signature Pedagogy in the Law School Curriculum*, 26 GEO. ST. U. L. REV. 361, 382 (2010) (noting that law students today "do not

relationship to information,¹² have acquired a consumer mentality,¹³ are prone to feel entitled to instant recognition,¹⁴ and have developed multi-tasking to an art form, even in the classroom.¹⁵

This does not mean that students in Generations X and Y are less capable of learning than their law school predecessors. They are reportedly “enthusiastic consumers” of education who are highly motivated to learn once they see the relevance of what is being taught.¹⁶ It does, however, suggest a need to reconsider law school pedagogy and ensure we are providing what our students require to prepare them well for practice. This is especially true given the demands now being placed on the legal academy. More than ever before, law schools are expected to serve as “bridges to practice,”¹⁷ preparing students to engage productively in the legal profession from the time they graduate.¹⁸ In the face of such a challenge, it is critical that we employ a pedagogy that will develop in our students the professional skills and understanding they need. To that end, scholarly literature increasingly suggests an expanded role for experiential teaching and learning,¹⁹ and asserts that an active, problem-based learning

always learn best in a linear fashion, and taking relevant notes from a lecture is difficult for some”); *see also* Bohl, *supra* note 1, at 782 (describing the difference between the “just in case” perspective of learners in the Baby-Boom Generation and the “just in time” perspective prevalent among Generations X and Y).

12. Bohl, *supra* note 1, at 780. Scholars began to recognize this phenomenon and the challenges it would pose when Generations X and Y were just becoming prevalent in law school classes. *See, e.g.*, Craig Anthony Arnold, *How Do Law Students Really Learn? Problem-Solving, Modern Pragmatism, and Property Law*, 22 SEATTLE U. L. REV. 891 (1999) (stressing the importance of active, as opposed to passive, learning); Paul T. Wangerin, *Learning Strategies for Law Students*, 52 ALB. L. REV. 471, 476-77 (1988).
13. *See, e.g.*, Bohl, *supra* note 1, at 781.
14. *Id.*
15. The tendency for law students to “multi-task” during class, for example, is often cited as a justification for banning laptops in the classroom. *See, e.g.*, M.H. Sam Jacobson, *Paying Attention or Fatally Distracted? Concentration, Memory, and Multi-Tasking in a Multi-Media World*, 16 J. LEGAL WRITING INST. 419, 435 (2010); Jill Schachner Chanen, *Profs Kibosh Students' Laptops*, 93 A.B.A. J. 16 (Nov. 2007); Nancy G. Maxwell, *From Facebook to Folsom Prison Blues: How Banning Laptops in the Classroom Made Me a Better Law School Teacher*, 14 RICH. J.L. & TECH. 4 (2007).
16. Campbell, *supra* note 1, at 286-87; *see also* NAS RECRUITMENT COMM'N, *supra* note 3, at 5.
17. WILLIAM M. SULLIVAN, ANNE COLBY, JUDITH WELCH WEGNER, LLOYD BOND, LEE S. SHULMAN, *EDUCATING LAWYERS: PREPARATION FOR THE PROFESSION OF LAW 87-125* (John Wiley & Sons 2007) [hereinafter Carnegie Report].
18. ROY STUCKEY ET AL., *BEST PRACTICE FOR LEGAL EDUCATION: A VISION AND A ROAD MAP 16* (University Publications 2007) [hereinafter Best Practices Report].
19. *Id.* at 165. *See also* Peggy Cooper Davis, *Experiential Legal Education in the United States*, www.aals.org/documents/curriculum/documents/NYUExperientialEducation.pdf (last accessed Sept. 19, 2011). Indeed, law schools increasingly are touting on their websites the opportunities they provide students to engage in experiential learning. *See, e.g.*, Charlotte School of Law website emphasizing the benefits of experiential education, <http://www.charlottelaw.edu/academics/academicscontent.aspx?id=102> (last visited Sept. 19, 2011); *Leading experiential education program has new Associate Dean*, CASE W. RES. UNIV., <http://law.case.edu/News/>

environment best fits the learning styles of the current generation of students.²⁰

Theoretically, there is little to prevent the legal academy from developing a more experiential teaching approach. Scholars for some time have been reporting their successes with experiential teaching techniques in both skills-related and traditional doctrinal courses.²¹ However, most of today's faculty members were trained under a variation of the Socratic approach, and there is no consensus among them regarding the need to discard an educational philosophy that apparently worked for many years.²² In addition, while recommendations for experiential teaching seem intuitive to some, the academy has little empirical data to confirm what kind of difference a more experiential pedagogy would make. The research described in this article was intended to help bridge that gap by adding to the modest, but growing, body of empirical data linking pedagogical approaches with learning outcomes. Our findings demonstrate that even the first year of law school can significantly affect law student learning styles.²³ And while less conclusive, the data also support the notion that an experiential approach in the classroom may impact student learning in a positive way.²⁴ Section II of this article provides a summary of recent developments in empirical scholarship regarding law school teaching and learning. Section III discusses adult learning styles and the theory of experiential learning, and addresses the question of learning style adaptability. Section IV describes the methodology used for this study and presents the study's findings, while Section V presents the author's conclusions and a recommendation for further research.

tabid/251/vw/1/ItemID/193/Default.aspx (last visited Sept. 19, 2011); *Northeastern University School of Law announces the Initiative on Experiential Education in Law*, NORTHEASTERN UNIV. SCH. OF LAW, <http://www.northeastern.edu/law> (last visited Sept. 19, 2011); Southern Illinois University School of Law website announcing its search for a faculty hire to fill the position of Director of Clinical and Experiential Education, http://www.law.siu.edu/Faculty_staff/dcee.php (last visited Sept. 19, 2011).

20. See, e.g., Patricia E. Salkin & John R. Nolan, *Practically Grounded: Convergence of Land Use Pedagogy and Best Practices*, 60 J. LEGAL EDUC. 519 (2011); Erwin Chemerinsky, *Rethinking Legal Education*, 43 HARV. C.R.-C.L. L. REV. 595 (2008); Benjamin V. Madison, III, *The Elephant in Law School Classrooms: Overuse of the Socratic Method as an Obstacle to Teaching Modern Law Students*, 85 U. DET. MERCY L. REV. 293 (2008).
21. Paula Young, of the Appalachian School of Law, has made a noteworthy effort to construct a list of recent articles describing experimental teaching approaches reported by law faculty. See Paula M. Young, *Bibliography of Books and Articles on Active Learning and other Techniques for Teaching Law*, LAWTEACHING.ORG (July 2008), <http://lawteaching.org/resources/bibliographies/young-paula-activelearningbibliography200807.pdf>.
22. See, e.g., Rita 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 (1996).
23. See *infra* notes 135-46 and accompanying text.
24. See *infra* notes 147-55 and accompanying text.

II. EMPIRICAL SCHOLARSHIP ON LAW SCHOOL TEACHING AND LEARNING

At a recent conference of law school professors and administrators,²⁵ the opinion was advanced that legal education “lags behind other disciplines in the development of scholarship, and particularly empirical scholarship, about teaching, assessment and student learning.”²⁶ Empirical research on teaching and learning styles began to attract a following in other educational fields over forty years ago,²⁷ and the pace of that research has accelerated dramatically in the last decade.²⁸ Only recently, however, has this area of inquiry attracted much attention among legal scholars.²⁹

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25. The research described in this article was presented as part of a panel discussion at the Southeastern Association of Law Schools (SEALS) Annual Conference in July 2010, which focused on the use of empirical research in informing law school pedagogy. The study was designed as a follow-up to an earlier round of research published in 2006, demonstrating that there are particular ways in which a large majority of successful law students appear to think and learn. See DeGroff & McKee, *supra* note 5.
 26. Program Notes for the SEALS Panel on Empirical Research and Law School Pedagogy (July 2010).
 27. See, e.g., D. I. Newble & N.J. Entwistle, *Learning Styles and Approaches: Implications for Medical Education*, 20 MED. EDUC. 162 (1986); C. A. Carrier, K.J. Newell & A. L. Lange, *Relationship of Learning Styles for Instructional Activities*, 46 J. DENTAL EDUC. 652 (1982); R.C. BOLLES, *LEARNING THEORY* (Holt, Rinehart & Winston eds., 2d ed. 1979); M. Caulley, *Psychological Types of Engineering Students—Implications for Teaching*, 66 ENGR. EDUC. 729 (Apr. 1976); G. E. SNELBECKER, *LEARNING THEORY, INSTRUCTIONAL THEORY, AND PSYCHO-EDUCATIONAL DESIGN* (McGraw Hill eds., 1974); H. Taba, *Teaching Strategies and Cognitive Functioning in Elementary School Children*, U.S.O.E. Cooperative Research Project No. 2404, SAN FRANCISCO ST. COLL. (1966).
 28. Learning style research in the last two decades has become a worldwide pursuit and has been particularly prominent in business and medical education. See, e.g., Morbert Michel, John Cater & Otmar Varela, *Active Versus Passive Teaching Styles: An Empirical Study of Student Learning Outcomes*, 33 SMALL BUS. INST. NAT'L PROC. 55 (2009) (comparing the impact of an active versus traditional teaching style in an introductory undergraduate business course at Nicholls State University); Buket Akkoyunlu & Meryem Yilmaz Soylu, *A Study of Students' Perceptions in a Blended Learning Environment Based on Different Learning Styles*, 11 EDUC. TECH. & SOC. 183 (2008) (comparing attitudes of undergraduate students at Hacettepe University, in Ankara, Turkey, regarding blended learning environments (on-line and face-to-face) based on student learning styles); Ted Brown, Tessa Cosgriff & Glenys French, *Learning Style Preferences of Occupational Therapy, Physiotherapy and Speech Pathology Students: A Comparative Study*, 6 INTERNET J. OF ALLIED HEALTH SCI. & PRAC. 1 (2008) (demonstrating a justification for case study and practical experience components in allied health education); Hong Lu, Lei Jia, Shuhong Gong & Bruce Clark, *The Relationship of Kolb Learning Styles, Online Learning Behaviors and Learning Outcomes*, 10 EDUC. TECH. & SOC. 187 (2007) (testing third-year undergraduates in the Department of Educational Technology at Shandong University in China); Keith Trigwell & Paul Ashwin, *An Exploratory Study of Situated Conceptions of Learning and Learning Environments*, 57 HIGHER EDUC. 243, 244 (2006) (observing the relationship of students' perceptions of their learning environments in various Oxford tutorials to their approach to learning); Naser-Nick Manochehr, *The Influence of Learning Styles on Learners in E-Learning Environments: An Empirical Study*, 18 COMPUTERS IN HIGHER EDUC. ECON. REV. 10 (2005) (comparing effects of on-campus versus on-line learning on undergraduates at Qatar University);

Although the legal academy is a relative newcomer to empirical research on teaching and learning, considerable progress has been made. On the basis of scholarship reported over just the last twenty years, legal educators have found that scores on the Law School Admission Test (LSAT) are valid predictors of students' success both in law school³⁰ and on the bar exam,³¹ and that the learning styles of law school applicants may significantly affect their success on the LSAT and, thus, their likelihood of admission.³² They have also noted that students admitted to law school today bring with them a substantially greater diversity of styles and approaches to learning than was true of law students several decades ago,³³

Robert Loo, *The Distribution of Learning Styles and Types for Hard and Soft Business Majors*, 22 EDUC. PSYCHOL. 349 (2002); G.E. Pickworth, *Theories of J.L. Holland and D.A. Kolb: A Theoretical and Empirical Study of Vocational Personality and Learning Style Types*, Ph.D. Thesis, UNIV. OF PRETORIA, SOUTH AFRICA (1997).

29. See, e.g., Robin A. Boyle & Lynne Dolle, *Providing Structure to Law Students – Introducing the Programmed Learning Sequence as an Instructional Tool*, LEGAL STUDIES RESEARCH PAPER SERIES # 08-0113 59, 68 (2008) (commenting on the “paucity of empirical research” regarding the diversity of law student learning styles); Andrea A. Curcio, Gregory Todd Jones & Tanya M. Washington, *Developing an Empirical Model to Test Whether Required Writing Exercises or Other Changes in Large-Section Law Class Teaching Methodologies Result in Improved Exam Performance*, 57 J. LEGAL EDUC. 195, 196 (2007) (noting that “little empirical work examines the efficacy of . . . improvements [in law school teaching methodology]”); Anthony S. Niedwiecki, *Lawyers and Learning: A Metacognitive Approach to Legal Education*, 13 WIDENER L. REV. 33, 37 (2006) (observing that “[l]aw schools and law professors are starting to follow the lead of other educators by seeing how learning theory can be integrated into the law school classroom”).
30. See, e.g., LINDA F. WIGHTMAN, BEYOND FYA: ANALYSIS OF THE UTILITY OF LSAT SCORES AND UGPA FOR PREDICTING ACADEMIC SUCCESS IN LAW SCHOOL, L. SCH. ADMIS. COUNCIL RESEARCH RPT. SERIES 3 (Aug. 2000); see also David A. Thomas, *Predicting Law School Academic Performance from LSAT Scores and Undergraduate Grade Point Averages: A Comprehensive Study*, 35 ARIZ. ST. L.J. 1007 (2003).
31. LINDA F. WIGHTMAN, LSAC NATIONAL LONGITUDINAL BAR PASSAGE STUDY, L. SCH. ADMIS. COUNCIL RESEARCH RPT. SERIES viii (1998).
32. See DeGroff & McKee, *supra* note 5, at 523-26.
33. See, e.g., Jacobson, *supra* note 7 (noting that law students are increasingly products of the television and computer age and have different ways of learning than many of their professors); Richmond, *supra* note 9, at 944 (suggesting that many law students have been educated in a passive environment and increasingly lack the capacity to engage in active learning); Reese & Reese, *supra* note 5 (reporting on the learning style assessment of law students at the University of Denver using the Kolb Learning Style Instrument, and noting a roughly 3:1 ratio between students in the lower two quadrants of Kolb’s learning style schematic and those in the upper quadrants); Boyle & Dolle, *supra* note 29, at 67 (finding that learning styles among incoming law students at St. John’s University over a ten-year period, as measured by the Productivity Environmental Preference Survey (PEPS), were diverse); DeGroff & McKee, *supra* note 5 (noting the same 3:1 ratio among law student learning styles at Regent University School of Law as was reported by the Reeses at the University of Denver).
 Though diverse, law student learning styles do follow predictable patterns and are distinct in some ways from students in other disciplines. See, e.g., Robin Boyle, Jeffrey Minneti & Andrea Honigsfeld, *Law Students Are Different from the General Population: Empirical Findings Regarding Learning Styles*, 17 PERSPECTIVES: TEACHING LEGAL RESEARCH AND WRITING 153, 158 (2009) (finding that law students at St. John’s University and Stetson were significantly more analytical in their learning preferences than were students in other graduate and undergraduate programs at those institutions).

and that the personality types and learning styles of today's law students may significantly affect their chances of academic success once admitted.³⁴ As significant as these findings are, they reflect the existing research only at the most general level. Legal scholars have also made praiseworthy efforts to determine what works best in terms of curricular design,³⁵ the use of technology in the classroom,³⁶ the promotion of active learning,³⁷ instruction in legal writing and analysis,³⁸ teaching methodology in substantive courses,³⁹ academic success programs,⁴⁰ assessment of academic performance,⁴¹ converting law school performance into employment opportunities,⁴² and even the professional development of law

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34. See, e.g., Vernelia R. Randall, *The Myers-Briggs Type Indicator, First-Year Law Students and Performance*, 26 CUMB. L. REV. 63 (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, and documenting the correlation between personality types and academic success in the first year of law school); DeGross & McKee, *supra* note 5, at 526-31 (noting a significant relationship between the propensity for abstract conceptualization, as measured by the Kolb LSI, and academic success in the first year of law school).
 35. See, e.g., William K.S. Wang, *The Restructuring of Legal Education Along Functional Lines*, 17 J. CONTEMP. LEGAL ISSUES 351, 354 n. 49 (2008).
 36. See, e.g., Robert E. Oliphant, *Using "Hi-Tech" Tools in a Traditional Classroom Environment – A Two-Semester Experiment*, 9 RICH. J.L. & TECH. 5 (2003).
 37. See, e.g., Kate E. Bloch, *Cognition and Star Trek: Learning and Legal Education*, 42 J. MARSHALL L. REV. 959, 968-82 (2009) (discussing empirical studies both in law schools and in other academic settings demonstrating the value of active learning).
 38. See, e.g., Robin A. Boyle, *Presenting a New Instructional Tool for Teaching Law-Related Courses: A Contract Activity Package for Motivated and Independent Learning*, 38 GONZ. L. REV. 1 (2002-03); HUNTER M. BRELAND & FREDERICK M. HART, *DEFINING LEGAL WRITING: AN EMPIRICAL ANALYSIS OF THE LEGAL MEMORANDUM 1* (1994) (assessing the degree to which legal writing instructors across the nation have agreed on what constitutes effective legal writing); Boyle & Dolle, *supra* note 29; Curcio, Jones & Washington, *supra* note 29 (assessing whether multiple practice essays with both peer assessment and self assessment impacted law students' ability to break a legal rule into its components and perform complex factual analysis on essay exams).
 39. See, e.g., Stephen J. Shapiro, *The Use and Effectiveness of Various Learning Materials in an Evidence Class*, 46 J. LEGAL EDUC. 101 (1996); Paul F. Teich, *Research on American Law Teaching: Is There a Case Against the Case System?*, 36 J. LEGAL EDUC. 167 (1986).
 40. See, e.g., Cynthia Schmidt & Ann L. Iijima, *A Compass for Success: A New Direction for Academic Support Programs*, 4 CARDOZO PUB. L. POL'Y & ETHICS J. 651 (2006); Emmeline Paulette Reeves, *Cool Data on a Hot Issue: Empirical Evidence that a Law School Bar Support Program Enhances Bar Performance*, 5 NEV. L.J. 646 (2005); Charles L. Finke, Kristine S. Knaplund & Richard H. Sander, *The Art and Science of Academic Support*, 45 J. LEGAL EDUC. 157 (1995).
 41. Andrea A. Curcio, *Assessing Differently and Using Empirical Studies to See if it Makes a Difference: Can Law Schools Do It Better?*, 27 QUINNIPIAC L. REV. 899 (2009); Ruth Colker, *Extra Time as an Accommodation*, 69 U. PITT. L. REV. 413 (2008).
 42. James R.P. Ogloff et al., *More Than Learning to "Think Like a Lawyer": The Empirical Research on Legal Education*, 34 CREIGHTON L. REV. 73 (2000).

school faculty.⁴³ Though progress in most of these areas has been modest, research such as this has made it possible to begin evaluating and reassessing long-held assumptions regarding law school pedagogy.⁴⁴ Some of the newer research suggests that understanding students' learning styles may be a key to ensuring that legal education continues to serve the needs of a new generation.⁴⁵

III. LEARNING STYLES AND LEARNING THEORY

The term "learning style" has been defined in a variety of ways, and no one definition fully captures the concept.⁴⁶ Perhaps the best description is that a learning style represents an individual's "preferred way of thinking, processing, and understanding information."⁴⁷ The concept encompasses both (1) the differing ways in which individuals perceive and absorb new information (*i.e.* the process of cognition, or the acquisition of knowledge), and (2) the disparate ways in which individuals process and catalog new information (*i.e.*, the process of conceptualization, in which new connections are formed and new ideas are conceived).⁴⁸ Learning styles have been "heavily researched" by scholars from a broad array of graduate and undergraduate programs⁴⁹ and, as noted above, the issue has increasingly begun to resonate among legal scholars.⁵⁰

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43. Gerald F. Hess & Sophie M. Sparrow, *What Helps Law Professors Develop As Teachers? – An Empirical Study*, 14 WIDENER L. REV. 149 (2008).
 44. Legal historians generally agree that, from the time of Dean Langdell's introduction of the case method at Harvard Law School in the 1870s, education in the American law school classroom has focused largely on the techniques of case analysis, the use of Socratic dialogue, and an emphasis on the skills of advocacy or adversarial lawyering. A review of more recent literature, however, reflects a reassessment of these traditional teaching techniques. *See, e.g.*, Jacobson, *supra* note 7, at 164 n.98 (suggesting 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* J. T. Dillon, *Paper Chase and the Socratic Method of Teaching Law*, 30 J. LEGAL EDUC. 528 (1980).
 45. *See, e.g.*, Randall, *supra* note 34; Alaka, *supra* note 6.
 46. Scholars define the term either broadly or narrowly, depending upon which aspect of the learning process they are considering. *See* DeGroff & McKee, *supra* note 5, at 509 n.47 and the references cited therein.
 47. Akkoyunlu & Soylu, *supra* note 28, at 184.
 48. *See* Kim Buch & Susan Bartley, *Learning Style and Training Delivery Mode Preference*, 14 J. WORKPLACE LEARNING 5, 6 (2002) (defining "learning style" as the way in which people "take information in and how they transform the information into meaning").
 49. Sandra Penger, Metka Tekavcic & Vlado Dimovski, *Meta-Analysis and Empirical Research of Learning Style Theories in Higher Education: The Case of Slovenia*, 5 J. COLLEGE TEACHING & LEARNING 1, 1 (Nov. 2008) (assessing the learning styles of undergraduate students in the field of management education at the University of Ljubljana, Slovenia) (citations omitted).
 50. *See* Young, *supra* note 21, for an extensive list of books and articles on learning styles and multiple intelligences.

A. Flexibility of Adult Learning Styles

There is general agreement in the literature that individuals differ significantly in the ways in which they tend to gather and absorb new information, and in how they process such information and relate it to what they already know.⁵¹ There is also substantial agreement that these differences in learning styles may have consequences for how successfully adult learners perform in various educational environments.⁵²

Scholars do not agree, however, on every aspect of the issue. One of the key distinctions among learning style theorists is the extent to which they view learning preferences as stable, or fixed.⁵³ Some suggest that learning styles are “hard wired” genetically and are therefore subject to minimal, if any, change—particularly in adult learners.⁵⁴ Others believe that, while adult learning preferences may be relatively stable, learning styles reflect some degree of both “nature and nurture”⁵⁵ and thus are flexible to an extent that varies among individuals.⁵⁶ Those who view adult

51. See, e.g., Susan Sunny Cooper, *Learning Styles* (Nov. 2001), <http://www.lifecircles-inc.com/learningstyles.htm>.
52. Charles R. Beck, *Matching Teaching Strategies to Learning Style Preferences*, 37 TCHR. EDUCATOR 1 (2001); 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); 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* (1997), <http://www.matthewjcook.com/research/lr.html>.
53. Penger, Tekavcic & Dimovski, *supra* note 49, at 4.
54. *Id.*
55. Reese & Reese, *supra* note 5, at 181 (“[l]earning style is a combination of nature and nurture which may change with age and experience”). See also Charalampos Mainemelis, Richard Boyatzis & David Kolb, *Learning Styles and Adaptive Flexibility: Testing Experiential Theory*, 33 Mgmt. Learning 5 (2002) (students can choose which set of learning abilities to use in specific learning environments); Martin Delahoussaye, *The Perfect Learner: An Expert Debate on Learning Styles*, TRAINING, May 2002, at 28, 31 (people may choose to “play to their strengths” and limit their learning situations to those compatible with those strengths, or “work to become better all-around learners”); Jacobson, *supra* note 7, at 146 (agreeing that learning styles are susceptible to change); Loo, *supra* note 28, at 350 (suggesting that “[t]he effective learner . . . can use each of the four styles effectively . . . rather than relying upon their preferred style”).
56. See, e.g., Alice Y. Kolb & David A. Kolb, *Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education* 15, 21 (2002) (unpublished manuscript) (on file with author) [hereinafter *Learning Spaces*]. See also Alice Y. Kolb and David A. Kolb, *THE KOLB LEARNING STYLE INVENTORY—VERSION 3.1: 2005 TECHNICAL SPECIFICATIONS* 10, 16 (HayGroup eds., 2005) [hereinafter *Technical Specifications*] (learning style is “not . . . a fixed trait, but . . . a dynamic state” that may be influenced by numerous factors including one’s academic or professional environment). As a reflection of his belief in the dynamic nature of learning styles, David Kolb has designed a specific instrument—the Adaptive Style Inventory—to measure the extent to which learners adapt their learning styles in response to new learning environments.

learning styles as malleable suggest that they may be influenced by the learner's experience and by exposure to new learning environments or demands.⁵⁷ Both the Kolb Learning Style Inventory (LSI) and Honey & Mumford's learning style instrument—two of the assessment tools used most widely in academic settings—are predicated on the theory that learning styles are flexible at least to a degree.⁵⁸

B. Characteristics of Adult Learning Styles

Of the more than two dozen diagnostic instruments that have been developed by educational researchers since the 1960s, the LSI was selected for this study because of its focus on the cognitive aspects of the learning process.⁵⁹ Originally published by David Kolb in 1976, the LSI was designed to assess a number of personal traits including learning styles and approaches to problem solving. The instrument was revised in 1985 to address concerns identified in early critiques. The format and design were modified again—though without substantive change—in 1999, and the instrument has been enhanced from time to time since then. The version used for the present research was the most recent iteration—the LSI 3.1—published in 2005.⁶⁰

The LSI reflects the view that learning styles encompass preferences, or personal tendencies, for both information acquisition and information processing. Responses by subjects completing the LSI are scored, and the

57. See Penger, Tekavcic & Dimovski, *supra* note 49, at 4 (discussing differences in learning style theories).

58. *Id.* at 8.

59. The LSI is not without detractors. See, e.g., Robin K. Henson & Dae-Yeop Hwang, *Variability and Prediction of Measurement Error in Kolb's Learning Style Inventory Scores: A Reliability Generalization Study*, 62 EDUC. & PSYCH. MEASUREMENT 712 (2002) (critiquing the validity and reliability of the LSI and questioning its ipsative format). However, Kolb recognized certain shortcomings in the original version of the instrument and made substantial modifications in 1985. All subsequent versions have been used extensively and generally have been well accepted. See, e.g., Thomas F. Hawk & Anit J. Shah, *Using Learning Style Instruments to Enhance Student Learning*, 5 DECISION SCIENCES J. INNOVATIVE EDUC. 1, 13 (2007) (discussing the merits of five of the leading learning style instruments and their uses in educational research, and finding that there is "solid support" for instrument validity and reliability with the LSI). See also Lu, Jia, Gong & Clark, *supra* note 28, at 188 (concluding that the revised LSI is a "well-accepted instrument" for educators and researchers); D. Christopher Kayes, *Internal Validity and Reliability of Kolb's Learning Style Inventory Version 3 (1999)*, 20 J. BUS. & PSYCH. 249 (2005) (reporting that both his and prior research largely support the "internal reliability" of the LSI). Other instruments that have been used in a law school setting include the Myers-Briggs Type Indicator (MBTI), the Productivity Environmental Preference Survey (PEPS), and the learning style instruments developed by both Dunn & Dunn and Honey & Mumford.

60. The LSI 3.1 is identical to the LSI 3—which was used by the author in an earlier round of research—but version 3.1 contains new charts reflecting scoring norms based on a sample of users that is larger, more diverse, and reportedly more representative of the general population than were any of the previous LSI versions.

scores are plotted on x and y axes that represent personal preferences with respect to both of those aspects of the learning process.⁶¹ The y axis measures preferences for information acquisition in terms of polar opposites—concrete experience (CE) versus abstract conceptualization (AC).⁶² The x axis measures preferences or traits with respect to cataloguing and translating the subject's experience into learning in terms that are also polar opposites—reflective observation (RO), or watching and listening, versus the testing of implications through active experimentation (AE).⁶³ The polar opposites on the x and y axes (RO, CE, AC and AE) are referred to by Kolb as “learning modes,”⁶⁴ or “learning orientations.”⁶⁵

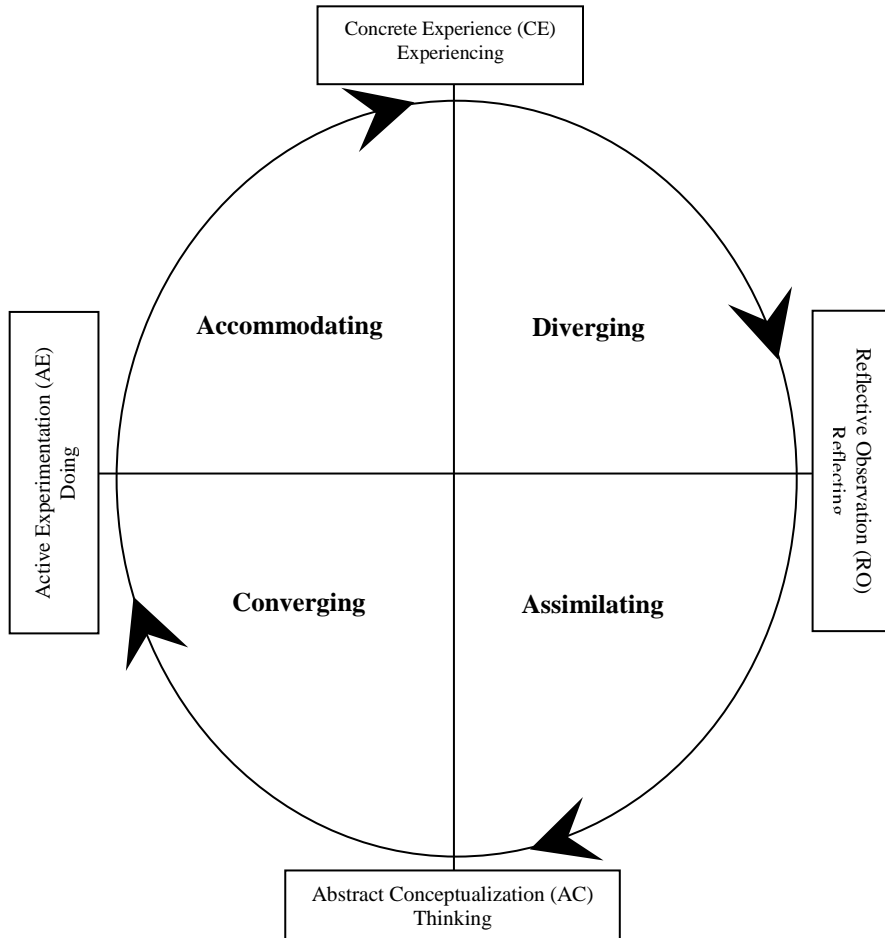
61. DAVID A. KOLB, KOLB LEARNING STYLE INVENTORY: LSI WORKBOOK VERSION 3.1.8 (HayGroup eds., 2007).

62. DAVID A. KOLB, FACILITATOR'S GUIDE TO LEARNING 14 (HayGroup eds., 2000).

63. *Id.*

64. KOLB, *supra* note 61, at 4. The author's findings, both in this round of research and in his earlier research on law student learning styles, indicate that “learning mode” may, in some cases, be a more powerful predictor of academic performance in law school than “learning style.” *See infra* notes 129-30 and accompanying text.

65. Technical Specifications, *supra* note 56, at 12.

Chart 1: Kolb Learning Style Schematic⁶⁶

The four learning styles, as shown in Chart 1 above, are therefore determined according to the subject's indicated preferences regarding both information acquisition and information processing. The learning styles are designated as Diverging, Assimilating, Converging, and Accommodating.⁶⁷ Commentators sometimes refer to the four learning styles in terms of "quadrants," which reflect spatially the location of each learning style on the schematic shown above. Beginning with the upper right-hand quadrant,

66. KOLB, *supra* note 61, at 5 (as modified by the author). Copyright 2007 Experience Based Learning Systems, Inc. All rights reserved. Reprint permission requests must be made in writing to the publisher, HayGroup, 116 Huntington Avenue, Boston, MA 02116.

67. *Id.* at 11.

commentators either number the quadrants sequentially in clockwise order⁶⁸ or refer to them as though they were points on a compass.⁶⁹ Thus, the learning styles and quadrants compare as follows: Quadrant 1 (northeast) = Diverging; Quadrant 2 (southeast) = Assimilating; Quadrant 3 (southwest) = Converging; and Quadrant 4 (northwest) = Accommodating.

Each of the four learning styles has unique strengths and weaknesses with respect to particular academic cultures and demands, and each appears to be uniquely compatible with a distinct range of teaching techniques. Students with learning styles in the “southern” quadrants share a propensity for abstract thinking. Accordingly, they tend to thrive in a learning environment that emphasizes logical, sequential reasoning and focuses on analytical constructs. Assimilators, for example (Quadrant 2—southeast section), exhibit a preference for logical and abstract thought, reflective observation, and the development of theories and ideas.⁷⁰ The term “assimilator” is a reflection of their relative skill at “assimilating knowledge into an integrated whole from separate pieces of information.”⁷¹ They are typically effective at understanding and formulating abstract concepts,⁷² and they tend to be detail-oriented, methodical, deliberate and analytical.⁷³ In formal learning situations, they typically prefer “readings, lectures, exploring analytical models, and having time to think things through.”⁷⁴ They “will work in groups if assigned,” but generally “prefer working alone.”⁷⁵ Among the professional groups most often represented by Assimilators are those related to science and math, as well as the legal profession.⁷⁶

Students who are more comfortable with the Converging style (Quadrant 3—southwest section) rely primarily on the learning strengths of abstract conceptualization and active experimentation.⁷⁷ The term “Converger” reflects their propensity to “converge quickly to make a decision” or “obtain one correct answer.”⁷⁸ Those who exhibit this style are

68. See, e.g., Elizabeth Armstrong & Ramin Parsa-Parsi, *How Can Physicians' Learning Styles Drive Educational Planning?*, 80 ACAD. MEDICINE 680 (2005), available at http://journals.lww.com/academicmedicine/fulltext/2005/07000/how_can_physicians_learning_styles_drive.13.aspx.

69. See, e.g., Learning Spaces, *supra* note 56, at 12-14.

70. See generally KOLB, *supra* note 61.

71. Julie E. Sharp, Learning Styles and Technical Communication: Improving Communication and Teamwork Skills 2 (undated manuscript from the Department of Chemical Engineering, Vanderbilt University) (on file with author).

72. Technical Specifications, *supra* note 56, at 5.

73. Sharp, *supra* note 71, at 3.

74. Learning Spaces, *supra* note 56, at 11.

75. Sharp, *supra* note 71, at 2.

76. KOLB, *supra* note 61, at 20.

77. *Id.* at 9.

78. Sharp, *supra* note 71, at 3.

typically skilled problem-solvers and decision-makers and tend to place an emphasis on practical uses for ideas.⁷⁹ In formal learning situations, Convergers tend to be less cerebral than Assimilators, often preferring active experimentation, simulation or laboratory assignments as a means of applying newly acquired information in a practical way.⁸⁰ Professions typically associated with the Converging learning style include medicine, engineering and the applied sciences.⁸¹

Students whose learning styles fall in the “northern” quadrants tend to be visual or global thinkers who may be more adept than others at seeing the “big picture,” but less proficient than those whose learning styles are in the southern quadrants at working sequentially through a theoretical framework. Divergers, for example (Quadrant 1—northeast section), reflect personal preferences for concrete experience and reflective observation.⁸² They are generally strong in the areas of imaginative thinking and feeling, or sensing.⁸³ Divergers typically learn by listening and sharing, and tend to be creative thinkers.⁸⁴ Their learning style is labeled “Diverging” because they tend to view situations or problems from divergent perspectives and perform well in situations requiring the generation of ideas.⁸⁵ Divergers typically have “broad cultural interests” and tend to specialize in the arts.⁸⁶ In formal learning situations, Divergers tend to enjoy working in groups and brainstorming to generate a range of ideas.⁸⁷

Accommodators (Quadrant 4—northwest section) enjoy strengths in the areas of concrete experience and active experimentation.⁸⁸ The accommodating learning style is so named because those who prefer it tend to be skilled at “accommodating or adapting knowledge to new situations.”⁸⁹ Those who exhibit this style tend to be experimenters who are effective in developing and implementing plans.⁹⁰ Accommodators typically prefer “hands-on” learning experiences, and in formal learning situations tend to be verbal learners who enjoy working with others to complete a project.⁹¹ Professions most often associated with the

79. KOLB, *supra* note 61, at 9.

80. *Id.* at 20.

81. *Id.*

82. *Id.* at 9.

83. Sharp, *supra* note 71, at 2.

84. *Id.*

85. Learning Spaces, *supra* note 56.

86. Technical Specifications, *supra* note 56.

87. KOLB, *supra* note 61, at 10-11; Sharp, *supra* note 71, at 2.

88. KOLB, *supra* note 61, at 9.

89. Sharp, *supra* note 71, at 3.

90. Technical Specifications, *supra* note 56, at 5.

91. *Id.*

Accommodating learning style include management, marketing and human resources.⁹²

C. The Learning Cycle and Experiential Learning Theory

The schematic in Chart 1 reflects two distinct elements, or “underlying assumptions,” of Kolb’s learning style theory.⁹³ The first element comprises Kolb’s concept of the learning process, or learning cycle, itself. Kolb has theorized that there are four stages to the learning process, each represented by one of the learning modes.⁹⁴ Together, the four learning stages encompass both the absorption of new information and the processing and cataloging of that information.⁹⁵ A learning experience may begin with any of the four stages, but Kolb and others have asserted that learning is most effective when it ultimately involves the student in all four phases of the cycle.⁹⁶ Thus, the ideal learning process would include: (1) an experience that exposes the learner to a new concept or new information (as reflected in the northern axis on Chart 1—“Concrete Experience”); (2) subsequent reflection upon, or review of, that experience in order to better understand it (as reflected in the eastern axis—“Reflective Observation”); (3) drawing conclusions about the experience and properly cataloging it along with prior knowledge or experiences (represented by the southern axis—“Abstract Conceptualization”); and (4) doing something with the experience, such as planning the next step or applying what was learned in a problem-solving context (depicted by the western axis—“Active Experimentation”).⁹⁷

As an example of this process, the academic success program at the author’s law school seeks to engage students in problem-solving exercises that encompass the entire learning cycle. In the academic success workshops, students may be given a summary of a specific doctrinal issue they have previously learned in one of their first-year classes, and then be asked to solve a hypothetical problem for a fictitious client entailing that issue. Students might begin the problem-solving component of the exercise by being divided into teams of three or four (mini-“law firms”), and then

92. KOLB, *supra* note 61, at 20.

93. Susan M. Montgomery & Linda N. Groat, *Student Learning Styles and their Implications for Teaching*, 10 CRLT OCCASIONAL PAPERS 1, 3 (1998).

94. *See supra*, Chart 1.

95. Mainemelis, Boyatzis & Kolb, *supra* note 55 (citing DAVID A. KOLB, EXPERIENTIAL LEARNING: EXPERIENCE AS THE SOURCE OF LEARNING AND DEVELOPMENT 41 (Prentice-Hall eds., 1984)).

96. *See* KOLB, *supra* note 62; Learning Spaces, *supra* note 56, at 6. *See also* DAVID A. KOLB, THE KOLB LEARNING STYLE INVENTORY: VERSION 3, 4 (HayGroup eds., 1999) (asserting that a “well-rounded learning process” is one that “cycle[s] through all phases”); Jacobson, *supra* note 7, at 172 (suggesting that a truly strong learner would “master the entire learning cycle”).

97. *See, e.g.*, KOLB, *supra* note 61, at 5.

reviewing the transcript of a fictitious interview with their “client.” The teams are then given an opportunity to discuss the problem among themselves to determine how their client’s case might be resolved.⁹⁸ All of the students then discuss the problem as a whole, sorting out the legal issues and assessing the strengths and weaknesses of the client’s case.⁹⁹ The class discussion gives students an opportunity to assess and refine their understanding of the legal concepts, correct any misunderstanding, and properly catalog what they have learned in the exercise alongside what they already knew.¹⁰⁰ Finally, the academic success director discusses with the students how the exercise can be used as a model for better synthesizing other material and answering potential questions on an exam.¹⁰¹ Problem-solving exercises used by the faculty during the course of their substantive classes throughout the semester provide further opportunities for students to engage in a similar process on a smaller scale.

The second foundational element, or assumption, of Kolb’s learning theory pertains to his conception of learner adaptability, and to the curricular and pedagogical techniques that he believes tend to promote such adaptability. Although each learner is likely to feel most comfortable with one or two of the four learning modes,¹⁰² Kolb theorizes that even adult students are capable of becoming “more proficient” with aspects of the learning cycle which they do not naturally prefer.¹⁰³ Their adaptability to new learning modes may be enhanced, however, if they are first introduced to new constructs in a way that comports with their learning preferences.¹⁰⁴ Kolb therefore suggests that one of the keys to promoting growth and flexibility in adult learning styles is for the instructor to facilitate an initial connection with new material by presenting it in a manner “consistent with [the students’] learning preferences.”¹⁰⁵ Once presented with material in a way they can comprehend with relative ease, students can follow the

98. This aspect of the exercise exposes the students to new information relating to material they have already learned, thus accounting for Step 1 above—a concrete experience.

99. This element of the exercise encourages the students to reflect upon their experience and better understand the process of problem-solving using legal concepts and language they have previously learned, thus addressing Step 2—reflective observation.

100. This effectively constitutes Step 3 in the learning cycle—drawing conclusions and cataloging any new understanding along with students’ prior knowledge and experience.

101. This aspect of the exercise relates to Step 4 of the learning cycle, which focuses on application and planning.

102. See, e.g., Montgomery & Groat, *supra* note 93 (citations omitted).

103. Kolb describes learning style as a “dynamic state,” but acknowledges “individuals vary in their ability to move about the learning space from their home region.” Learning Spaces, *supra* note 56, at 15, 21.

104. *Id.* at “Applications.”

105. *Frequently Asked Questions*, “Why did Kolb develop the Learning Style Inventory?,” EXPERIENCED-BASED LEARNING SYSTEMS, INC., http://learningfromexperience.com/frequently_asked_questions/ (last accessed Feb. 10, 2011).

sequence of the learning cycle as they process the same material in different ways through exercises that require the use of multiple learning modes and facilitate a deeper understanding of the subject.

D. Law School Pedagogy and Learning Style Adaptation

Kolb theorizes that students may ultimately become more proficient in the full range of learning skills and thus become more balanced, sophisticated learners if they are able to make an initial connection with material in a manner consistent with their learning styles.¹⁰⁶ Thus, Kolb suggests 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.”¹⁰⁷ When curricular design 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.”¹⁰⁸ These principles are fundamental to what Kolb calls experiential learning.¹⁰⁹

The challenge for legal education is that the typical first-year curriculum focuses almost entirely on substantive doctrinal subjects that require a significant level of abstract thinking. The first-year courses also tend to be taught primarily through lecture, Socratic dialogue and the construction and exploration of analytical models. Mastery of the subject matter requires detail-oriented, methodical and deliberate analysis. Assuming the LSI is an accurate reflection of learning style strengths and preferences, this kind of academic environment is best suited for students with learning profiles in the “southern hemisphere” of the Kolb schematic—*i.e.*, Assimilators and Convergents.¹¹⁰ Assimilators and Convergents share a preference for abstract conceptualization as a way of connecting with new material, and they tend to learn well in the classroom environment typical of first-year law school courses.¹¹¹

By contrast, the traditional first-year classroom is poorly suited for students whose learning profiles lie in the northern hemisphere of the

106. *Id.*

107. *Id.*

108. *Id.*

109. The experiential learning theory commonly associated with Kolb was based on the work of cognitive and learning theorists including Bloom, Mezirow, Freire and a number of other scholars. Kolb, however, refined the cyclical concept of learning by distinguishing the acts of perceiving and processing as distinct aspects of that cycle. For a more thorough explanation of the Experiential Learning Theory and its historical development, see Curtis Kelly, *David Kolb, The Theory of Experiential Learning and ESL*, INTERNET TESL J. (Sept. 1997), <http://iteslj.org/Articles/Kelly-Experiential/>.

110. See *supra* notes 70-81 and accompanying text.

111. *Id.*

schematic—*i.e.*, Divergers and Accommodators. Those learning profiles share a preference for concrete experience as a means of mastering new concepts, and students with those learning profiles tend to learn best through hands-on experiences including group projects, simulation, experimentation and the use of imaginative thinking.¹¹² A number of courses and non-classroom experiences offered in the typical law school do resonate well with Accommodators and Divergers, including skills courses, inter-mural competitions such as moot court or alternative dispute resolution, clinical programs, externships and practica. Such experiences—particularly those that incorporate live client contact or a chance to work on actual or even hypothetical cases—coincide with the abilities of such students to see the big picture and learn through active experimentation.¹¹³ These types of experiences, however, are normally reserved for second- or third-year students. To benefit from such experiences, students must first survive the first year of school. Unless professors make a determined effort to incorporate problem-solving exercises and opportunities for students to engage material in a practical, hands-on way, first-year courses are generally devoid of learning opportunities that connect well with Divergers or Accommodators.

Research indicates that a substantial minority of today's law students begin their legal study as Divergers or Accommodators—students whose learning styles reflect a relatively low preference for abstract conceptualization as a learning mode.¹¹⁴ Unfortunately, the data also show that students with a low preference for abstract thinking have significantly greater difficulty surviving the first year of law school, or of coming out of their first year experience in solid academic standing.¹¹⁵ The study described on the following pages was designed to test whether an experiential teaching approach could help enhance the analytical

112. See *supra* notes 82-92 and accompanying text.

113. *Id.*

114. In a previous round of research, we found that approximately one-fourth of our entering first-year students reflected either an Accommodating or Diverging learning styles, thus placing them in the northern quadrants of the Kolb schematic. See DeGroff & McKee, *supra* note 5, at 520-21 (assessing the learning styles of approximately 150 first-year law students). These findings were virtually identical to those discovered several years earlier by Professors John and Tania Reese, at the University of Denver. The Reeses likewise reported a one-to-three ratio of Accommodators and Divergers to Assimilators and Convergents. See Reese & Reese, *supra* note 5, at 177.

115. DeGroff & McKee, *supra* note 5, at 521-31. Data from our previous research reflected statistically significant correlations among learning styles or learning modes, LSAT scores, and academic performance in the first year of law school. Students whose learning styles reflected a low preference for abstract conceptualization (*i.e.*, Accommodators and Divergers) tended to have relatively low LSAT scores and also tended to perform marginally in their first-year courses. A high propensity for abstract conceptualization (AC) did not guarantee academic success, but low AC scores were associated with low LSAT scores and low first-year grades at a statistically significant rate. *Id.* at 529-31.

proficiency of first-year students—particularly those whose learning styles initially reflected a relative lack of skill or comfort with abstract thinking—in order to help them cope with the analytical demands of their substantive courses.¹¹⁶

The rationale for providing such assistance is not, of course, simply to make the learning process easier for non-traditional students or to help them survive the first year of law school. By the time they enter the legal profession, our students all must have acquired the ability to think analytically and grapple with facts and principles in a disciplined, orderly way. As Dean Alaka, of Washburn University Law School, has correctly noted:

[R]egardless of [students' learning styles], lawyers must be able to think abstractly and use inductive and deductive reasoning. Lawyers must also develop the skills to identify how abstract principles can influence concrete actions. Truly, critical analysis, planning, and decision making are the “conceptual foundations” for many of the practical skills a lawyer must possess to be effective.¹¹⁷

The goal of addressing all learning styles in the classroom is, instead, to provide a means for all students to connect with the subject matter initially in a way that makes sense to them. The objective is then to assist them in moving through the learning cycle, helping them to adapt their mode of learning, if necessary, so that they can eventually engage the material in a lawyerly and analytical way. Whether an experiential approach makes it possible to accomplish this was tested in this research by observing the comparative effects of disparate teaching methods on learning style adaptation among our first-year law school class.

IV. RESEARCH DESIGN, METHODOLOGY AND FINDINGS

This research was conducted as a follow-up to our previous study, which had reflected clear propensities regarding law student learning styles and a significant correlation between learning modes and academic success in the first year of law school. The research was designed with input from

116. *Id.* at 547 n.194. As indicated in our previous article, our limited testing of law school graduates who have failed the bar exam suggests that their learning preferences fall disproportionately in Quadrants One and Four (Accommodating and Diverging), both of which are relatively weak in the modality of abstract conceptualization. These observations suggest that failure by law students to adapt more fully to abstract learning modes may inhibit their performance on the bar exam—presuming, of course, that the graduates who were tested after-the-fact actually began their law school career with a preference for Quadrant One or Four learning styles.

117. Alaka, *supra* note 6, at 167.

statisticians in the university's Schools of Psychology and Counseling, and Education.

A. Research Design

This study was designed to evaluate, through the use of correlation research, the nature and degree of change in learning styles among students during their first year of law school. It was also intended to assess whether differences in teaching styles would influence the direction and degree of that change. In designing our research, we hypothesized that: (1) the academic culture and demands of law school would lead to significant adjustments in the learning styles of law students over the course of their first year of study; and (2) the use of an experiential teaching approach¹¹⁸ by certain faculty members who taught in the first-year curriculum would likely influence the direction and degree of that change, possibly promoting a shift in a southerly direction, toward a more analytical approach to learning.

B. Research Methodology

1. *Student Participants*

Subjects consisted of a sample of 149 first-year law students, which represented the entire entering class at our law school in the fall semester, 2007. Participants consisted of sixty-nine females (46.3%) and eighty males (53.7%). In terms of ethnicity, the population included fourteen African-Americans (9.4%), 118 Caucasians (79.2%), fourteen others (9.4%, primarily Hispanic and Asian), and three unknown. Participants' LSAT scores ranged from 144 to 165.

118. An experiential approach to teaching is one that seeks to address the full learning cycle as described by Kolb and others and to connect in some way with students in each of the four learning style quadrants. An experiential approach does not necessarily require that teaching techniques compatible with each learning style be used during every class session, but an effort is made to incorporate a variety of pedagogical techniques at some point during the coverage of each significant area of the law. For a more thorough description and discussion of experiential teaching theory, see DeGroff & McKee, *supra* note 5, at 547-48.

One specific version of experiential teaching that has been applied in a number of academic environments and may hold promise in a law school context is called "4MAT." For a description of that method and the results achieved, see BERNICE MCCARTHY, *THE 4MAT SYSTEM: TEACHING TO LEARNING STYLES WITH RIGHT/LEFT MODE TECHNIQUES* (EXCEL 1987); Bernice McCarthy, *Using the 4MAT System to Bring Learning Styles to Schools*, 48 EDUC. LEADERSHIP 31 (1990); Cynthia Kelly, *Using 4MAT in Law School*, 48 EDUC. LEADERSHIP 40 (1990).

2. *Faculty Participants*

Four faculty members who taught first-year courses during the 2007-2008 academic year were involved in the study, in the sense that their classes were observed and the learning styles of students in their sections were tracked. Of those four, two faculty members (referred to hereinafter as Professors X and Y) were familiar with experiential learning theory and had incorporated aspects of that theory into their teaching. Professor X, who taught one of the substantive first-year courses, devoted a number of class periods during the fall and spring semesters to simulations that entailed group discussions, brainstorming, and a modeling of the problem-solving process beginning with a summary of a fictitious client interview and concluding with an analysis of the relevant legal issues. The professor provided scaffolding outlines before each class period throughout the year to help direct the students in preparing for class discussions, provide a sense of context for each day's assignment, and serve as a model for students in organizing their own course material. He incorporated a required analytical writing assignment and a number of optional writing assignments during the fall semester and provided individual feedback on those assignments to students who chose to make appointments with him to discuss the exercises. He also devoted time throughout the year to modeling the analytical process for the class by walking students through analyses of various issues, thereby breaking down the analytical process through class discussion and feedback.

Professor Y, who taught a first-year Civil Procedure section, specifically discussed the learning process with his students at the beginning of the academic year and explained how his students' class preparation could enhance that process. He provided considerable context for his course material; modeled the analytical process for his students; made extensive use of maps, diagrams and other visual aids; provided opportunities for small group exercises; and assigned written exercises to enable his students to experience the pleading process in a concrete way. A number of the techniques used by both of these professors—visual aids, written exercises, case studies or “lab exercises,” small-group discussions, brainstorming and immediate feedback from and interaction with the instructor—are consistent with an experiential teaching approach and were used by the professors as a means of connecting with visual and other non-traditional learners.¹¹⁹

119. Professor Sam Jacobson and others have noted the increasing prevalence of visually-oriented students and passive learners among today's law school population, making them quite unlike the law school classes of previous generations. A number of legal scholars have documented and discussed the academic challenges such students face in the traditional law school classroom. *See*,

The two other professors who taught the same courses as Professors X and Y were rigorous instructors who were widely recognized at the school for their teaching excellence, but were more Socratic in their approach. Given the differences in teaching styles between the two pairs of professors who happened to be teaching those subjects that year, a unique opportunity existed to assess to what extent, if any, the incorporation of experiential learning principles by Professors X and Y would influence the learning styles of students in their sections.

3. Distribution of Study Participants

Except for the Legal Research, Analysis and Writing classes, and a first-year course on jurisprudence—where sections were relatively small—first-year courses at our law school were double-sectioned, with approximately seventy to eighty students per class. Incoming students were actually divided into four sections, with each professor being assigned two of the four sections. Because the four sections were combined differently in each course, during the year in question Professors X and Y had one section of students in common, while each had one section of students that the other did not teach. Accordingly, of the first-year students at the law school during the study period, one-fourth had Professor X but not Y (referred to hereinafter as Section X), one-fourth had Professor Y but not X (referred to subsequently as Section Y), one-fourth had both Professors X and Y (Section X+Y), and one-fourth had neither (referred to hereinafter as the “control group”).

4. Administration of the Learning Style Instrument

Subjects were administered both a Pre-Test LSI questionnaire before the beginning of the fall semester and a Post-Test LSI questionnaire during the final week of the spring semester. Students who participated in the law school’s summer academic success program before the fall semester of their 1L year were given the Pre-Test questionnaire at the beginning of the first summer session, before any substantive instruction was provided. Those who were not involved in the summer program completed the Pre-Test questionnaire during the new student orientation period before the fall semester classes began. The Pre-Test questionnaire was administered at these times to ensure that no student had received any sort of law school instruction before completing the assessment. The Post-Test questionnaire

e.g., Jacobson, *supra* note 7, at 140, 144-45; Richmond, *supra* note 9, at 944; Arnold, *supra* note 12, at 891.

was administered in the students' Legal Research, Analysis and Writing classes during the final week of school in the spring semester.¹²⁰

5. Data Collection and Quantitative Methods

In addition to respondents' Pre-Test and Post-Test scores on the LSI 3.1, data were collected from student admission files concerning respondents' race or ethnicity, gender, and LSAT scores.¹²¹ Respondents were also categorized as being students of Professor X, Professor Y, both Professors X and Y, or neither. At the end of each semester, grades were collected from the Law School Records and Registration Office and recorded for each subject. A correlation design was used to: (1) determine the predictive value of LSAT scores, learning styles, and learning modes with respect to first-year grade point averages;¹²² (2) assess the correlation between learning styles or learning modes and LSAT scores;¹²³ (3) assess the degree and direction of change in learning styles and learning modes over the course of the first year of law school as measured by the Pre-Test versus Post-Test learning style scores;¹²⁴ and (4) assess the relationship between the direction and degree of change in learning styles or learning modes and the identity of the participants' professors: (1) Professor X; (2) Professor Y; (3) both X and Y; or (4) neither X nor Y.¹²⁵

120. Response rates, unfortunately, were less than 100 percent. Of the 149 admitted students for whom LSAT scores were available, there were 143 valid Pre-Test learning style scores. Students who were absent on the days the Pre-Test LSIs were administered received introduction and training with regard to legal analysis during the days immediately following, before the Pre-Test LSI could be administered to them. For the sake of consistency, they were not included in the Pre-Test sample.

Of the 149 students admitted for the fall semester, eleven either left the program or were academically dismissed before the end of the academic year. Of the remaining 138 students, a number were absent from class on the days the Post-Test LSIs were given, and the follow-up response rate from those students was poor. Accordingly, the population for whom valid Post-Test LSI scores were available consisted of 109 students. The number of students who completed both valid Pre-Test and Post-Test instruments was 105.

121. No significant correlation was found between gender and GPA or gender and learning style. With regard to LSAT scores, however, men scored significantly higher than did women in this particular law school class [$F(1,147) = 8.084, p = .005$ sig.]. As to ethnicity, the sample population of minority students was insufficient to provide meaningful comparisons.

122. See *supra* notes 127-30 and accompanying text.

123. See *supra* notes 131-34 and accompanying text.

124. See *supra* notes 135-46 and accompanying text.

125. See *supra* notes 147-57 and accompanying text.

C. Research Findings

1. *Correlation Between Learning Styles, LSAT Scores and Law School Performance*

The results of this study were consistent with those of our previous research in a number of respects.¹²⁶ First, Pre-Test data from this study reflected a 3:1 ratio of students who exhibited Converging or Assimilating learning styles (southern hemisphere) as compared with those who demonstrated Accommodating or Diverging styles (northern hemisphere). This demonstrated a predominant preference among the first-year class for abstract thinking, as reflected in relatively high AC scores among the roughly seventy-five percent of the sample population whose learning styles were in the southern quadrants of the Kolb learning style schematic.¹²⁷ Second, as was also true with our previous findings, subjects' LSAT scores proved to be a statistically significant predictor of first-year GPAs.¹²⁸

Third, a statistically significant correlation was found between subjects' learning modes, as indicated on the Pre-Test LSIs, and their LSAT scores. A high positive correlation existed between the subjects' Pre-Test AC scores and LSAT scores, as shown in Chart 2 below.¹²⁹ Significant, but less profound, negative correlations were also found between both CE and AE scores and the subjects' LSAT scores.¹³⁰

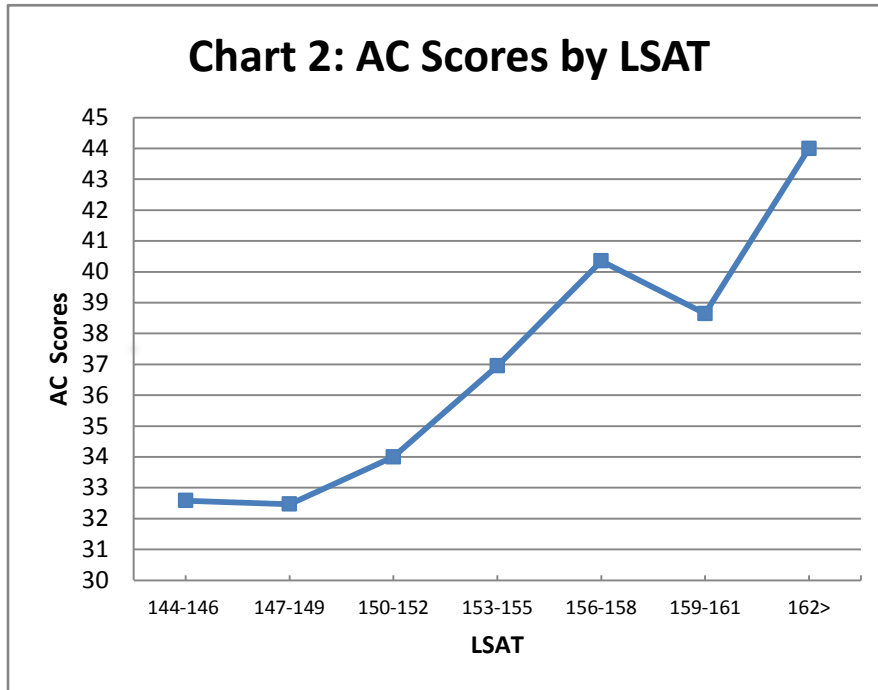
126. See DeGroff & McKee, *supra* note 5, at 519-32.

127. Pre-test results were as follows: N 143; Accommodators = 18 (12.6 percent); Divergers = 17 (11.9 percent); Convergers = 33 (23.1 percent); Assimilators = 75 (52.4 percent). The 75.5 percent of students with learning styles in the "southern" quadrants of the Kolb schematic was virtually identical to the 76.3 percent of students sampled in our previous study who exhibited Diverging or Assimilating learning styles.

128. $R(136) = .463$, $p < .01$ (sig.).

129. Correlation between LSAT and AC: $r(107) = .401$, $p < .01$ sig.

130. Correlation between LSAT and CE: $r(107) = -.206$, $p = .032$ sig.; correlation between LSAT and AE: $r(107) = -.201$, $p = .036$ sig.

Chart 2: AC Scores by LSAT

A correlation between LSAT scores and learning styles similar to that found in our previous research was also clearly noticeable, with the highest LSAT scores earned by subjects reflecting Diverging or Assimilating learning styles.¹³¹ Consistent with findings from our previous study, however, this correlation was not statistically significant when the four learning styles were considered individually.

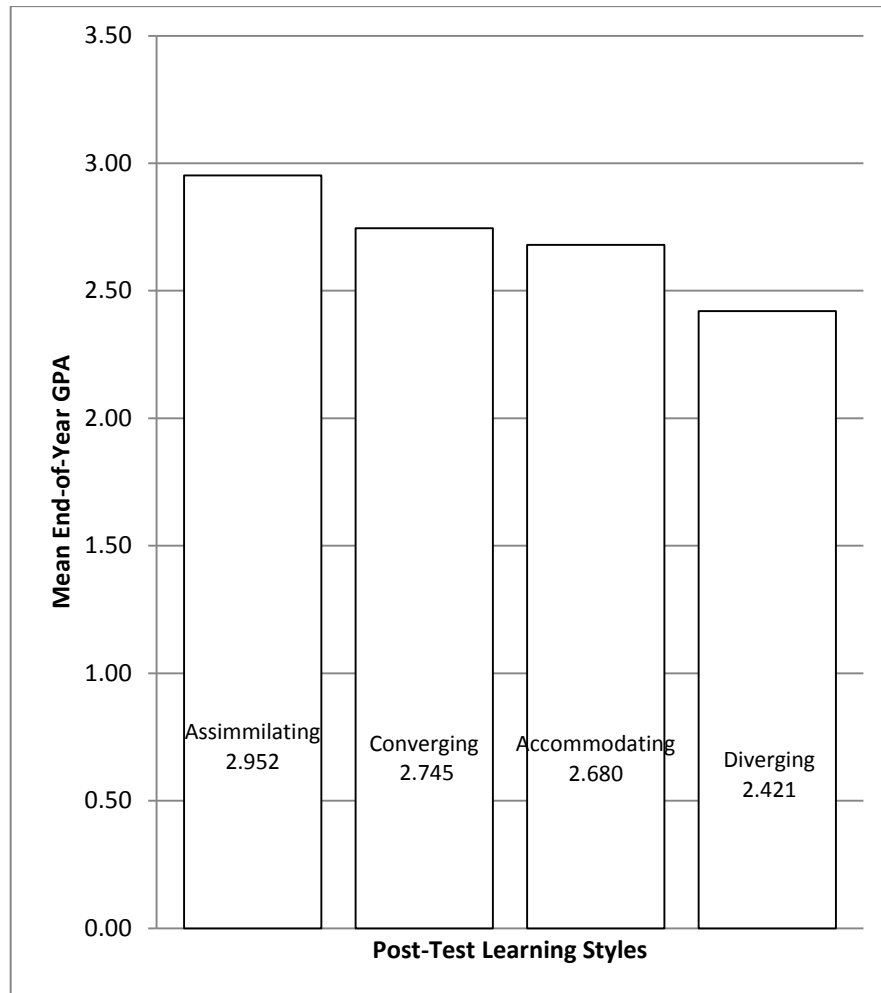
Finally, data from the current study reflected a pattern almost identical to that of our previous study with respect to learning styles and academic performance in the first year of law school.¹³² Though the relationship was not statistically significant, students with a propensity toward the Converging and Assimilating learning styles (*i.e.*, those in the southern hemisphere of the Kolb schematic) performed better, on the whole, than did those with Diverging or Accommodating learning styles (see Chart 3

131. Assimilating, Pre-Test: M = 153.3333 (N=75); Converging, Pre-Test: M = 153.2727 (N=33); Diverging, Pre-Test: M = 151.0558 (N=17); Accommodating, Pre-Test: M = 149.2778 (N=18).

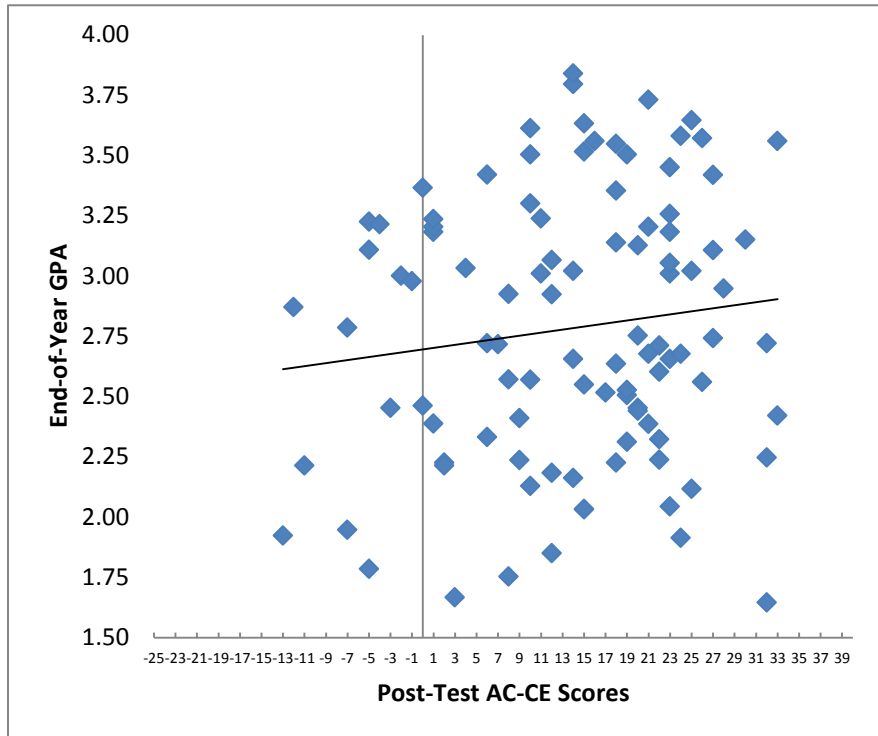
132. See DeGroff & McKee, *supra* note 5, at 527.

below).¹³³ Data from the current study also reflected a noticeable—though not significant—positive relationship between the subjects' Pre-Test ACCE scores (*i.e.*, their location along the *y* axis of the learning style schematic) and their first-year GPAs. (See Chart 4 below.)

Chart 3: End-of-Year GPAs by Learning Style



133. Converging: GPA = 2.82; Assimilating: GPA = 2.73; Diverging: GPA = 2.51; Accommodating: GPA = 2.49.

Chart 4: End-of-Year GPAs by AC-CE Score¹³⁴

2. Nature and Degree of Learning Style Shift in the First Year of Law School

One of the primary purposes of the current study was to assess the degree of change in law student learning styles over the course of an academic year. To the best of our knowledge, no longitudinal analysis of learning styles had previously been done in a law school setting, though a number of such studies have been reported in other academic disciplines. In a variety of non-law school settings involving both graduate and undergraduate students, researchers have found that immersion in particular academic cultures can generate significant change in subjects' learning styles.¹³⁵ Indeed, the learning styles of students in one undergraduate

134. Though the end-of-year GPAs appear in this chart to trend upward in relation to higher AC-CE scores, the results were not sufficiently consistent to establish statistical significance.

135. See, e.g., Richard Tucker, *Learning Style Drift: Correlation Between Built Environment Students' Learning Styles and the Learning Styles of Their Teachers*, 3 J. FOR EDUC. IN THE BUILT ENV'T 68, 71 (2008) (referring to a 1996 study by Nulty and Barrett, and to his own research findings

history class reportedly changed significantly over the course of a single semester when the students were exposed to an unusual pedagogical approach and an extremely demanding workload.¹³⁶ Changes reported by other scholars generally have been less profound and typically have been assessed over a longer period. A number of researchers have documented significant shifts in learning styles over the course of two to four years of study in particular professional fields¹³⁷ or undergraduate majors.¹³⁸ This phenomenon has been labeled by some authors as “learning style drift.”¹³⁹

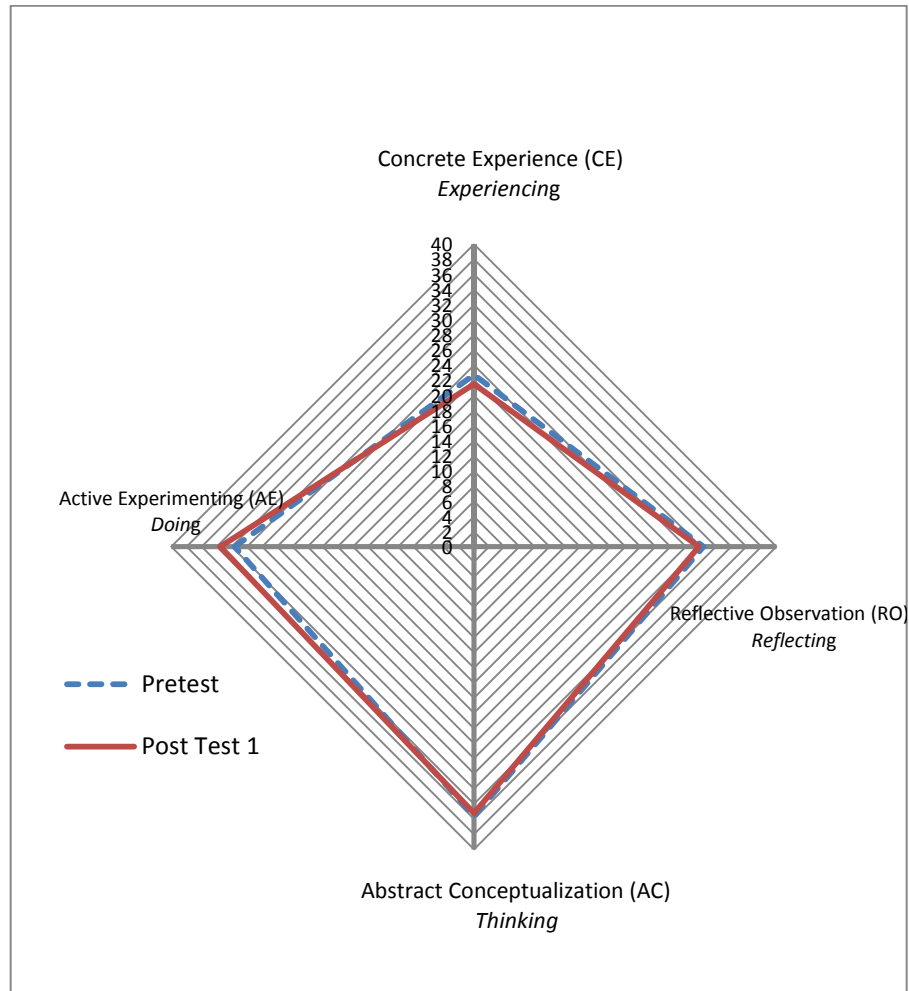
As we planned our study and contemplated the likely results, we hypothesized that our students’ learning styles would shift noticeably over the course of their first year of study. That hypothesis proved to be accurate, though the direction of movement in the subjects’ learning styles was not anticipated. Knowing that the students would be engaged throughout their first year of study in learning the rudiments of legal analysis, we expected that their learning styles would move in a southerly direction to reflect a greater reliance upon, and proficiency with, abstract conceptualization. Instead, a comparison of our subjects’ Pre-Test and Post-Test learning style scores reflected a statistically significant shift in a westerly direction (see Chart 5 below).¹⁴⁰ Though the extent of the westerly

which, though not statistically significant, revealed a clear trend among the sampled student population in adjusting learning styles to the demands of their academic program). See also Alfred P. Rovai, Louis B. Gallien, Jr. & Mervyn J. Wighting, *Graduate Student Academic Achievement and Learning Style Preferences: A Comparison of Graduates from Predominantly [Caucasian] and Historically [African-American] Colleges and Universities* 9 (Sept. 3, 2004) (unpublished manuscript) (copy on file with author) (citing J. K. Pinto, M. A. Geiger & E. J. Boyle, *A Three Year Longitudinal Study of Changes in Student Learning Styles*, 35 J. COLL. STUDENT DEV. 113 (Mar. 1994) (finding that the learning styles of college students were subject to change over time)).

136. Tony Grasha, *Using Traditional Versus Naturalistic Approaches to Assessing Learning Styles in College Teaching*, 38 J. OF EXCELLENCE IN COLL. TEACHING 23, 25-26 (1990).
137. See, e.g., Tucker, *supra* note 135, at 70-74.
138. See, e.g., Learning Spaces, *supra* note 56. See also Stephen J. Cavanaugh, Kevin Hogan & Terenlall Ramgopal, *The Assessment of Student Nurse Learning Styles Using the Kolb Learning Style Inventory*, 15 NURSE EDUC. TODAY 177, 178 (1994) (finding that learning styles develop among nursing students “that reflect the special needs and learning demands of the discipline”).
139. See Tucker, *supra* note 135. See also Richard Tucker, *Southern Drift: The Learning Styles of First- and Third-Year Students of the Built Environment*, 50.3 ARCHITECTURAL SCI. REV. 246 (2007). Scholars are not entirely uniform in their use of the concept of statistical “drift.” The term is typically associated with variables that are measured on an ongoing basis (e.g., in the context of genetic or market research), as opposed to single “before and after” comparisons. To distinguish the before-and-after phenomenon observed in our research from the more widely-understood concept of statistical “drift,” I have chosen to use the term “learning style *shift*” in this article to describe the Pre- and Post-Test changes in our subjects’ learning styles.
140. The subjects’ AE scores rose from an average of 32.0094 on the Pre-Test LSI to an average of 33.5377 on the Post-Test assessment. That movement was substantial enough to be considered statistically significant, though the level of significance was moderate to slight [$t(105) = -2.909$, $p = .004$]. A lesser shift in the southerly direction also occurred, as shown in Chart 5, but the extent of that shift was insufficient to prove statistically significant.

shift was modest, the fact that a statistically significant change occurred over the course of only a single academic year was noteworthy.¹⁴¹ We further noted that roughly the same westerly shift occurred among students in all sections of the sample population, not only among those in Sections X, Y, or X+Y.¹⁴²

Chart 5: Learning Style Shift During Subjects' First Year of Law School



141. E-mail from Alice Y. Kolb, Adjunct Professor of Organizational Behavior, Case Western Reserve University, and President, Experience Based Learning Systems, Inc., to author (July 16, 2010, 10:50 EST) (on file with author) (noting that in most previous research, “significant changes do not normally occur until the end of the sophomore year”).

142. See *infra* Chart 6.

The cause of the population's westerly shift was not entirely clear. A change in that direction among students of Professors X and Y alone might have been attributed to the prevalence of problem-solving exercises used in those classes. Convergents (those reflecting a southwesterly orientation) are said to have "a strong practical orientation"¹⁴³ and to be "generally deductive in their thinking."¹⁴⁴ Similarly, Accommodators (those reflecting a northwesterly bent) are said to "like doing things . . . in the here and now."¹⁴⁵ A number of the experiential techniques used by Professors X and Y—case studies, group discussions, brainstorming and analytical modeling, for example—were specifically designed to promote students' problem-solving skills. A westerly movement among those students would therefore not have been surprising. What is less clear is why subjects in all four sections experienced the same type of westerly shift. It appears from these data that immersion in the academic culture of a legal education in general may tend to promote a more problem-solving orientation among the adult learners so engaged.¹⁴⁶

3. Influence of Teaching Styles on the Direction and Degree of Learning Style Shift

The literature makes it clear that an experiential teaching approach is generally well received by students in Generations X & Y, and particularly by those whose learning styles are visually oriented.¹⁴⁷ Opportunities for active, learner-centered interaction with the material through work in small groups, writing assignments, role playing or problem-solving exercises—combined with frequent opportunities for evaluation and feedback—facilitate learner engagement.¹⁴⁸ The issue was not, however, whether an experiential pedagogy would appeal to non-traditional law students or make the learning process easier for them. It was whether the use of an experiential approach would facilitate learning style

143. Hawk and Shah, *supra* note 59, at 4.

144. *Id.*

145. *Id.*

146. The fact that students' average CE, RO and AC scores fell during the year does not necessarily suggest that the skill sets reflected by those learning modes were weakened. The LSI's ipsative format, which has been discussed at length in the literature, naturally results in lower relative scores for other learning modes whenever the score of any particular learning mode increases. Thus, for example, an increased focus on practical problem solving could effect a reduction in a student's AC score without necessarily reflecting a reduction in the student's analytical skill or preference for an analytical approach to learning.

147. See, e.g., Coughlin, McElroy & Patrick, *supra* note 11, at 382.

148. *Id.* See also Bohl, *supra* note 1, at 784-85; Campbell, *supra* note 1, at 280-81.

adaptation—*i.e.*, a transition among such students toward a learning style that would better accommodate the process of abstract analytical reasoning.

Our hypothesis was that differences in teaching styles between Professors X and Y, on the one hand, and their two faculty counterparts on the other, would influence the direction and degree of any learning style shift among the first-year students. Specifically, we expected that the sections taught by Professors X and Y might reflect a stronger southerly shift as a result of their more experiential pedagogy.

Our data did, in fact, reflect a modest trend in the expected direction and suggested that the differences in teaching styles may have influenced students' learning styles somewhat, particularly among those whose Pre-Test LSIs indicated a low propensity for abstract thinking.¹⁴⁹ The following findings all reflected a similar pattern. First, of the 105 students who completed both Pre-Test and Post-Test LSIs, thirty-five exhibited Accommodating or Diverging learning styles on their Pre-Test instruments, placing them in the northern hemisphere of the Kolb schematic at the beginning of the academic year.¹⁵⁰ Of those thirty-five subjects, ten (29%) reflected Converging or Assimilating learning styles on their Post-Test LSIs, having apparently shifted, over the course of the year, into learning styles in the southern hemisphere. Of those ten students, five were in Section X, three in Section Y, and two in Section X+Y. No student in the control group exhibited a shift from a learning style in the northern hemisphere to one in the southern quadrants.

Second, while not statistically significant, there were slight variations among the four sections regarding changes in AC scores over the course of the year. Given the ipsative nature of the LSI, the significant increase in the average AE scores (which led to the westward shift among the sample population as a whole) was accompanied by overall reductions in the subjects' average RO, CE, and AC scores.¹⁵¹ Accordingly, the average AC scores among students in three of the four sections declined over the course of the year. However, the average AC scores among students in Sections X and Y fell somewhat less than did those in the control group, and the AC

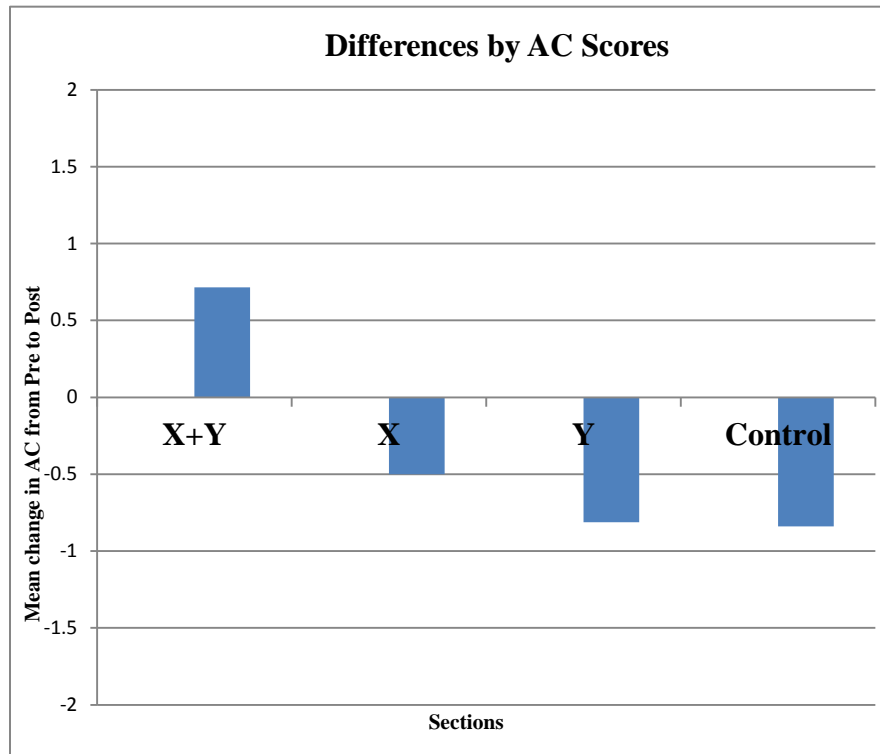
149. An inherent and unavoidable limitation in the research design was the fact that teaching styles among the four faculty members involved were not totally disparate. Though Professors X and Y have been intentional in incorporating experiential techniques in their instruction, both employ Socratic methods in the classroom to a degree. Their counterparts, likewise, make use of lectures and visual aids, and are purposeful in their instruction regarding the dynamics of legal analysis. Thus, though their teaching styles differ substantially, none of the four are at either extreme of the Socratic spectrum.

150. See *supra* note 127 and accompanying text.

151. Results of a paired samples t-test showed that AC, RO, and CE scores were all lower, but not significantly so. AE, however, rose significantly from the beginning to the end of the academic year ($t(105) = -2.909$, $p = .004$). AE scores changed from an average of 32.0094 to 33.5377.

scores among students in Section X+Y actually increased slightly between the Pre-Test and Post-Test assessments. (See Chart 6 below.)¹⁵²

Chart 6: Changes in Average AC scores by Section



Finally, the data also reflected disparities among the sections with respect to those students whose scores changed substantially over the year. Again, given the nature of the LSI and the possibility of test sensitization, modest shifts between Pre-Test and Post-Test scores were common among the test population in both directions along each axis.¹⁵³ When limited, however, to subjects whose movement along the y axis equaled or exceeded five points from the first administration of the LSI to the second,¹⁵⁴

152. Results of a paired samples t-test showed the following changes from the beginning to the end of the academic year: X+Y (+.7143); X (-.5000); Y (-.8215); Control (-.8400).

153. Indeed, one of the key questions considered by both critics and supporters of the LSI has always been the instrument's degree of test-retest reliability. See, e.g., Kayes, *supra* note 59; Henson & Hwang, *supra* note 59.

154. In determining what constituted a significant change in a subject's learning style between Pre-Test and Post-Test administrations, there was no obvious cut-off point. Professor Alice Kolb herself has indicated that she is not aware of "any studies testing sensitization of the LSI on repeated

differences among the four sections were noticeable. Among students in either Section X or Y whose AC-CE scores changed by five points or more, sixteen of twenty-eight (58%) shifted in a southerly direction.¹⁵⁵ Among those in Section X+Y, eight of thirteen (62%) moved in a southerly direction. Among the control group, by contrast, only a minority of such students (five of twelve, 42%) shifted learning styles in a southerly direction.

Despite these trends, our hypothesis concerning the expected effect of differences in teaching styles was not confirmed. The disparities in direction and degree of learning style shift among the four sections, while consistent, were not statistically significant. There was no significant difference in change in AC-CE scores among the four sections,¹⁵⁶ and no significant difference in change in AC scores themselves among the four sections.¹⁵⁷

V. CONCLUSIONS

The results of this study were consistent with findings from our previous research in several respects. First, our Pre-Test data indicated that roughly three-fourths of the law school's entering first-year class exhibited Converging or Assimilating learning styles, reflecting a relatively high propensity for abstract conceptualization as a preferred learning mode.¹⁵⁸ Second, a statistically significant correlation was demonstrated between the subjects' LSAT scores and their Pre-Test AC scores, suggesting a positive relationship between proficiency with abstract thinking and success on the LSAT. Third, though not statistically significant, our data again reflected that students whose learning styles fell within the southern hemisphere of the Kolb schematic performed better academically in their first year of law school than did those whose learning styles placed them in the northern quadrants.

The study also demonstrated a significant shift in learning styles among our first-year law students, as determined by a comparison of Pre-Test versus Post-Test LSI scores. The composite shift among the first-year class was primarily in a westerly direction, suggesting the development of a

administrations." E-mail from Alice Y. Kolb to the author (July 24, 2006, 15:28 EST) (on file with the author). She noted, however, that "Sims 1991 test retest study . . . administered the LSI three times in 8 week[] intervals and found strong test- re-test reliability." *Id.* We decided to use a cut-off of a 5-point shift along the y axis for this analysis on the basis that that number was roughly twice the standard deviation.

155. This percentage was precisely the same among students in Section X (#s) and in Section Y (#s).

156. $F(4,101) = .564, p = .690$ n. s.

157. $F(4, 101) = .385, p = .819$ n. s. See *supra* chart 6.

158. See *supra* Chart 1.

higher propensity among the sample population for active experimentation as a means of synthesizing new information and analytical constructs.

It remains unclear, however, whether or to what degree differences in pedagogy may have influenced adjustments by the students in their learning styles. There was evidence suggesting that an experiential teaching approach may have promoted a greater southerly shift within the sample population—particularly among students who began their law school careers with relatively undeveloped analytical skills. If these findings are truly representative, they suggest that the use of an experiential approach in teaching first-year law students may have some salutary effect in developing and encouraging the use of law students' abstract thinking skills. Conclusions, however, are difficult to draw from the data for a variety of reasons. First, the differences among the sections with respect to the students' learning style adjustments were not statistically significant. Second, the sample sizes used for comparison were relatively modest. Though the Pre-Test sample was reasonably large,¹⁵⁹ the Post-Test sample was substantially smaller,¹⁶⁰ and division of the reduced Post-Test sample into the four sections created very limited sample populations for comparison.¹⁶¹ Finally, the number of uncontrollable factors influencing the learning experience of first-year students made it difficult to isolate and evaluate the impact of the variables under examination. In addition to their professors in the two courses isolated for this study, all of the students were enrolled in a minimum of two other courses during the academic year, and most were enrolled in four additional courses.¹⁶² In those courses, the students had varying combinations of other professors whose teaching styles were not known or accounted for in this research. Even among the four faculty members observed in connection with this study, the differences in teaching styles were fundamentally a matter of degree. Professors X and Y do not avoid the Socratic method in their classes, but simply supplement it with selected experiential techniques. Nor do their counterparts rely upon the Socratic method exclusively; their classes also incorporate both lecture and instruction in problem-solving.¹⁶³

With regard to the design and utility of empirical research in general, our study reinforced the need, in conducting such research, to ensure that

159. N = 143.

160. N = 105. It is not clear what effect the failure to capture all first-year students in the Post-Test process may have had on the data. Those who were missed on the Post-Test were students who did not attend the final Legal Research & Writing class of the spring semester.

161. The sample population in each section for the Post-Test consisted of the following: N(X+Y) = 22; N(X) = 30; N(Y) = 28; N(Control) = 25.

162. Those enrolled in the law school's part-time program were registered for a total of four courses, while those in the full-time program were generally enrolled in six courses.

163. See *supra* note 149 and accompanying text.

the questions asked are appropriate and that the study design is workable. Professor Andrea Curcio has noted that empirical research tends to move in baby steps, and has suggested that an investigator should try to define his research question “as narrowly and precisely as possible.”¹⁶⁴ We found that advice to be cogent. Our experience also affirmed the value of Professor Robin Boyle’s suggestion to conduct a pilot study, if possible, in preparation for a final research project.¹⁶⁵ Through a pilot study we conducted in the year before implementing this research, we discovered two very important realities: first, that the academic intervention we had originally planned to assess was likely insufficient to promote any meaningful change in our students’ learning styles; and second, that the research design we initially intended to use was overly complex.

Finally, we note that the LSI used in this research has been utilized by Kolb and others concurrently with a related instrument called the Adaptive Style Inventory (ASI).¹⁶⁶ The ASI was designed to measure the extent to which learners adapt their learning styles in response to different learning situations,¹⁶⁷ and the instrument is reportedly useful in identifying and addressing subjects’ learning style flexibilities.¹⁶⁸ It is possible that use of the LSI in conjunction with the ASI would yield a more accurate and complete assessment of learning style adjustments.

Despite the limitations of this research, it demonstrates that the law school environment can significantly affect the learning styles of those who engage in it; and while by no means conclusive, it provides some evidence that an experiential approach in the classroom may help enhance the development of law students’ analytical skills. Our hope is that others will expand on this research in other law school settings, with the goal of helping us all further refine and enhance a law school pedagogy that maximizes opportunities for a new generation of students and an increasingly complex profession.

164. See Curcio, *supra* note 41, at 923. Professor Curcio’s article is an excellent reference for anyone interested in designing empirical research in a law school setting.

165. See Robin A. Boyle & Joanne Ingham, *Suggestions on How to Conduct Empirical Research: A Behind-the-Scenes View*, 15 PERSPECTIVES: TEACHING LEGAL RESEARCH & WRITING 176, 177 (2007) (noting that the authors themselves conducted a pilot study during the year before the classroom study described in their article, and suggesting that a pilot “may be very helpful in . . . fine-tuning [a contemplated] study”).

166. See, e.g., Mainemelis, Boyatzis & Kolb, *supra* note 55, at 5.

167. *Id.* at 11.

168. The ASI was developed by Kolb and Boyatzis in 1993. A brief description of the instrument can be found at http://www.haygroup.com/leadershipandtalentondemand/ourproducts/Item_Details.aspx?ItemID=23&type=7&t=2 (last visited Feb. 28, 2012).

