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## Take Note: Teaching Law Students to be Responsible Stewards of Technology

Kristen E. Murray

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## Take Note: Teaching Law Students to be Responsible Stewards of Technology

### Cover Page Footnote

Professor of Law, Temple University, Beasley School of Law. David Thomson and Margaret Hannon provided feedback and encouragement about this project in various stages. I am also grateful to Sarah Hand for her enthusiastic research assistance.

# TAKE NOTE: TEACHING LAW STUDENTS TO BE RESPONSIBLE STEWARDS OF TECHNOLOGY

*Kristen E. Murray*<sup>+</sup>

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The modern lawyer cannot practice without some deployment of technology; practical and ethical obligations have made technological proficiency part of what it means to be practice-ready. These obligations complicate the question of what constitutes best practices in law school.

Today's law schools are filled with students who are digital natives but who do not necessarily leverage technology in maximally efficient ways, and faculty who span multiple generations, with varying amounts of skepticism about modern technology. Students are expected to use technology to read, prepare for class, take notes, and study for and take final exams. Professors might use technology to teach or assess student work, but students are often asked to leave technology out of the classroom because of professor expectations about distraction and notetaking. All of this is happening as we attempt to prepare students to enter a profession that is infused with both technological capabilities and obligations, including the rules of professional conduct. These capabilities and obligations will continue to evolve, grow, and change alongside companion developments in technologies.

It is no wonder that in discussions about technology and law student learning, some mixed messages emerge. In some cases, law faculty have attempted to clarify these mixed messages using research regarding best practices for learning, but even these good faith attempts can leave students feeling somewhat confused.

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<sup>+</sup> Professor of Law, Temple University, Beasley School of Law. David Thomson and Margaret Hannon provided feedback and encouragement about this project in various stages. I am also grateful to Sarah Hand for her enthusiastic research assistance.

In this Article, I revisit a topic I first studied and wrote about ten years ago.<sup>1</sup> Since then, there has been much more research and discussion about the topic of legal technology and some significant changes to the environment in which these discussions occur. My position has only been fortified by these more recent developments, including the quick pivot to remote learning and lawyering that occurred in the spring of 2020 at the start of the COVID-19 pandemic. I remain convinced that banning technology is bad for law student learning.<sup>2</sup> Now, I am sure it is also bad for their professional development. In fact, we should arguably be integrating more technology into the law school curriculum.

This Article asserts that law schools have a duty to help students develop best practices and good habits about technology while they are in law school. This means granting students a certain degree of autonomy over their own learning while also encouraging thoughtful deployment of technology as a matter of their professional development.

Part I of this Article looks at the role technology plays in modern life—in the life of the practicing lawyer and the life of the current law student. Part II looks at the technology-related rules of professional conduct. Part III is focused on how law students use technology in their law studies. Part IV then argues that as a result of the interplay between these concepts, law schools should think expansively about the role technology plays. Law school is the place to develop good norms and practice about technology as part of a practice-ready curriculum.

## I. TECHNOLOGY AND MODERN LIFE

Most practicing lawyers are digital immigrants,<sup>3</sup> and legal practice is often slow to embrace new technologies, but technology is still present in most lawyers' personal and professional lives. Most current law students are digital natives,<sup>4</sup> although they do not necessarily use technology in maximally efficient ways. This section considers the role technology plays in the life of the modern lawyer and the life of the modern law student.

### A. *Technology and the Life of the Modern Lawyer*

Technology is omnipresent in the lives of lawyers, even though they are mostly a group of digital immigrants who were educated in a world absent of modern technologies. Despite these origins, practitioners have had to evolve in order to work in today's modern, technology-driven world. Many practitioners use devices such as smartphones, tablets, and laptops to support their practice, whether these devices are personally-owned or provided to them by their

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1. See Kristen E. Murray, *Let Them Use Laptops: Debunking the Assumptions Underlying the Debate over Laptops in the Classroom*, 36 OKLA. CITY U. L. REV. 185, 229 (2011).

2. See *id.*

3. Marc Prensky, *Digital Natives, Digital Immigrants*, 9 ON THE HORIZON 1, 1–2 (2001).

4. *Id.* at 1.

employers.<sup>5</sup> Technology is used to facilitate mobile practice as well as to enhance traditional aspects of practice.<sup>6</sup>

The American Bar Association conducts annual technology surveys in order to explore how attorneys use technology in practice. According to the 2019 ABA Tech Survey, smartphone usage is ubiquitous, with ninety-eight percent of lawyers reporting that they use them to support their practice.<sup>7</sup> About half of practicing attorneys also have a tablet of some kind available for practice-related work.<sup>8</sup> In 2019, seventy-three percent of attorneys reported using remote access technologies to perform work.<sup>9</sup> According to the ABA, “[l]awyers say they use their laptops most often as their primary remote-work device (44%), followed by smartphones (30%), tablets (13%), and non-work desktop computers (12%).”<sup>10</sup> The majority of devices used to facilitate mobile work are personally-owned devices.<sup>11</sup>

All of these devices allow lawyers to complete traditional practice-related tasks, such as making phone calls, handling emails, calendar functions, and tracking time and expenses. Even texting, especially with clients, is now considered an acceptable business practice.<sup>12</sup> Technology also enables enhanced law practice, such as the ability to research, write, e-file documents, and make courtroom presentations on mobile devices.<sup>13</sup>

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5. See Aaron Street, *TECHREPORT 2017: 2017 Mobile Technology*, ABA (Dec. 1, 2017), [https://www.americanbar.org/groups/law\\_practice/publications/techreport/2017/mobile/](https://www.americanbar.org/groups/law_practice/publications/techreport/2017/mobile/).

6. See *id.*

7. See Gabriella Mihm, *TECHREPORT 2019: 2019 Life and Practice*, ABA (Oct. 20, 2019), [https://www.americanbar.org/groups/departments\\_offices/legal\\_technology\\_resources/TechSurvey/](https://www.americanbar.org/groups/departments_offices/legal_technology_resources/TechSurvey/). Approximately 79% of attorneys report that they are using iPhones. *Id.*

8. Ian Hu, *TECHREPORT 2018: 2018 Practice Management*, ABA (Jan. 1, 2019), [https://www.americanbar.org/groups/law\\_practice/publications/techreport/ABATECHREPORT2018/2018PracticeMgmt/](https://www.americanbar.org/groups/law_practice/publications/techreport/ABATECHREPORT2018/2018PracticeMgmt/). 77% percent of the respondents naming the brand of their tablet use iPads, while 22% use Microsoft Surface products. *Id.*

9. Alexander Paykin, *TECHREPORT 2019: 2019 Practice Management*, ABA (Nov. 6, 2019), [https://www.americanbar.org/groups/law\\_practice/publications/techreport/abatechreport2019/practicemgmt2019/](https://www.americanbar.org/groups/law_practice/publications/techreport/abatechreport2019/practicemgmt2019/).

10. Street, *supra* note 5.

11. *Id.*

12. Heidi Frostestad Kuehl, *Technologically Competent: Ethical Practice for 21st Century Lawyering*, 10 CASE W. RES. J.L. TECH. & INTERNET 1, 2 (2019) (discussing a case in Iowa where attorney was found to have violated ethical rules for failure to keep reasonably informed for lack of response to thirty-five texts and five certified letters); see also David L. Hudson Jr., *Can Lawyers Text Potential Clients?*, ABA J. (Dec. 1, 2017, 1:10 AM), [http://www.abajournal.com/magazine/article/can\\_lawyers\\_text\\_potential\\_clients](http://www.abajournal.com/magazine/article/can_lawyers_text_potential_clients).

13. Technology could also be used to enhance the way law services are provided and could even provide more access to representation; however, a discussion of this type of technology leveraging is outside the scope of this Article. See generally ABA COMMISSION ON THE FUTURE OF LEGAL SERVICES, REPORT ON THE FUTURE OF LEGAL SERVICES IN THE UNITED STATES, 18–31 (2016), [http://www.americanbar.org/content/dam/aba/images/abanews/2016FLSReport\\_FNL\\_WEB.pdf](http://www.americanbar.org/content/dam/aba/images/abanews/2016FLSReport_FNL_WEB.pdf).

Forward-thinking practitioners may also be using technology in expansive, non-traditional ways. This may include artificial intelligence,<sup>14</sup> natural language processing,<sup>15</sup> and predictive analytics.<sup>16</sup> Facility with technology was an asset to practitioners who had to make quick pivots to mobile lawyering during the COVID-19 crisis in the spring of 2020.

To be sure, with the increasing role of technology come companion concerns about confidentiality, billing structures, and the use of social media.<sup>17</sup> However, at this point, the modern lawyer cannot practice effectively without using technology.<sup>18</sup> This is true despite the legal profession's general resistance to technology and innovation and the resulting slow pace at which new technologies are adopted.<sup>19</sup>

### B. *Technology and the Life of the Modern Law Student*

By 2020, almost all law students will be digital natives, though they are not all from the same generational subset; these students are mostly from a combination of the tail end of Generation Y (also known as the millennial

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14. *A Visual Guide to AI*, ROSS, <https://rossintelligence.com/what-is-ai.html> (last visited June 2, 2020); *see, e.g., Under the Hood*, DOROTHY AI, <https://pepper-poodle-4yte.squarespace.com/underthehood> (last visited June 2, 2020).

15. Agnieszka McPeak, *Disruptive Technology and the Ethical Lawyer*, 50 U. TOL. L. REV. 457, 461–63 (2019) (discussing “Lawtech” software that uses natural language processing, including eBrevia, a document review tool).

16. *How Predictive Analytics Is Changing the Legal Industry*, GWINNETT COLL. (Sept. 13, 2018), <http://www.gwinnettcollege.edu/how-predictive-analytics-is-transforming-the-legal-industry/> (last visited June 2, 2020).

17. *See, e.g.,* Andrew Arruda, *An Ethical Obligation to Use Artificial Intelligence? An Examination of the Use of Artificial Intelligence in Law and the Model Rules of Professional Responsibility*, 40 AM. J. TRIAL ADVOC. 443, 457 (2017); Natasha Babazadeh, *Legal Ethics and Cybersecurity: Managing Client Confidentiality in the Digital Age*, 7 J.L. & CYBER WARFARE 85, 85–86 (2018); Lisa McGrath, *How to Avoid Ethical Violations When Using Social Media*, 61 ADVOCATE 30, 30 (2018); David G. Ries, *TECHREPORT 2018: 2018 Cybersecurity*, ABA (Jan. 28, 2019), [https://www.americanbar.org/groups/law\\_practice/publications/techreport/ABATECHREPORT2018/2018Cybersecurity/](https://www.americanbar.org/groups/law_practice/publications/techreport/ABATECHREPORT2018/2018Cybersecurity/).

18. *See, e.g.,* Nelson P. Miller & Derek S. Witte, *Helping Law Firm Luddites Cross the Digital Divide—Arguments for Mastering Law Practice Technology*, 12 SMU SCI. & TECH. L. REV. 113, 114 (2009). Even this article, published eleven years ago, notes that “[t]echnology has infiltrated the lawyer’s practice in nearly every area” and “[a]ttorneys who ignore technology’s dominion do so at their peril.” *Id.*

19. *See, e.g.,* Catherine J. Lanctot, *Becoming a Competent 21st Century Legal Ethics Professor: Everything You Always Wanted to Know About Technology (But Were Afraid to Ask)*, 2015 PROF. LAW. 75, 76 (2015) (“Lawyers historically have been reluctant to embrace new inventions, resisting the newfangled invention of the telephone as undignified, looking skeptically at mechanical devices like typewriters, and even avoiding taking elevators.”); Cliff Gilley, *Why Are Lawyers Slow to Adopt Technology?*, QUORA (Dec. 1, 2015), <https://www.quora.com/Why-are-lawyers-slow-to-adopt-technology>; Mary Juetten, *The Future of Legal Tech: It’s Not As Scary As Lawyers Think*, FORBES (Feb 19, 2015, 10:00 AM), <http://www.forbes.com/sites/maryjuetten/2015/02/19/legal-tech-or-tech-legal/#4dd1998a644d>.

generation) and Generation Z.<sup>20</sup> More than ten years ago, David Thomson noted that to modern students, “technology is not something new or separate, it is like air.”<sup>21</sup>

Technological gadgetry, social media, and the Internet are all intimately familiar to today’s law students. Computers, smartphones, tablets, and other gadgets have been increasingly available and present for all of their lives.<sup>22</sup> These students “have always lived in a world where the personal computer existed.”<sup>23</sup> As of 2018, eighty-eight percent of American teenagers had their own computer or had access to one at home, though that access varied by level of income and level of education among parents.<sup>24</sup> According to a 2018 EDUCAUSE survey, ninety-one percent of undergraduate students had access to a laptop and forty percent had access to some kind of tablet.<sup>25</sup>

Smartphones are similarly ubiquitous. Ninety-five percent of undergraduate students had access to a smartphone in 2018.<sup>26</sup> An increasing number of

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20. The birth years of the Millennial generation are 1981–1996, while Generation Z (sometimes called iGen) is the cohort of people born between the mid-to-late 1990s (approximately 1995) and the end of the aughts (2010–12). MICHAEL DIMOCK, *DEFINING GENERATIONS: WHERE MILLENNIALS END AND GENERATION Z BEGINS*, (Pew Rsch. Ctr. 2019), <https://www.pewresearch.org/fact-tank/2019/01/17/where-millennials-end-and-generation-z-begins/>. Generational generalizations do not necessarily apply to every person in a given generational cohort, and people at the margins can exhibit characteristics of the adjacent generation or may be a hybrid of two categories. *Id.* A detailed investigation of the characteristics of each generation is outside the scope of this Article, which is largely concerned with the average current law student’s relationship to technology. Other scholars have considered these questions to some depth. *See generally* NEIL HOWE & WILLIAM STRAUSS, *MILLENNIALS RISING: THE NEXT GREAT GENERATION* (2000); COREY SEEMILLER & MEGHAN GRACE, *GENERATION Z GOES TO COLLEGE* (2016); WILLIAM STRAUSS & NEIL HOWE, *GENERATIONS: THE HISTORY OF AMERICA’S FUTURE, 1584–2069* (1991); JEAN M. TWENGE, *IGEN: WHY TODAY’S SUPER-CONNECTED KIDS ARE GROWING UP LESS REBELLIOUS, MORE TOLERANT, LESS HAPPY—AND COMPLETELY UNPREPARED FOR ADULTHOOD—AND WHAT THAT MEANS FOR THE REST OF US* (2017); Laura P. Graham, *Generation Z Goes to Law School: Teaching and Reaching Law Students in the Post-Millennial Generation*, 41 U. ARK. LITTLE ROCK L. REV. 29 (2018).

21. DAVID I. C. THOMSON, *LAW SCHOOL 2.0: LEGAL EDUCATION FOR A DIGITAL AGE* 14 (2009).

22. *See, e.g.*, Graham, *supra* note 20, at 49–51.

23. THOMSON, *supra* note 21, at 26. Professor Thomson notes that the first IBM PC debuted in 1981. *Id.*

24. MONICA ANDERSON & JINGJING JIANG, *TEENS, SOCIAL MEDIA & TECHNOLOGY 2018* 7–8 (Pew Rsch. Ctr. 2018), <https://www.pewinternet.org/2018/05/31/teens-social-media-technology-2018>. “Fully Ninety-six percent of teens from households with an annual income of \$75,000 or more per year say they have access to a computer at home, but that share falls to seventy-five percent among those from households earning less than \$30,000 a year.” *Id.* at 8. Ninety-four percent of teens who have a parent with a bachelor’s degree say they have access to a computer whereas only seventy-eight percent of teens whose parents have a high school diploma or less. *Id.*

25. JOSEPH D. GALANEK ET AL., *ECAR STUDY OF UNDERGRADUATE STUDENTS AND INFORMATION TECHNOLOGY, 2018*, 7 (2018), <https://library.educause.edu/resources/2018/10/2018-students-and-technology-research-study>.

26. *Id.*

teenagers and undergraduate students own smartwatches, which, among other tasks, allow students to send and receive messages with a flick of a wrist.<sup>27</sup> Many of today's law students likely have memories of when the iPhone was introduced in 2007, the iPad arrived in 2010, and the popularization of Facebook and the introduction of Twitter in 2006. Young adults continue to be active social media users; Instagram and Snapchat are among the most popular social media platforms for eighteen to twenty-nine-year-olds.<sup>28</sup>

Internet usage has also always been widely available to these students. Thomson has noted that the Internet became available to the American public in the mid-1990s when the oldest millennials were in elementary school.<sup>29</sup> The rate of available Internet access in schools rose significantly over a relatively short period of time—in 1996, second grade students had access at a rate of fourteen percent, a number that jumped to fifty-one percent by 1998 and to ninety-two percent by 2002.<sup>30</sup> By 2018, forty-five percent of teens reported that “they use the Internet ‘almost constantly,’ a figure that has nearly doubled from the twenty-four percent who said this in a 2014–2015 survey.”<sup>31</sup> Another forty-four percent of teens claimed they went online several times a day.<sup>32</sup> Thus, approximately ninety percent of teenagers claim to go online at least multiple times per day.<sup>33</sup>

Technology has been seamlessly integrated into all aspects of these students' lives, including their educations. Both computing technology and, by extension, the Internet have been integrated into many of these students' early educational experiences.<sup>34</sup> As early as 2000, ninety-four percent of teenagers who had Internet access “use[d] the Internet for school-related research.”<sup>35</sup> More recently, seventy percent of teachers said they assigned homework that required use of the Internet<sup>36</sup> and ninety percent of students in grades 9–12 reported that

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27. As of 2018, nearly 20% of undergraduates had access to a smartwatch. *Id.*

28. Andrew Perrin & Monica Anderson, *Share of U.S. Adults Using Social Media, Including Facebook, Is Mostly Unchanged Since 2018*, PEW RES. CTR.: FACT TANK (Apr. 10, 2019), <https://www.pewresearch.org/fact-tank/2019/04/10/share-of-u-s-adults-using-social-media-including-facebook-is-mostly-unchanged-since-2018/>.

29. THOMSON, *supra* note 21, at 26.

30. *Id.* at 27 (citing Mark R. Nelson, *E-Books in Higher Education: Nearing the End of the Era of Hype?*, 43 *EDUCAUSE REV.* 40, 50 (2008)).

31. ANDERSON & JIANG, *supra* note 24, at 8.

32. *Id.*

33. *Id.*

34. See generally Randall S. Davies & Richard E. West, *Technology Integration in Schools*, in *HANDBOOK OF RESEARCH ON EDUCATIONAL COMMUNICATIONS AND TECHNOLOGY* (4th ed. 2014).

35. U.S. DEP'T OF EDUC., *TOWARD A NEW GOLDEN AGE IN AMERICAN EDUCATION: HOW THE INTERNET, THE LAW AND TODAY'S STUDENTS ARE REVOLUTIONIZING EXPECTATIONS* 17 (2004), <https://files.eric.ed.gov/fulltext/ED484046.pdf>.

36. Keith R. Krueger, *Scoping the Digital Equity Problem (or the Homework Gap)*, COSN (Sept. 9, 2015, 12:13 PM), <https://cosn.org/blog/scoping-digital-equity-problem-or-homework-gap>.

they needed to use the Internet to complete homework assignments at least a few times a month.<sup>37</sup>

Today's law students thus have very specific expectations about the role technology will play in their educations. One 2013 study surveyed over 113,000 undergraduates in fourteen countries and found that students expect faculty to use technology in the classroom; however, the same study also found that students need guidance for best practices regarding technology.<sup>38</sup> By 2018, ninety-eight percent of undergraduate students reported using a laptop in more than one course and ninety-four percent of students claimed the laptop was important for their academic success.<sup>39</sup> Smartphones are increasingly being used and deemed by undergraduates to be important to their academic work.<sup>40</sup>

Expectations about technology will continue to evolve as Generation Z students start filling law school seats. It is worth noting some key characteristics of this group that differentiate them from their predecessor generations. First, they use nontraditional materials as part of their education. Few read books for pleasure<sup>41</sup> or research, while as of 2012, fifty-two percent of teenaged Generation Z students used social media for research assignments in school.<sup>42</sup> This generation grew up exposed to many different learning modalities, including smart phones, tablets, online work, and instructional videos.<sup>43</sup> Finally,

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37. *How America's Schools Are Addressing the Homework Gap: Speak Up 2016 Findings*, SPEAK UP, <https://tomorrow.org/speakup/speakup-2016-addressing-homework-gap-september-2017.html> (last visited June 2, 2020). The ubiquity of technology in early education raises issues of equity regarding the availability of computing technology and internet access that are outside the scope of this Paper.

38. EDEN DAHLSTROM ET AL., ECAR STUDY OF UNDERGRADUATE STUDENTS AND INFORMATION TECHNOLOGY, 2013 7, 9, 22 (2013), <https://www.educause.edu/ir/library/pdf/ERS1302/ERS1302.pdf>.

39. GALANEK ET AL., *supra* note 25, at 10.

40. *Id.* Whether a particular category of device is used and/or deemed important varies by demographic. According to the 2018 ECAR Study:

[S]tudents who come from lower-income families, are non-white, and cannot be claimed by their parents as dependents are significantly more likely to see desktop [computers] as important to their academic success than wealthier, white, and dependent students. Additionally, women are significantly less likely than men to see desktop[ computers] as important. Holding all other factors constant, women are significantly *more* likely than men to view laptops as important. Smartphones are significantly more important to non-white, first-generation college students, students whose families have lower incomes, and those with disabilities. Although white students are significantly less likely to think of tablets as important, independent, first-generation, non-white, and disabled students attribute significantly greater levels of importance of tablets to their academic work.

*Id.* at 11.

41. By 2015, only 16% of teens read a book or magazine every day. TWENGE, *supra* note 20, at 60.

42. Kristen Purcell et al., *How Teens Do Research in the Digital World*, PEW RSCH. CTR. (Nov. 1, 2012), <https://www.pewresearch.org/internet/2012/11/01/how-teens-do-research-in-the-digital-world/>.

43. SEEMILLER & GRACE, *supra* note 20, at 181–84.

they crave quick satisfaction when they are searching or browsing for information.<sup>44</sup> Getting and keeping their attention is challenging.<sup>45</sup>

Thus, technology, in all its many forms, is ubiquitous in the lives of modern law students, including their educational lives, and has been for some time.

## II. TECHNOLOGY AND MODERN ETHICAL OBLIGATIONS

As technology has become more of a fixed presence in the everyday lives of lawyers, the legal profession has been making strides to close the gap between its current standards and ongoing technological innovations.<sup>46</sup> In fact, present-day lawyers who are technologically incompetent or unaware may be committing an ethics violation.<sup>47</sup>

ABA Model Rule 1.1 has long required attorneys to provide a certain level of “competent representation” or have the “legal knowledge, skill, thoroughness and preparation reasonably necessary for the representation.”<sup>48</sup> After the ABA Commission on Ethics 20/20 studied technology in law, the ABA House of Delegates amended the Model Rules to require that today’s lawyers adapt to new technology as part of this ethical duty of competent representation.<sup>49</sup> In 2012, the ABA revised the comments to Model Rule 1.1 of the ABA Model Rules of Professional Conduct to recognize explicitly the effect of technological developments on law practice.<sup>50</sup> The new Comment 8 now suggests that staying current in the law and its practice includes staying abreast of “the benefits and risks associated with relevant technology.”<sup>51</sup>

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44. SEEMILLER & GRACE, *supra* note 20, at 174. (“[R]esearch has become less about the process of knowledge acquisition and more about quickly finding the answer needed for an assignment.”).

45. *Id.* at 58, 181.

46. See Mark Rosch, *TECHREPORT 2019: 2019 Technology Training*, ABA (Nov. 27, 2019), [https://www.americanbar.org/groups/law\\_practice/publications/techreport/abatechreport2019/techtraining19/](https://www.americanbar.org/groups/law_practice/publications/techreport/abatechreport2019/techtraining19/).

47. See MODEL RULES OF PRO. CONDUCT r. 1.1 cmt. 8 (AM. BAR ASS’N 2018).

48. MODEL RULES OF PRO. CONDUCT r. 1.1 (AM. BAR ASS’N 2018).

49. ABA, ABA COMM’N ON ETHICS 20/20, INTRODUCTION AND OVERVIEW 8 (2012), [https://www.americanbar.org/content/dam/aba/administrative/ethics\\_2020/20120508\\_ethics\\_20\\_20\\_final\\_hod\\_introduction\\_and\\_overview\\_report.pdf](https://www.americanbar.org/content/dam/aba/administrative/ethics_2020/20120508_ethics_20_20_final_hod_introduction_and_overview_report.pdf).

50. *Id.* MODEL RULES OF PRO. CONDUCT r. 1.1 cmt. 8 (AM. BAR ASS’N 2018). (“To maintain the requisite knowledge and skill, a lawyer should keep abreast of changes in the law and its practice, *including the benefits and risks associated with relevant technology*, engage in continuing study and education and comply with all continuing legal education requirements to which the lawyer is subject.” (emphasis added)). *Id.* The Commission suggested that this duty was implicit in in Rule 1.1, but that it had decided to make the duty explicit to understand the “benefits and risks” of relevant technology. *Id.*

51. *Id.*; compare MODEL RULES OF PRO. CONDUCT r 1.1 cmt 8 (AM. BAR. ASS’N 2011). See also Mary E. Vandenack, *Making Technology a Part of Firm Culture*, 43 LAW PRAC. 76 (2017).

Then, in February 2017, the ABA adopted a revised Model Rule for Minimum Continuing Legal Education.<sup>52</sup> The revised MCLE requirements require continuing education on “safe and effective ways to use technology in law practice”; thus, mere *exposure* to technology is not enough to satisfy the duty of technological competence.<sup>53</sup>

To date, thirty-eight states have updated their ethical rules to include technology as part of the duty of competence.<sup>54</sup> Even lawyers in states that have not yet adopted the comment on technological competence still owe their clients *some* duty of technological competence.<sup>55</sup>

Educators, scholars, and professionals have begun to respond to these changes and obligations. Law schools have started offering courses that specifically teach students about practice-related technologies.<sup>56</sup> Scholars have begun to consider what types of technologies should be included in the concept of technological competence.<sup>57</sup> Technology also has been and will continue to be featured prominently in continuing education programs.<sup>58</sup> The ABA has even created a legal technology resource center to address the multiple ways technology affects law practice.<sup>59</sup>

The duty of technological competence requires several considerations. First and foremost, as noted above, mobile lawyering—especially on personally-

52. ABA *MCLE Model Rule Implementation Resources*, ABA, <https://www.americanbar.org/events-cle/mcle/modelrule/> (last visited June 3, 2020).

53. Ivy Grey, *How to Meet the Duty of Technology Competence*, LAW TECHNOLOGY TODAY, (June 29, 2017) <https://www.lawtechnologytoday.org/2017/06/technology-competence/>.

54. Robert Ambrogi, *Tech Competence*, LAWSITES, <https://www.lawsitesblog.com/tech-competence> (last visited June 3, 2020).

55. Nicole Iannarone, *What Every Attorney Should Know About Technology in Practice*, 26 PIABA B.J. 59, 62 (2019) (“The drafters of the change noted that the comment merely provides additional information explaining the parameters of a duty already part of the competence rule. Thus, all lawyers should assume that technological competence is one of the duties they owe their clients as part of the broader duty of competence.”).

56. See John Mayer, *Syllabi Commons*, TEACHING TECH. TO L. STUDENTS SPECIAL INT. GRP., <https://techforlawstudents.classcaster.net/syllabi-commons/> (last updated Feb. 3, 2020); see also Katrina June Lee, *A Call for Law Schools to Link the Curricular Trends of Legal Tech and Mindfulness*, 48 U. TOLEDO L. REV. 55, 68–73 (2016).

57. See generally Lori D. Johnson, *Navigating Technology Competence in Transactional Practice*, 65 VILL. L. REV. 159 (2020); Stacey Blaustein, Melinda L. McLellan, & James A. Sherer, *Digital Direction for the Analog Attorney—Data Protection, E-Discovery, and the Ethics of Technological Competence in Today’s World of Tomorrow*, 22 RICH. J.L. & TECH. 10 (2016).

58. See, e.g., Jeff Cox, *Why Every State Should Require Technology CLES*, L. TECH. TODAY (May 20, 2019), <https://www.lawtechnologytoday.org/2019/05/why-every-state-should-require-technology-cles/>; Jason Krause, *Tech Training Helps Lawyers Meet Client Expectations*, ABA J. (Aug. 1, 2016, 1:50 AM), [https://www.abajournal.com/magazine/article/legal\\_technology\\_core\\_competencies\\_certification\\_coalition](https://www.abajournal.com/magazine/article/legal_technology_core_competencies_certification_coalition) (describing Legal Technology Core Competencies Certification program).

59. See *Legal Technology Resource Center*, ABA, [http://www.americanbar.org/groups/departments\\_offices/legal\\_technology\\_resources.html](http://www.americanbar.org/groups/departments_offices/legal_technology_resources.html) (last visited June 3, 2020).

owned devices—raises concerns about digital security and privacy.<sup>60</sup> Lawyers must take reasonable care with client's confidential information and files and must be careful when using email to share client-related information.<sup>61</sup>

Second, the duty requires that lawyers develop basic competencies. This includes basic computing and word processing, use and management of practice-related software and apps, Internet mastery, and an understanding of the information storage issues discussed above.<sup>62</sup> Lawyers need not be personally fluent in all practice-related technologies; however, they must be aware of those technologies that have become ubiquitous and should consider associating with other professionals who are competent in those areas.<sup>63</sup>

Finally, lawyers must be able to use technology in ways that enhance and do not interfere with their practice. Practicing lawyers (and today's law students, as discussed *infra* Part III) are susceptible to technology-related distractions, whether in the form of checking messages from one client while attending the deposition of another or flipping through social media while sitting in court.<sup>64</sup> Perhaps more important for young lawyers is that the digital leashes that keep them attached to work at all times are also tools of distraction, even when they are in the office. Katrina Lee has specifically called upon law schools to consider making a curricular connection between legal technology and mindfulness.<sup>65</sup>

Technological incompetence—whether in the form of lack of facility or penchant for distraction—could have other ethical consequences as well, in the form of unreasonable fees.<sup>66</sup> Model Rule 1.5, which prohibits the collection of unreasonable fees,<sup>67</sup> creates an ethical obligation to work in a cost-effective manner. A lawyer who spends billable time manually performing easily-

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60. See Street, *supra* note 5.

61. See Anthony E. Davis & Steven M. Puiszis, *An Update on Lawyers' Duty of Technological Competence: Part 1*, LAW.COM: N.Y. L.J. ONLINE (Mar. 1, 2019, 2:45 PM), [https://www.law.com/newyorklawjournal/2019/03/01/an-update-on-lawyers-duty-of-technological-competence-part-1/#:~:text=Davis%20and%20Steven%20M.,of%20information%20in%20their%20possession;John%20G.%20Loughnane,TECHREPORT%202019:2019%20Cybersecurity,ABA\(Oct.16,2019\),https://www.americanbar.org/groups/law\\_practice/publications/techreport/abatechreport2019/cybersecurity2019/](https://www.law.com/newyorklawjournal/2019/03/01/an-update-on-lawyers-duty-of-technological-competence-part-1/#:~:text=Davis%20and%20Steven%20M.,of%20information%20in%20their%20possession;John%20G.%20Loughnane,TECHREPORT%202019:2019%20Cybersecurity,ABA(Oct.16,2019),https://www.americanbar.org/groups/law_practice/publications/techreport/abatechreport2019/cybersecurity2019/).

62. Hedda Litwin, *The Ethical Duty of Technology Competence: What Does it Mean for You?*, NAAG: NAGTRI J. (Nov. 2017), <https://www.naag.org/publications/nagtri-journal/volume-2-issue-4/the-ethical-duty-of-technology-competence-what-does-it-mean-for-you.php>.

63. *Id.*

64. See Megan Zavieh, *Distracted Lawyering*, ATT'Y AT WORK: ON BALANCE (Oct. 4, 2018), <https://www.attorneyatwork.com/distracted-lawyering/>.

65. See generally Lee, *supra* note 56.

66. See Ivy B. Grey, *Not Competent in Basic Tech? You Could Be Overbilling Your Clients—and Be on Shaky Ethical Ground*, ABA: LEGAL REBELS (May 15, 2017, 8:21 AM), [http://www.abajournal.com/legalrebels/article/tech\\_competence\\_and\\_ethical\\_billing](http://www.abajournal.com/legalrebels/article/tech_competence_and_ethical_billing).

67. MODEL RULES OF PRO. CONDUCT r. 1.5(a) (AM. BAR ASS'N 2019).

automated tasks or otherwise drawing out tasks that could be made more efficient by use of technology, is at risk of running up an unreasonable bill.<sup>68</sup>

Courts have also heard attorney misconduct claims based on computer illiteracy. For example, a 2014 Delaware Court of Chancery case found against an attorney who had claimed computer illiteracy as a defense to a discovery violation.<sup>69</sup> The court held that the amendment to Rule 1.1 includes a duty to either master the necessary technological advancements or hire outside consultants to do the work.<sup>70</sup> This is not necessarily new news—in 2009, the Florida District Court of Appeals noted that “[l]awyers have also become expected to use computer-assisted legal research to ensure that their research is complete and up-to-date.”<sup>71</sup>

So, the role technology plays in modern law practice is both a practical reality and an ethical obligation. Technology is infiltrating all areas of law practice, both in and out of the office. Expectations that law graduates will have technological competence are high and rising.

### III. TECHNOLOGY AND LAW STUDENT LEARNING

Despite technology’s ubiquity in their everyday lives, today’s law students do not necessarily make wise technology-related educational choices.<sup>72</sup> Today’s law students likely have used technology during earlier educational experiences, but their experiences may vary greatly, and students may not have developed technology-related habits that are particularly beneficial.<sup>73</sup> Thus, technology has been present in their lives, but students do not necessarily arrive at law school ready to harness and apply these technological capabilities.

At the same time, these students are being taught by law professors who are often Baby Boomers or Generation Xers who attended law school before technology was so infused in our daily lives and at a time when it was certainly less present in legal education.<sup>74</sup> Thus, they are often suspicious of newer educational technologies and what they have to offer.<sup>75</sup>

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68. See Grey, *supra* note 66.

69. James v. Nat’l Fin. LLC, No. 8931-VCL, 2014 Del. Ch. LEXIS 254, at \*35 (Dec. 5, 2014) (“Professed technological incompetence is not an excuse for discovery misconduct.”).

70. *Id.* at \*36.

71. Hagopian v. Just. Admin. Comm’n, 18 So. 3d 625, 642 (Fla. Dist. Ct. App. 2009).

72. See, e.g., Siva Vaidhyathan, *Generational Myth*, CHRON. HIGHER EDUC. (Sept. 19, 2008), <https://www.chronicle.com/article/Generational-Myth/32491>.

73. THOMSON, *supra* note 21, at 28 (noting that although most current law students are digital natives, they do not always “use the tools well, appropriately, or optimally” when it comes to their own learning); see also Daniel Bates, *Are ‘Digital Natives’ Equipped to Conquer the Legal Landscape?*, 13 LEGAL INFO. MGMT. 172 (2013).

74. See Prensky, *supra* note 3, at 1–3.

75. See, e.g., Matt Bodie, *I Want My Westlaw Classic*, PRAWFSBLAWG (Apr. 16, 2014, 12:09 PM), <https://prawfsblawg.blogs.com/prawfsblawg/2014/04/i-want-my-westlaw-classic.html>.

This raises the question of how law students are actually using technology when they are in law school. This section considers how today's law students are using technology both outside and inside of class.

#### A. *Out-of-Class Technology*

There are two primary ways law students deploy technology outside of class: when preparing for class and when preparing for and taking exams. Students' academic success on law school exams is usually determined by performing well on summative assessments given at the end of the semester, be they examinations or seminar papers.<sup>76</sup> This success is usually achieved by students who take several foundational steps along this path, including both hard and soft inputs: class attendance and preparation, an attitude of seriousness about one's legal education, spending sufficient time on one's studies, and adequate preparation for exams.<sup>77</sup> Use of technology is also one of these inputs, as it is virtually impossible to prepare for class and exams and to perform the final assessments without it.<sup>78</sup>

Class preparation typically involves reading and taking notes on the reading, usually in the form of what are commonly called "case briefs."<sup>79</sup> Formal case briefing is a hallmark of the first year, and though students move into upper-level lecture and seminar courses with less formal case briefing habits, the idea of taking notes on course readings as a way of preparing for class remains. Both large lecture classes and seminar courses rely on student preparation as a foundation for discussion.<sup>80</sup> Most students take computer-generated notes to prepare for class.<sup>81</sup>

Although there has been recent chatter about formative assessment in large lecture classes, most of these classes dispense with grades by the execution of a single final examination, which is graded on a curve.<sup>82</sup> Given that this is how most law schools assess student performance, several norms about preparation for these types of exams have emerged.

First, law schools all but mandate outlining as part of the process of studying for exams. As Professor Grant Gilmore once wrote about law teaching, "We

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76. See, e.g., LORI E. SHAW & VICTORIA L. VANZANDT, *STUDENT LEARNING OUTCOMES AND LAW SCHOOL ASSESSMENT: A PRACTICAL GUIDE TO MEASURING INSTITUTIONAL EFFECTIVENESS* 7 (2015).

77. See, e.g., Jennifer M. Cooper & Regan A. R. Gurung, *Smarter Law Study Habits: An Empirical Analysis of Law Learning Strategies and Relationship with Law GPA*, 62 ST. LOUIS U. L.J. 361, 392–94 (2018).

78. Murray, *supra* note 1, at 198–200.

79. RUTH ANN MCKINNEY, *READING LIKE A LAWYER* 25 (2d ed. 2012).

80. *Id.* ("The format of a traditional [case] brief will give you the bare bones for a class discussion of virtually any case you've read.")

81. See, e.g., Murray, *supra* note 1, at 199 n.75.

82. See, e.g., Daniel Schwarcz & Dion Farganis, *The Impact of Individualized Feedback on Law Student Performance*, 67 J. LEGAL EDUC. 139, 140–45 (2017).

shy off from organizing our material into a coherent whole on the excuse that to do so would be spoon-feeding. At best, we give our students a series of unrelated flashes of brilliance; at worst, nothing.”<sup>83</sup>

Thus, the burden falls to students to take their pre-class notes and briefs and their in-class notes and form them into a coherent course outline, with the goal of processing and understanding the birds’ eye view of the course. To wit, many schools (and law school-adjacent companies) offer advice about how to outline.<sup>84</sup> Law students also tend to seek outlines from past students in the same courses, as an additional input for their own outlines. This process is often facilitated by organizations within law schools themselves.<sup>85</sup> The outline is the ultimate study tool, so much so that the outline itself may often be brought into an open-book exam.

Second, this process often occurs within the context of a study group. Students self-select into small groups to exchange notes and outlines, work through practice exam questions, and generally talk about the law and themes of the course. Law schools encourage this process as well.<sup>86</sup> Some go so far as to say that this means that ultimately, law students have to “teach themselves” how all of this material hangs together.<sup>87</sup>

Third, most students take these examinations, whether in the form of a take-home or in-class exam, on laptops. Some schools require that students purchase a laptop—including ones with particular specifications—before starting their

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83. Grant Gilmore, *Book Reviews: Cases and Materials on the Law of Sales and Sales Financing*, 7 J. LEGAL EDUC. 97, 97 (1954).

84. See, e.g., *Academic Success & Bar Program*, U. SAN DIEGO SCH. L., <https://www.sandiego.edu/law/student-affairs/academic-success/materials/outlining.php> (last visited June 5, 2020); see also Jeremy Byellin, *Five Tips for Studying for Law School Final Exams*, THOMSON REUTERS: LEGAL SOLS. BLOG, (Apr. 24, 2014), <http://blog.legalsolutions.thomsonreuters.com/law-school-1/five-tips-studying-law-school-final-exams/>.

85. See e.g., *Course Outlines*, N.Y.U. SCH. L.: STUDENT BAR ASS’N, <http://www.law.nyu.edu/students/studentbarassociation/courseoutlines> (last visited June 5, 2020) (promoting an online repository for outlines maintained by the NYU Law Student Bar Association); Chris Yeager, *Outlining for Exams*, GEO. U. L. CTR.: THE WRITING CTR. (2015), <https://www.law.georgetown.edu/wpcontent/uploads/2018/07/OutliningforExamsHandoutFinal.2016-1.pdf>. (providing advice on outlining from Georgetown’s law school writing center).

86. See, e.g., Fowler Sch. of Law, *20 Tips for Success in Law School*, CHAP. U.: ACAD. ACHIEVEMENT PROGRAM, <https://www.chapman.edu/law/student-resources/achievement-program/20-tips-success.aspx> (last visited June 5, 2020) (“Study groups can be a valuable learning tool. Talking through material with classmates can increase your understanding and retention of course material. You also can obtain helpful study tips from your peers. If you decide to form a study group, seek out other students who are well-prepared for class and have similar academic goals.”).

87. See, e.g., Alison Monahan, *What No One Tells You Before You Go to Law School: You Actually Have to Teach Yourself “The Law”*, MS. JD (May 15, 2012), <http://ms-jd.org/blog/article/what-no-one-tells-you-you-go-law-school-you-actually-have-teach-yourself-%E2%80%9C-law%E2%80%9D>.

legal studies.<sup>88</sup> Others send more subtle messages, making recommendations about particular computing devices that the school will support generally or in the specific context of exams.<sup>89</sup> Some schools go so far as to recommend particular computers for students to use, because they want the computer hardware to be compatible with, among other things, exam-taking software.<sup>90</sup>

Law professors have noted that typewritten exams are, of course, easier to read and grade.<sup>91</sup> Students benefit from this system also; in the era of handwritten exams, it is possible that those with better handwriting would perform better.<sup>92</sup>

All three of these pursuits utilize technology, and their value is maximized by effective deployment of technological tools. At this point, few students write law school outlines by hand, nor does any law professor recommend that they do so. Technology allows students to merge pre-class and in-class notes into a coherent outline very easily; depending on the tools used, these might cohere even as they are constructed. Study groups can communicate using email or a chat app, sending outlines to each other, or working together on a shared

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88. See, e.g., David Gulbransen, *IT Memo to Incoming Students*, U. CHI. L. SCH., <https://www.law.uchicago.edu/orientation/tech> (last visited June 5, 2020).

89. See, e.g., *Computer Recommendations*, DUKE UNIV. SCH. L. (Aug. 1, 2020), <https://law.duke.edu/actech/incomingstudents/>; *Student Computer Recommendations*, CORNELL L. SCH., <https://www.lawschool.cornell.edu/information-technology/Student-Computer-Recommendations.cfm> (last visited June 5, 2020).

90. See, e.g., *Computer Recommendations, Email and LawWeb Information for Students*, U. VA. SCH. L., <https://www.law.virginia.edu/admissions/computer-recommendations-email-and-lawweb-information-students> (last visited June 5, 2020) (“Given the importance of access to online information, the Law School’s reliance on electronic communications, and the requirement that students take exams on computers, the Law School requires that all entering J.D. and LL.M. students own a notebook computer with a functioning wireless network card. The Law School strongly recommends purchasing one of Cavalier Computers’ school-approved and selected models for law students. The Law School IT Help Desk and University IT departments do not offer extensive customer support for other models.”); *Laptop Requirements*, N.Y.U. L., <https://www.law.nyu.edu/technology/students/requirements> (last visited June 5, 2020) (“All law students, whether in the JD or Graduate Division, enrolled in or registered for any course at New York University School of Law are required to have, for exams and other purposes, a laptop that meets the following requirements. Every student is required to type his or her exams on a laptop or desktop computer; handwriting will not be permitted on exams. In-class exams require the use of a laptop. Take-home exams can be completed with a laptop or desktop computer. . . . Laptops must meet the minimum hardware and software requirements outlined below. Students are responsible for meeting these requirements and keeping their laptop in good working order. Law ITS are not responsible for providing laptops to students during the semester or during the final exam period.”).

91. See, e.g., Kif Augustine-Adams, Suzanne B. Hendrix, and James R. Rasband, *Pen or Printer: Can Students Afford to Handwrite Their Exams?*, 51 J. LEGAL EDUC. 118, 118 (2001) (“As we graded, we dreaded deciphering exams with poor handwriting when we could move so much more rapidly through keyboarded exams.”).

92. Steve Graham, *Want to Improve Children’s Writing? Don’t Neglect Their Handwriting*, AM. EDUCATOR, Winter 2009–2010, at 20–21, <http://www.aft.org/sites/default/files/periodicals/graham.pdf>.

document through a collaborative platform like Google Docs. And though some students might still take exams by hand because of personal preference (where available) or reasonable accommodation (as required), the large majority of law students submit typewritten exams at the end of the semester.

Thus, good use of technology is a necessity for proper preparation for both class and for law school exams.

### *B. In-Class Technology*

Broadly speaking, many law school classrooms share certain characteristics. Most law faculty come from a specific subset of elite law schools and tend to teach the way they were taught.<sup>93</sup> In large “lecture” classes, the Socratic method has been the guiding principle of instruction since the 1870s.<sup>94</sup> Much has been written about the functioning of the Socratic method and its pros and cons.<sup>95</sup> Law professors often employ variations on the Socratic system<sup>96</sup> but the core principles of the method remain intact in large lecture classes.<sup>97</sup> Students are expected to come to class prepared and to take notes during class.<sup>98</sup> In contrast, law school seminars have more variations in both the method of instruction and the assessments and/or deliverables.<sup>99</sup>

Modern technology arrived in law school classrooms around the late 1990s, as law schools began modifying classrooms to enable teaching with technology and law students began bringing personal computers with them to campus,

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93. Jennifer Jolly-Ryan, *Bridging the Law School Learning Gap Through Universal Design*, 28 *TOURO L. REV.* 1393, 1398–99 (2012); see also Olympia Duhart, *The ‘F’ Word: The Top Five Complaints (and Solutions) About Formative Assessment*, 67 *J. LEGAL EDUC.* 531, 543 (2018) (“[L]aw professors generally approach teaching influenced by the thousands of hours spent as students.”); Michael Hunter Schwartz, *Teaching Law by Design: How Learning Theory and Instructional Design Can Inform and Reform Law Teaching*, 38 *SAN DIEGO L. REV.* 347, 365 (2001) (“[L]aw professors are likely to use the methodologies by which they learned law.”).

94. ROBERT STEVENS, *LAW SCHOOL: LEGAL EDUCATION IN AMERICA FROM THE 1850S TO THE 1980S* 35, 52–3 (1987); John O. Sonsteng et al., *A Legal Education Renaissance: A Practical Approach for the Twenty-First Century*, 34 *WM. MITCHELL L. REV.* 303, 321–27 (2007) (discussing the history of American legal education).

95. See, e.g., Christie A. Linskens Christie, *What Critiques Have Been Made of the Socratic Method in Legal Education?*, 12 *EUR. J.L. REFORM* 340, 343–50 (2010).

96. See HOWARD E. KATZ & KEVIN FRANCIS O’NEILL, *STRATEGIES AND TECHNIQUES OF LAW SCHOOL TEACHING: A PRIMER FOR NEW (AND NOT SO NEW) PROFESSORS* 35–38 (2009) (discussing the advantages and disadvantages of calling on students at random versus assigning an “expert panel” in each class).

97. *Id.* at 48 (advocating that “any strict Socratic interlude should be followed by a direct summation of the key points that the professor was trying to convey”).

98. See *supra* notes 77–81 and accompanying text.

99. Because of these variations, seminar courses are less relevant to the discussion of student use of technology and the conclusions set forth in this Article do not necessarily apply in that context.

including into their classrooms.<sup>100</sup> The arrival was not universally greeted by warm welcomes. In the years since, educators have approached learning-related technologies as an opportunity to be leveraged,<sup>101</sup> a nuisance to be addressed,<sup>102</sup> and a problem to be banned.<sup>103</sup>

Learning-related technologies fall into two distinct categories, which I call “professor-driven technologies” and “student-driven technologies.” “Professor-driven technologies” include any technology used by the professor to transmit information. “Student-driven technologies” are those that the students bring into the classroom to facilitate learning.

Professor-driven technologies include anything that the professor uses in the classroom, including presentation software, clickers and other in-class polling, technology-supported simulations, and video content.<sup>104</sup> There has been much debate about the “right” amount of professor-driven technology to bring into the

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100. See Paul Caron & Rafael Gely, *Taking Back the Law School Classroom: Using Technology to Foster Active Student Learning*, 54 J. LEGAL EDUC. 551, 555–56 (2004); Stephen M. Johnson, *www.lawschool.edu: Legal Education in the Digital Age*, 2000 WIS. L. REV. 85, 89 (2000) (“The most visible and prolific integration of technology into legal education has been in the area of computer-assisted legal research (CALR).”); Rogelio Lasso, *From the Paper Chase to the Digital Chase: Technology and the Challenge of Teaching 21st Century Law Students*, 43 SANTA CLARA L. REV. 1, 20 (2002) (noting “almost all entering law students today own a computer and are computer literate”). See generally Prensky, *supra* note 3.

101. See, e.g., Klint W. Alexander, *The Future of Legal Education in America: Rethinking How Best to Prepare a Lawyer This Century*, 41 WYO. LAW. 22, 22–24 (2018); Carrie W. Teitcher, *Rebooting the Approach to Teaching Research: Embracing the Computer Age*, 99 LAW LIBR. J. 555, 556–57 (2007); Nicole Black, *Today’s Tech: How A Law School Professor Uses Technology In Her Classroom*, ABOVE THE L. (Dec. 18, 2014, 11:20 AM), <https://abovethelaw.com/2014/12/todays-tech-how-a-law-school-professor-uses-technology-in-her-classroom/>; John Schwartz, *This Is Law School?*, N.Y. TIMES (Aug. 1, 2014), <https://www.nytimes.com/2014/08/03/education/edlife/socrates-takes-a-back-seat-to-business-and-tech.html>.

102. See, e.g., Robin A. Boyle, *Should Laptops Be Banned? Providing a Robust Classroom Learning Experience within Limits*, 20 PERSPECTIVES 8 (2011); Jana R. McCreary, *The Laptop-Free Zone*, 43 VAL. U. L. REV. 989, 991, 1041 (2009).

103. See, e.g., Andrew Rothman, *A Case Against Higher Tech in the Law School Classroom*, 40 RUTGERS COMPUT. & TECH. L.J. 147 (2014); Ian Ayres, *Lectures vs. Laptops*, N.Y. TIMES (Mar. 20, 2001), <https://www.nytimes.com/2001/03/20/opinion/lectures-vs-laptops.html?searchResultPosition=1>.

104. See generally Karen Barton et al., *Authentic Fictions; Simulation, Professionalism, and Legal Learning*, 14 CLINICAL L. REV. 143 (2007); Paul Bergman, *Teaching Evidence the “Reel” Way*, 21 QLR 973 (2003); Angela Caputo, *Four Pointers to Effective Use of Powerpoint in Teaching*, 10 PERSPECTIVES 132 (2002); Fred Galves, *Will Video Kill the Radio Star? Visual Learning and the Use of Display Technology in the Law School Classroom*, 2004 ILL. J.L. TECH. & POL’Y 195 (2004); Dwight Golann, *Using Video to Teach Negotiation and Mediation*, 13 DISP. RESOL. MAG. 8 (2007); Stephen M. Johnson, *Teaching for Tomorrow: Utilizing Technology to Implement the Reforms of MacCrate, Carnegie, and Best Practices*, 92 NEB. L. REV. 46 (2013); Michele Pistone, *Law Schools and Technology: Where We Are and Where We Are Heading*, 64 J. LEGAL EDUC. 586 (2015); *Polling Systems: iClickers vs Poll Everywhere*, HARV. L. SCH., <https://hls.harvard.edu/dept/tlc/tool-catalog/polling/> (last visited June 5, 2020).

law school classroom.<sup>105</sup> Early on, professor-driven technologies were viewed as a promising opportunity for innovation in law teaching. For example, in 2004, Paul Caron and Rafael Gely wrote about harnessing professor-driven technologies in order to increase active learning in law school classrooms.<sup>106</sup> Other law faculty have been more skeptical of professor-driven technologies; this hesitation usually relates to an individual professor's views on whether a teaching method needs to be updated at all.<sup>107</sup> Even now, when most, if not all, law school classrooms are equipped for high-tech teaching, and law school classrooms are populated with a great deal of student-driven technology, the debate about professor-driven technologies continues. Today, professors continue to experiment with professor-driven technology to varying degrees; some remain unready to embrace classroom technology, even when they acknowledge its potential utility.<sup>108</sup>

Meanwhile, student-driven technologies also bring a great deal of potential to the classroom, mostly in an individualized way. Much ink has been spilled about what student-driven technologies should be *permitted* in the law school classroom,<sup>109</sup> but there has been little discussion of what student-driven technologies should be *embraced* in the classroom.

Students of all ages use in-class technologies for taking and recording class notes.<sup>110</sup> These technologies can include pen/pencil and paper, audio recording devices, tablets, or laptop computers.

The student-driven technology that has gotten the most attention in the law school environment has been laptop computers. Whether students should be allowed to use laptops in class has been a hotly-debated topic since the technology itself became available. In fact, the issue “has led to more debate

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105. See, e.g., Diana R. Donohoe, *An Autobiography of a Digital Idea: From Waging War Against Laptops to Engaging Students with Laptops*, 59 J. LEGAL EDUC. 485, 486 (2010) (“Because our students today do not think or learn the way we did when we were students, it makes no sense to continue to teach them using the same outdated techniques. Instead, we must modify our pedagogy to meet their changing needs.”); Jolly-Ryan, *supra* note 93, at 1408–09 (“Effective teaching involves the use of technology to benefit all of today’s law students.”); Lasso, *supra* note 100, at 3–4.

106. See generally Caron & Gely, *supra* note 100.

107. See, e.g., Pistone, *supra* note 104, at 592.

108. See, e.g., Mark Tushnet & Louis Michael Seidman, *On Being Old Codgers: A Conversation About a Half Century in Legal Education* 38 (Harv. Pub. L. Working Paper No. 19-18, 2019) (“I know cognitively that there are ways of using technology in a classroom that would improve the classes, but it’s just too hard for me to learn how to do it at this point in my career. If I had another ten years of teaching I might try to do some of that stuff but it’s just not worth it.”).

109. See, e.g., Simon Canick, *Infusing Technology Skills into the Law School Curriculum*, 42 CAP. U.L. REV. 663, 673–81 (2014).

110. See generally R.A. Gurung, *How Do Students Really Study (and Does it Really Matter)?* 32 TEACHING PSYCH. 238 (2005); Kayla Morehead et al., *Note-Taking Habits of 21st Century College Students: Implications for Student Learning, Memory, and Achievement*, 27 MEMORY 807 (2019); Robert A. Palmatier & J. Michael Bennett, *Notetaking Habits of College Students*, 18 J. READING 215 (1974).

among law professors than any other technology issue in recent memory.”<sup>111</sup> Since the early 2000s, when laptops first became fixtures in law school classrooms, several studies on the topic have been conducted, mostly by law professors teaching large lecture courses.<sup>112</sup> Most of these studies concluded that laptops in law school classrooms could be at best tolerated, with accommodations; several professors continue to ban the use of laptops in class altogether.<sup>113</sup>

The standard for banning technology should be high already, given the costs of laptop bans. For example, taking away the autonomy to decide how to take notes can be harmful, especially to students with disabilities.<sup>114</sup> Also, most of today’s students are not going to be very proficient at taking handwritten notes. Instruction in handwriting is almost nonexistent in elementary education; it has been displaced by training in keyboarding.<sup>115</sup> There are also practical considerations that counsel against handwritten notes. Handwritten notes can be ruined or lost.<sup>116</sup> They cannot be searched or reorganized without great effort.

Law students also bristle at the paternalism baked into laptop bans. A recent Reddit thread in r/LawSchool, “for current and former Law School Redditors,” included a “rant” about in-class laptop bans.<sup>117</sup> The responses to the thread

111. James B. Levy, *Teaching the Digital Caveman: Rethinking the Use of Classroom Technology in Law School*, 19 CHAP. L. REV. 241, 280 (2016).

112. See generally Boyle, *supra* note 102, at 8; Eric A. DeGroff, *The Dynamics of the Contemporary Law School Classroom: Looking at Laptops Through a Learning Style Lens*, 39 DAYTON L. REV. 201 (2014); McCreary, *supra* note 102, at 997; Murray, *supra* note 1, at 229; Jeff Sovern, *Law Student Laptop Use During Class for Non-Class Purposes: Temptation v. Incentives*, 51 U. LOUISVILLE L. REV. 483 (2013); Kevin Yamamoto, *Banning Laptops in the Classroom: Is it Worth the Hassles?*, 57 J. LEGAL EDUC. 477, 485–86 (2007).

113. Compare McCreary, *supra* note 102, at 989 (banning laptops from the first few rows of the classroom to limit distractions), with Yamamoto, *supra* note 112, at 514 (noting that while not a perfect solution, he plans to continue the laptop ban).

114. See, e.g., Recent Grad, Comment to *The Rise and Fall of Laptops in the Classroom*, PRAWFSBLAWG (Jul. 25, 2019, 2:12:25 PM), <https://prawnsblawg.blogspot.com/2019/07/the-rise-and-fall-of-laptops-in-the-classroom.html#comments>.

As someone who had to get an accommodation to use a laptop for note taking due to a disability, I urge you to reconsider your ban. Being the only person in the room with a laptop made me the target of catty remarks about being “special” as well as unwanted queries about my disability and outright charges that I was gaming the system. Even at the best of times, it was a reminder that I was different and my professor considered me less than ideal because of my disability. The legal profession is already a tough place for people with disabilities—please consider changing your practice to avoid being part of that problem.

*Id.*

115. E.g., Jackie Davis, *What Happened to Handwriting Education? In 45 States It Is Not Required*, TODAY’S MOD. EDUCATOR (Nov. 13, 2018), <https://todaysmodereducator.com/2018/11/13/what-happened-to-handwriting-education-in-45-states-it-is-not-required/#.XtqcGJ5JGEs>.

116. Electronic notes can also be lost, of course, but there are safeguards one can use to make this occurrence less likely, such as utilizing cloud storage or an external hard drive.

117. VisitingFromNowhere, *Laptop Ban Rant: “Research Shows that Handwritten Notes Are More Effective”*, REDDIT: R/LAWSCHOOL (Jan. 21, 2020, 8:55:44 AM),

included calls for law professors to treat law students like adults and let them choose their own method of notetaking<sup>118</sup> as well as concern for students with disability-related accommodations who are effectively outed by laptop bans.<sup>119</sup>

Laptop bans are generally based on a belief that laptops are tools of distraction or transcription (or both).<sup>120</sup> I should note that these objections are, on some level, inconsistent with each other; if a student is not paying attention, he cannot be recording a verbatim transcript of the lecture and vice versa.

I argue *infra*, in Part IV, that these bans also run afoul of a law school's duty to teach students to be responsible stewards of technology. However, this section concludes with a description of the commonly-held beliefs that lead to law school laptop bans.

### 1. *Distraction*

In-class use of any student-driven technology necessarily involves potential distraction, because almost every device either features additional functionality other than that being used for class-related purposes or is capable of connecting to the Internet, or both.<sup>121</sup> The actual distraction manifests in several different

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[https://www.reddit.com/r/LawSchool/comments/eruzzi/laptop\\_ban\\_rant\\_research\\_shows\\_that\\_handwritten/](https://www.reddit.com/r/LawSchool/comments/eruzzi/laptop_ban_rant_research_shows_that_handwritten/). The post was 95% upvoted and garnered 146 comments:

Oh, really, professor? Is that what research shows? What else does it show? Is there a single study that suggests that withholding feedback and basing grades on a single three-hour exam improves student learning outcomes? Is there any research whatsoever that suggests that the casebook method is an effective pedagogical approach? No? Why is this the only time that you've decided to consult research into instructional methods? Seriously—I've never met a group of educators who are less concerned with relevant research until it suits their personal preferences.

*Id.*

118. Tuti1006, Comment to Laptop Ban Rant: "Research Shows that Handwritten Notes Are More Effective", REDDIT (Jan. 21, 2020, 10:19:01 AM) [https://www.reddit.com/r/LawSchool/comments/eruzzi/laptop\\_ban\\_rant\\_research\\_shows\\_that\\_handwritten/](https://www.reddit.com/r/LawSchool/comments/eruzzi/laptop_ban_rant_research_shows_that_handwritten/) ("[W]e're grown-ups and can choose how we do something as innocuous as take notes.").

119. Madd-eye1, Comment to Laptop Ban Rant: "Research Shows that Handwritten Notes Are More Effective", REDDIT (Jan. 21, 2020, 12:11:59 AM) [https://www.reddit.com/r/LawSchool/comments/eruzzi/laptop\\_ban\\_rant\\_research\\_shows\\_that\\_handwritten/](https://www.reddit.com/r/LawSchool/comments/eruzzi/laptop_ban_rant_research_shows_that_handwritten/) ("And all these profs who will be like 'I'll give accommodations to those who need them!' Like . . . thank you for forcing non-visibly disabled people to out themselves?").

120. Jodi S. Cohen, *E-slacking: It's Laptop over Lecture*, CHI. TRIB. (July 18, 2006), <https://www.chicagotribune.com/news/ct-xpm-2006-07-18-0607180081-story.html> ("The problem, professors say, is that Internet use can be distracting[,] not just for the user, but also for anyone sitting near that student."); Dan Rockmore, *The Case for Banning Laptops in the Classroom*, NEW YORKER: ANNALS TECH. (June 6, 2014), <https://www.newyorker.com/tech/annals-of-technology/the-case-for-banning-laptops-in-the-classroom> ("The act of typing effectively turns the note-taker into a transcription zombie, while the imperfect recordings of the pencil-pusher reflect and excite a process of integration, creating more textured and effective modes of recall.").

121. The Derek Bok Ctr. for Teaching and Learning, *Technology and Student Distraction*, HARV. U., <https://bokcenter.harvard.edu/technology-and-student-distraction> (last visited June 5, 2020).

ways: distraction to the user, distraction to the user's neighbors, and distraction to the overall class.<sup>122</sup>

The greatest potential for distraction is to the student user. The standard laptop or other electronic notetaking device, such as a tablet, also comes equipped with Internet access and applications that allow a connected student to be pulled away from the lecture and into a vast world of social media, games, chat programs, and other potential distractors.

Of course, smartphones, and now smartwatches, also offer the same potential for distraction. For example, a student wearing an Apple Watch during a lecture might receive any number of notifications, signaled by a buzz on the wrist, such as an email or text message, an emergency weather alert, a prompt to stand up to avoid stagnancy, a suggestion that she meditate, or a reminder for an event later in the day.<sup>123</sup>

In-class technologies may also distract classmates seated nearby. This distraction is generally the case with more brazen non-class use of these devices, such as students who are online shopping or watching a movie during a lecture.<sup>124</sup> Again, devices other than laptops, smartphones, and smartwatches (depending on how they are positioned relative to other classmates) can be similarly distracting. Here, some low-level technological solutions such as muting notifications, using a screen blocker, or designating a laptop-free zone can mitigate the distractions.

Finally, there is the notion that in a classroom filled with distracted students, discussions are less robust and the overall quantity and quality of classroom discussion has decreased.<sup>125</sup> This evidence is mostly anecdotal, and there may be other explanations for classroom discussions changing over time; it could just be that classroom participation has evolved.<sup>126</sup> For example, in today's world students have more tools to look up something themselves (whether in or out of class); they may also have been educated in ways that have altered their views of what classroom discussion should look like.

That distractions abound is not merely a phenomenon in the law school classroom; distractions are a fact of the modern world. Today's students are both used to this type of distraction and inexperienced at managing it. Some say that today's learners are better at multitasking than predecessor generations, while

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122. *Id.*

123. *See, e.g.,* Zach Miners, *5 Things the Apple Watch Can Do, and 5 Things It Can't*, PC WORLD (Sept. 10, 2014, 5:44 AM), <https://www.pcmag.com/article/2605140/5-things-the-apple-watch-can-and-cant-do.html>; *Apple Watch Series 3*, APPLE, <https://www.apple.com/apple-watch-series-3/> (last visited June 5, 2020).

124. *See* The Derek Bok Ctr. for Teaching and Learning, *supra* note 121.

125. Murray, *supra* note 1, at 190–92 (summarizing arguments professors make regarding how laptops affect classroom discussion).

126. *See id.* (noting various factors that affect classroom dynamics).

some say that multitasking is just another way of saying that you are paying less attention; both of these things can be true.<sup>127</sup>

## 2. *Notetaking*

There is no question that notetaking improves student learning,<sup>128</sup> and generally speaking the more notes students take, the more information they tend to remember later.<sup>129</sup> Professors often ban laptops because they cause students to take “bad” class notes; that is, students use their laptops to record a transcript of the class discussion.<sup>130</sup>

Classroom notes fall into two loose categories: generative or non-generative.<sup>131</sup> Generative notetaking includes summarizing, copying, paraphrasing, or concept-mapping.<sup>132</sup> Non-generative notetaking is also known as verbatim transcription—a task which most law professors ascribe to their students, based mostly on the fact that the use of a laptop enables this type of notetaking more than handwriting does.<sup>133</sup>

The mode used to take notes does not necessarily correlate to a particular type of notetaking. Electronic notes can be generative or non-generative; verbatim notes may be easier to take using a laptop or other electronic device, but it is not impossible to take verbatim (or close to verbatim) notes by hand. For the most part, law professors who ban laptops assume that students are using them to take non-generative notes and that non-generative notes are inferior to generative notes.<sup>134</sup>

The latter assumption gained a firmer foothold after a “high-profile” 2014 study purported to establish the superiority of handwritten notetaking.<sup>135</sup> The

127. Compare Shalini Jandial George, *Teaching the Smartphone Generation: How Cognitive Science Can Improve Learning in Law School*, 66 ME. L. REV. 163, 179 (2013) (noting that multitasking interferes with the ability to process information accurately “when the task switches involved intellectually demanding work like reading, reasoning, and problem solving”), with Deep Patel, *8 Ways Generation Z Will Differ from Millennials in the Workplace*, FORBES (Sept. 21, 2017, 11:52 AM), <https://www.forbes.com/sites/deepatpatel/2017/09/21/8-ways-generation-z-will-differ-from-millennials-in-the-workplace/#4330e1ea76e5> (“Switching between different tasks and paying simultaneous attention to a wide range of stimuli comes naturally to them.”).

128. Kenneth A. Kiewra, *How Classroom Teachers Can Help Students Learn and Teach Them How to Learn*, 41 THEORY INTO PRAC. 71, 72 (2002).

129. *Id.*; Pauline A. Nye et al., *Student Note-Taking Related to University Examination Performance*, 13 HIGHER EDUC. 85, 94 (1984).

130. See, e.g., Yamamoto, *supra* note 112, at 490–91.

131. See Kenneth A. Kiewra et al., *Note-Taking Functions and Techniques*, 83 J. EDUC. PSYCH. 240, 240 (1991).

132. See *id.* at 240–41.

133. See *id.* at 241; Murray, *supra* note 1, at 201.

134. See Murray, *supra* note 1, at 189–90. This data was captured in 2009; thus, it may have changed over time.

135. Pam A. Mueller & Daniel M. Oppenheimer, *The Pen is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking*, 25 PSYCH. SCI. 1159, 1165–66 (2014); see also Steven Eisenstat, *A Game Changer: Assessing the Impact of the Princeton/UCLA Laptop Study on*

researchers—two educational psychologists—used three different studies to test how notetaking techniques might affect memory and comprehension; the studies were focused on notetaking alone and did not account for distraction.<sup>136</sup>

I admit that when I read this research when it was first published, I was immediately skeptical that its conclusions could be usefully extended to the law school context. This is because whether a particular type of notetaking is better for a particular task is related to the assessment mechanism associated with the notes being taken.<sup>137</sup> There are two hypotheses attached to the concept of in-class notetaking. The “encoding hypothesis” posits that students process information in a way that enables improved learning and retention.<sup>138</sup> The “external-storage hypothesis” is based on the notion that the ability to review material—even notes taken by someone else—is beneficial.<sup>139</sup>

These two concepts play out in a unique fashion in law school notetaking because of the role technology plays in law school class preparation and exam preparation and performance.<sup>140</sup> Law students are almost never assessed without returning to their reading and in-class notes to create an outline and review the materials before the examination.<sup>141</sup> In fact, in many law school exams, the

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*the Debate of Whether to Ban Law Student Use of Laptops During Class*, 92 U. DET. MERCY L. REV. 83, 88 (2015); Susan Dynarski, *Laptops Are Great. But Not During a Lecture or a Meeting*, N.Y. TIMES (Nov. 22, 2017), <https://www.nytimes.com/2017/11/22/business/laptops-not-during-lecture-or-meeting.html>; Howard Wasserman, *The Rise and Fall of Laptops in the Classroom*, PRAWFSBLAWG (July 23, 2019, 8:53 PM), <https://prawfsblawg.blogs.com/prawfsblawg/2019/07/the-rise-and-fall-of-laptops-in-the-classroom.html> (setting forth a timeline of the “rise and fall” of laptops that includes reference to the 2014 Mueller and Oppenheimer study but does not include a full roster of notetaking research).

136. Mueller & Oppenheimer, *supra* note 135, at 1160–66. In the first of the three experiments, students took an assessment thirty minutes after viewing and taking notes on one of five TED talks. *Id.* at 1160. The students took notes using their typical notetaking strategy on either a laptop or a notebook; both groups tested equally well on factual-recall questions, but the longhand group scored significantly better on conceptual-application questions. *Id.* at 1160–61. The second study replicated the setup of the first, except the group of students taking notes on laptops was asked specifically *not* to take verbatim notes (based on the hypothesis that the detrimental effect of the laptop use was based on verbatim transcription of the lecture). *Id.* at 1162. The intervention had an ambiguous effect on testing outcomes. *Id.* at 1164. The third experiment gave the student notetakers the opportunity to study their notes before the assessment. *Id.* at 1164. These students recorded notes on a lecture using either a laptop or longhand notes; they were further split when they returned a week later and half of each group was given ten minutes to study their notes before being tested. *Id.* at 1164. Here, the students who took longhand notes and were given the ability to study them performed better than any other group. *Id.* 1165. Among participants who were unable to study, there was no difference between laptop notes and longhand notetaking. *Id.* at 1166.

137. See The Learning Ctr., *Effective Note-Taking in Class*, U.N.C., <https://learningcenter.unc.edu/tips-and-tools/effective-note-taking-in-class/> (last visited June 6, 2020).

138. Mueller & Oppenheimer, *supra* note 135, at 1159.

139. *Id.*

140. See *supra* Part III.A.

141. See, e.g., Duhart, *supra* note 93, at 532–33.

students can use notes and outlines *during* the exam.<sup>142</sup> In the Mueller and Oppenheimer study, the assessments were administered in two of the experiments immediately, and in one of the experiments a week later, following a ten-minute window to review notes.<sup>143</sup> None of these situations mirrors the typical summative assessment given in law school.

Furthermore, the 2014 Mueller and Oppenheimer study is only one of multiple studies that have attempted to determine whether, irrespective of distraction, certain kinds of notetaking lead to better learning where “learning” is measured by higher scores on an assessment.<sup>144</sup> In 2013, three other educational psychologists studied the effects of laptops on student notetaking and came to somewhat opposite conclusions.<sup>145</sup> For example, in one of their experiments, the participants who used a computer took more notes but also recalled more of the lecture than the students who took notes by hand.<sup>146</sup> In comparison, another set of researchers concluded that taking notes on computers does not have a statistically meaningful impact on student performance.<sup>147</sup>

Furthermore, and perhaps most importantly, following a 2019 attempt to replicate and expand the Mueller and Oppenheimer study, a second group of researchers was unable to replicate the results and reached slightly different overall conclusions.<sup>148</sup> These researchers determined that “conclusions about which method [of notetaking] (if any) is superior for improving the functions of note-taking are premature for two reasons.”<sup>149</sup> First, not all studies were able to

142. See, e.g., Vikas Bajaj, *Open Book vs. Closed Book: Succeeding on Law School Exams*, ABA: BEFORE THE BAR (Apr. 26, 2018), <https://abaforlawstudents.com/2018/04/26/open-book-vs-closed-book-law-school-exams/>; Lee Burgess, *Tips for Studying for an Open Book Law School Exam*, LAW SCH. TOOLBOX (Nov. 7, 2013), <https://lawschooltoolbox.com/tips-for-studying-for-an-open-book-exam/>.

143. Mueller & Oppenheimer, *supra* note 135, at 1160, 1162, 1164.

144. See generally Mueller & Oppenheimer *supra* note 135.

145. Dung C. Bui, Joel Myerson & Sandra Hale, *Note-Taking with Computers: Exploring Alternative Strategies for Improved Recall*, 105 J. EDUC. PSYCH. 299, 299 (2013). The study had three aims. *Id.* at 300. The first was to compare longhand notes with notes taken using a laptop with respect to test performance. *Id.* The second was to compare “organized notes” (those that have been filtered through a processing framework) with verbatim notes. *Id.* The third was to determine whether one’s working memory plays a role in determining the benefits of one notetaking strategy over another. *Id.* at 300. The study included three different experiments using undergraduate students. See *id.* at 300–07.

146. *Id.* at 300–02. In this experiment, students listened to an eleven-minute lecture and were asked to take notes using either a pen and notebook or a computer. *Id.* at 301. Some students were asked to organize their notes, while others were told to record as much of the lecture as possible in their notes. *Id.* The students who were told to take verbatim notes by computer had the best performance on both tests, including both recall of main ideas and important details. *Id.* at 302.

147. Benjamin Artz et al., *Taking Notes in the Digital Age: Evidence from Classroom Random Control Trials*, 51 J. ECON. EDUC. 103, 108 (2020).

148. Kayla Morehead et al., *How Much Mightier Is the Pen than the Keyboard for Note-Taking? A Replication and Extension of Mueller and Oppenheimer (2014)*, 31 EDUC. PSYCH. REV. 753, 772–74 (2019).

149. *Id.* at 755.

demonstrate that longhand notes are superior, even for the encoding function of notetaking.<sup>150</sup> Second, the effects of the Muller and Oppenheimer study had yet to be replicated.<sup>151</sup>

This second set of researchers attempted to replicate the Muller and Oppenheimer studies and also expand the experiments in a few ways that are relevant to law school notetaking.<sup>152</sup> Most notably, they attempted to evaluate the effects of notetaking based on a delayed test of lecture content (in contrast with Muller and Oppenheimer's immediate test).<sup>153</sup> They concluded that students who took notes by hand scored better on factual test questions but not on conceptual ones.<sup>154</sup> They also concluded that advantages of taking notes by hand diminish over time; handwritten notes might be useful for encoding notes but not as much for the storage function of notetaking.<sup>155</sup>

The encoding function might be useful for some law students for real-time understanding. However, the storage function is what is critical for law school exam taking, which is largely conceptual and usually summative. Time is plentiful in most law school courses with a terminal exam because most law school assessments rely on the ability to revisit and, in most cases, create a whole new set of notes to be used on the final exam.<sup>156</sup> Even students who handwrite their notes ultimately create an outline as a study or exam guide. Different students may have different preferences about this process.<sup>157</sup> For example, some students may find the task of typing out handwritten notes to be a useful step in processing information, while others find it to be a chore.<sup>158</sup> Students with electronic notes may benefit from their searchability; students with

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150. *Id.*; see also Bui, Myerson & Hale, *supra* note 145, at 307 (finding statistically significant difference for laptop notetakers in a similar experiment); Linlin Luo et al., *Laptop Versus Longhand Note Taking: Effects on Lecture Notes and Achievement*, 46 INSTRUCTIONAL SCI. 947, 958–59 (2018) (finding laptop test-takers scored higher on a test following a lecture on educational measurement, though the effect was not significant).

151. Morehead et al., *supra* note 148, at 755.

152. *Id.* at 755–56. First, in addition to laptops and handwriting, they looked at notes taken on eWriters, which are electronic devices that allow students to simulate handwritten notes with a stylus (but have no other functionality). *Id.* at 756–57. Second, they “conducted secondary analyses aimed at estimating the degree to which individual differences in various aspects of the notes were related to final test performance.” *Id.* at 757. They conducted other, less relevant extensions as well, which I have not covered here. *Id.*

153. *Id.* at 757–58.

154. *Id.* at 765.

155. *Id.* at 768–69, 772.

156. See, e.g., Ruth Colker, *Universal Design: Stop Banning Laptops!*, 39 CARDOZO L. REV. 483, 488 (2017) (noting that “these studies used undergraduate students in artificial testing environments—nothing like the kind of conceptual, summative assessments that are typical of law school classrooms”).

157. *Id.* at 490.

158. *Id.* at 488–90.

handwritten notes may have developed a convention that compensates for this. Typing notes might be easier in a class with a professor who talks very quickly, but handwriting might be more useful in a course that requires students to record diagrams or do calculations. Students might use non-word processing programs to take notes in unique, non-linear forms.<sup>159</sup>

As Ruth Colker has noted, law school laptop users have different incentives than the undergraduate students enrolled in the experiments discussed above, are taking in-class notes based on pre-class readings,<sup>160</sup> and as adult-learners have developed specific preferences about their own best practices for in-class notetaking and outlining in anticipation of the final exam.<sup>161</sup>

These best practices include thoughtful consideration of both the mechanism and method with which one records notes. Following the replication study, one of the authors of the original study offered clarification about what best practices might be supported by his own study.<sup>162</sup> He wrote, “The right way to look at these findings, both the original findings and these new findings is not that longhand is better than laptops for note-taking, but rather that longhand note-taking is *different* from laptop note-taking.”<sup>163</sup> John Dunlosky, one of the researchers in the second study, permits laptops in his class but asks laptop users to sit in the back of the room, to localize distractions,<sup>164</sup> a solution adopted a decade ago by law professor Jana McCreary.<sup>165</sup>

Thus, best practices for notetaking depends on the context in and purpose for which the notes are being taken. As Morehead et al. note, “a key focus for future research should be to understand the degree to which a particular notetaking method increases the likelihood that students include the most important and to-be-tested content in their notes.”<sup>166</sup>

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159. See, e.g., Patrick Lucas Austin, *Start Writing Digital Notes in 2018*, LIFEHACKER (Mar. 7, 2018, 3:00 PM), <https://lifehacker.com/start-writing-digital-notes-in-2018-1823589620>; Emily Price, *Sync Your Lecture Notes and Audio Recordings with the 'Noted' App*, LIFEHACKER (Apr. 8, 2018, 2:22 PM), <https://lifehacker.com/noted-syncs-your-lecture-notes-and-audio-recording-1825091352>.

160. Professor Colker also makes her Powerpoint slides available to her students as supplementary material in advance of class. Colker, *supra* note 156, at 489–90.

161. *Id.* Professor Colker conducted a “natural experiment” in her first-year constitutional law class. *Id.* at 485. Ultimately, Professor Colker’s laptop-using students fared no worse on the final examination than her students who took notes by hand. *Id.* at 488–89.

162. See Beckie Supiano, *Should You Allow Laptops in Class? Here’s What the Latest Study Adds to That Debate*, CHRON. HIGHER EDUC. (Feb. 6, 2019), <https://www.chronicle.com/article/Should-You-Allow-Laptops-in/245625>.

163. *Id.* (quoting an email from Professor Oppenheimer to the author).

164. *Id.*

165. McCreary, *supra* note 102, at 989.

166. Morehead et al., *supra* note 148, at 774.

#### IV. THE DUTY TO TEACH LAW STUDENTS TO BE RESPONSIBLE STEWARDS OF TECHNOLOGY

This Paper has thus far considered three seemingly separate concepts regarding technology: its role in modern life and practice, the rules of professional conduct, and law student learning. Where do these concepts intersect?

I have long argued that law schools should embrace technology or, at a minimum, not interfere with students' own self-directed use of technology.<sup>167</sup> I now take a more expansive position: I believe that law schools have a responsibility to teach students to be responsible stewards of technology.

Taken together, the realities of modern law practice and the rules of professional conduct suggest a new and higher standard for technological proficiency in practice. Some law schools have embraced this standard overtly and have added elements of "legal technology" to the curriculum.<sup>168</sup> Others have argued for specific competencies that should be included in the law school curriculum.<sup>169</sup>

Here, I take a position on a more subtle part of technological competence. At a minimum, law schools should be encouraging students to determine their own best practices for integrating technology into their professional lives. Instead, at present, law schools have high expectations about how student-driven technologies can and should support student learning, yet they also send mixed messages about technology when they ban technology in the classroom setting. Law schools create an expectation that law students will make technology part of their educational experience, and then they put limitations on what that experience entails.

These mixed messages do a disservice to students, instead of leveraging their time in law school as a time of self-inquiry about their own relationship to technology. Take, for example, the concept of distraction. On some level, trying to legislate what student notes look like is really an attempt to minimize distraction. We cannot literally mandate that students pay better attention; in a world where technology is more and more present, they need to learn the value of paying attention. In-class multitasking is not a problem we can outrun. There is no way to dictate what a student writes down. A student who is laptop-free may appear to be free from distraction but could actually be reading a casebook in preparation for a different class from the one he or she is sitting in at the moment.

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167. Murray, *supra* note 1, at 186.

168. See, e.g., *Institute on Legal Innovation & Technology*, SUFFOLK U. BOS., <https://sites.suffolk.edu/legaltech/> (last visited June 6, 2020).

169. See generally Iantha M. Haight, *Digital Natives, Techno-Transplants: Framing Minimum Technology Standards for Law School Graduates*, 44 J. LEGAL PRO. 175 (2020).

Current research supports the idea that multitasking leads to distraction and less learning.<sup>170</sup> Students themselves often know that multitasking is likely to affect their ability to pay attention, process information, and miss in-class instructions, but they still do it.<sup>171</sup> However, you cannot ban multitasking itself, and each year it becomes more and more difficult to ban the tools that enable it. Digital distraction has moved from laptop games to Internet surfing to apps and texting to the ability to send messages from one's wrist. It is extremely difficult, if not impossible, to police, and students are often not incentivized to pay attention even when seemingly aware of the negative effects of multitasking.<sup>172</sup> In fact, they may even be addicted to it.<sup>173</sup>

As such, the ability to manage distraction in daily life is an important professional skill, not just in the legal profession. Thus, this too feels like an important technology-related skill that students need to learn how to handle in law school. The consequences of professional distraction can be dire.<sup>174</sup> Even absent the requirements that new law graduates be technologically competent, this issue should be something that students confront and address while in law school, rather than after.

Lawyers, of course, also have to take notes, though in different contexts and for different purposes than they do in law school. Although the utility of these notes presumably is not assessment-dependent, students will benefit from thinking critically about their own set of notetaking best practices. What does it mean to take "good" notes? The answer might be context-specific, and law professors should make their notetaking advice clear. Training in specific notetaking strategies can help improve both the quality of the notes and the writer's ability to retain the information.<sup>175</sup> Although practice-related notes will differ in form and purpose from law school class notes, exposure to different modes and modalities for notetaking can be beneficial to students.

Technology has long been important in legal education and legal practice, but the COVID-19 crisis has brought its importance into stark relief. Presumably, students, professors, and legal professionals with the highest levels of technological fluency had the easiest transition to remote learning, teaching, and legal practice in the early days of the pandemic.

There are many places in the law school curriculum and in the law school experience where law schools can and should discuss the intersections between technology and future law practice. At the same time, professors should retain autonomy about how much technology to bring into the classroom, both

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170. See, e.g., Patrick Meyer, *The Google Effect, Multitasking, and Lost Linearity: What We Should Do*, 42 OHIO N.U. L. REV. 705, 721–22 (2016).

171. *Id.* at 724–25.

172. *Id.*

173. *Id.* at 725–26.

174. See *supra* Part II for an overview of the professional duty of technological competence.

175. See, e.g., Arthur Robin et al., *Teaching Note-Taking Skills to Underachieving College Students*, 71 J. EDUC. RSCH. 81, 84–85 (1977).

professor-driven technology and student-driven technology, though limitations on student-driven technology should be held to a high standard. On the whole, law schools should be looking for potential synergies between technology and learning, especially given the concerns some have expressed about practicing attorneys' deficient technological skills.<sup>176</sup>

Technology is a fixture in modern life. Law professors and law schools send mixed messages about technology to law students. Yet there is a clear message from the profession that new lawyers need to be able to manage technology and use it in practice without letting it become a tool of distraction or inefficiency. Law schools should be the place where students being to develop good technology-related habits, to become self-aware, responsible stewards of technology.

#### V. CONCLUSION

As I have come to the same conclusion time and again, so too am I left with the same recommendations regarding the role technology should play in law school. Allow students to self-direct their own in-class learning and leverage technology in ways that work for them. Recommend that students engage in some kind of reflection or experimentation to make these decisions. Counsel students about the dangers of distraction. Advise them about what kind of notes they should be taking in different classes. Warn them about the potential consequences of distraction and poorly taken notes in practice.

The next logical step could also be more research into what "good" notetaking is in the legal context, both in law school and in practice. However, time might be better spent accepting that options for notetaking will continue to evolve and expand and that the idea of what is "best" for notetaking is not necessarily universal. Perhaps that is one more opportunity for professional development: giving students the clear message that they can and should decide what will work best for them.

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176. See D. Casey Flaherty, *Could You Pass this In-House Counsel's Tech Test? If the Answer Is No, You May Be Losing Business*, ABA: LEGAL REBELS (July 17, 2013, 1:30 PM), [http://www.abajournal.com/legalrebels/article/could\\_you\\_pass\\_this\\_inhouse\\_counsels\\_tech\\_test/](http://www.abajournal.com/legalrebels/article/could_you_pass_this_inhouse_counsels_tech_test/).