

LAW STUDENT LAPTOP USE DURING CLASS FOR NON-CLASS PURPOSES: TEMPTATION V. INCENTIVES

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INTRODUCTION

When the creators of the children's television show *Sesame Street* wished to know whether preschoolers would actually watch it, their head of research, Ed Palmer, set up a room with a television monitor showing segments from the show.¹ On a nearby screen, Palmer projected slides of various images; the slides changed every seven-and-a-half seconds.² Then he brought small children in and waited to see if the children focused on the *Sesame Street* segments or the still pictures.³ Only segments that elicited attention from many preschoolers ended up on the air.⁴ As a result, the producers discarded segments that they had intended to run and created new characters to hold children's attention.⁵ After three or four seasons, nearly every segment held the attention of at least 85% of the children.⁶

Law students in class also face distractions. In the fall of 2009, while waiting for a professor to vacate a classroom, I peeked into the class and noticed a student simultaneously texting on her cell phone and surfing the web on her computer.⁷ Consequently, in the fall of 2010, I stationed observers at the back of six law school classes in an attempt to determine, among other things, the extent to which laptops distract students, and whether student use of laptops for non-class purposes is affected by what is happening inside the classroom—for example, whether students are more likely to visit Facebook when the professor is lecturing or another student

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¹ MALCOLM GLADWELL, *THE TIPPING POINT: HOW LITTLE THINGS CAN MAKE A BIG DIFFERENCE* 102 (2002).

² *Id.*

³ *Id.* at 102–03.

⁴ *See id.* at 103.

⁵ *Id.* at 103–04.

⁶ *Id.* at 104.

⁷ The problem is not unique to law schools. *See* Katherine S. Mangan, *Cutting the Power*, *CHRON. HIGHER EDUC.*, Sept. 7, 2001, at A43 (business schools and colleges).

asks a question. Ultimately, the observers recorded detailed observations in sixty class sessions of a collective 1,072 laptop users (though there was considerable overlap among those 1,072 users).⁸

Because of methodological limits to the study, discussed in Part II below, it is not possible to draw definitive conclusions about law student laptop use. Nevertheless, some patterns emerged. The observations suggest that some laptop use depends on what happens within the classroom.⁹ Incentives seemingly make a huge difference to student attentiveness.¹⁰ It will hardly surprise those familiar with legal education that for first-semester students—for whom grades are more significant in determining admission to prestigious positions on law review and job prospects—the incentives to pay attention generally outweigh the temptation to tune out.¹¹ But for many upper-year students, temptation wins that contest.¹²

The Article proceeds as follows. Part I describes how the study was conducted. Part II explains some methodological problems. Part III reports on the data, and Parts IV and V discuss some implications of the data. Part VI concludes with a plea.

I. HOW THE STUDY WAS CONDUCTED

At various times during the fall 2010 semester, one, or sometimes two, observers sat in on six law school courses. The classes were all either required courses or survey-style doctrinal electives in which grades depended principally on a final examination. Class sizes ranged from forty-six to ninety-one; larger classes were chosen because observers were more likely to be able to see a greater number of students using laptops. Observers attempted to sit at the rear of the classroom to maximize the number of laptops they could observe. Students were not told why the observers were there or that their laptop use was being observed, but over the course of the semester it is possible that some students guessed what was going on; at least two students in the classes observed overheard conversations that led them to deduce the nature of the study. Those students were asked not to repeat what they had learned, but it is impossible to know whether they did, or whether other students overheard other conversations without any of us realizing that fact. In addition, from time

⁸ See *infra* Part II.

⁹ See *infra* Table 8.

¹⁰ See *infra* Part V.A.

¹¹ See *infra* Part V.A.

¹² See *infra* Part V.A.

to time, observers rose from their seats or craned their necks to view a particular laptop; a student who chose that moment to look behind might have noticed what the observer was doing and deduced why the observer was present.¹³ Observers were instructed not to tell any students who asked why they were there, but they were also instructed not to lie.

For each session, observers were instructed to record the number of laptops they could see, the number of students who never used the laptop for a non-class purpose (“not distracted”), the number who used them for a non-class purpose for up to five minutes (“occasionally distracted”), the number who used them for more than five minutes but less than half the class (“distracted”), and the number who used them for at least half the class (“strongly distracted”).¹⁴ The five-minute threshold is somewhat arbitrary but it seems a reasonable cutoff between quick checks of e-mail over the course of a class and using laptops for something more. Observers also recorded what was happening in the class in two broad categories: content (e.g., procedural posture of a case, holding of a case) and format (e.g., whether the professor was calling on a student, lecturing, taking questions).¹⁵

The instructions to the observers changed over time in light of what they reported.¹⁶ In particular, the way the observers recorded what was happening in class evolved as we came to a better understanding of what would be useful and attempted to standardize the types of observations.¹⁷ As a result, some of the earlier observations cannot be readily compared with some later observations for some purposes.¹⁸ In addition, as the observers reported their impressions, the instructions changed in an attempt to verify whether those impressions were valid.¹⁹

Observers were instructed not to report the nature of the non-class laptop use (e.g., surfing the web or playing solitaire), but only that such use was occurring.²⁰ They were also asked to report students as distracted when they used cell phones for texting.

St. John’s University School of Law, where at least two of the classes were observed, has a policy that bars the use of laptops in the classroom for

¹³ After the study had run its course, I asked some students in one class that had been observed what they thought the observers were doing at the rear of the classes. One asked if they were there to observe laptop use, but said that she had not discussed this speculation with other students.

¹⁴ See generally *infra* Table 1.

¹⁵ See *infra* Table 8.

¹⁶ See *infra* pp. 490–91.

¹⁷ See *infra* Part II.

¹⁸ See generally *infra* Part II.

¹⁹ See generally *infra* Part II.

²⁰ See, e.g., *infra* Table 1.

non-class purposes, except with the professor's permission.²¹ The policy appears in the Student Handbook, which is available on the web and distributed to entering students; how many students are aware of the policy, however, is not clear.²² In four of the classes observed (Classes A and B, Introduction to Law, and Civil Procedure), the professors have neither a written policy, nor announce in class, that use of laptops for non-class purposes is prohibited. The remaining two have written policies pertaining to laptop use: Class D stated in the syllabus that use of laptops for non-class purposes is barred while Class C announced on the front page of the class website that such use is discouraged and may affect grades.

A. *The Classes*

I taught two of the six courses observed: Introduction to Law ("Intro") and Civil Procedure. The Article will not identify the other professors involved, name the other courses, or identify the law school or law schools where they took place, but will describe the courses in general terms.

Introduction to Law was unique among the courses included in the study in several ways: First, it was the only evening course in the study; second, it was the only non-exam course (each week for four weeks students drafted a short paper based on class work); third, it was graded on a pass-fail basis; fourth, it was offered only to part-time students; and fifth, it had a different schedule from the other classes. The course met intensively at the beginning of the semester but quickly petered out. For the first two weeks of the semester, Introduction to Law met Monday through Thursday from 6:25 PM to 9:40 PM (the other first-semester subjects began

²¹ ST. JOHN'S UNIV. SCH. OF LAW, STUDENT HANDBOOK 53 (2012) [hereinafter STUDENT HANDBOOK], available at <http://www.stjohns.edu/academics/graduate/law/current/handbook>. The St. John's "Policy on Computer Usage in the Classroom" appears in the Handbook and specifies as follows:

Except with the instructor's permission, during class students are not permitted to compose, review, receive, or send e-mails or instant messages or access the Internet. Unless a professor directs otherwise, computers may be used during class solely for the purposes of taking notes or reviewing materials prepared for the class, such as case briefs and answers to problems assigned for the class. Nothing in this policy is meant to limit the power of a professor to bar the use of computers during class for any reason. The use of computers during class is a privilege, not a right, and may be revoked for failure to comply with this policy, except that this sentence is not intended to affect the right of a student under applicable law or policies of the Law School to use a computer because of a disability.

Id.

²² See generally *id.*

only after those two weeks).²³ Introduction to Law also met once, for two hours, during the third week of the semester and for a final two-hour period during the fifth week.²⁴ Introduction to Law was also the only course that met before Information Technology conducted a session to introduce students to the law school's wireless network. While that session took place between the third and fourth Intro classes, some students may have been able to access the Internet during the first three classes because some may have subscribed to independent Internet service providers. Others may have obtained access to the law school network earlier by visiting Information Technology. Many undoubtedly could use cell phones to text. The class had sixty-four students.

Civil Procedure met twice a week for 130 minutes beginning in the third week of the semester.²⁵ It had ninety-one students.

The remaining courses in the study were upper-year doctrinal survey courses. The number of students in the four courses was forty-six (Class B), sixty-eight (Class C), seventy-eight (Class A), and eighty-eight (Class D). All but Class C met twice a week; Class C met once per week. The classes met either for eighty-five minutes or two hours; two hour classes included a ten-minute break.

The professor teaching Class B withdrew from teaching during the study. That professor was briefly replaced by another professor who agreed to continue participating, but ultimately the course was taken over by still another professor. When that professor expressed uneasiness about participating, Class C was substituted in the study.²⁶

II. METHODOLOGICAL PROBLEMS

A prefatory note to this Part: the study's observations were confined to laptop users, and so it sheds no light on the distractedness of students who do not use laptops in the classroom. Still, a great many law students use laptops in class: a survey of law students at one law school found that 79.8% said that they used laptops in classes in which such use was permitted.²⁷ While we did not record the percentage of laptop users in the

²³ Students had one fifteen-minute break during each session.

²⁴ During the fourth week, student teaching assistants conducted a session to answer student questions. The two-hour sessions included ten-minute breaks.

²⁵ Each session also included a ten-minute break.

²⁶ An additional class that had been observed was dropped from the study after the professor teaching it received a draft of this Article and so requested.

²⁷ Jana R. McCreary, *The Laptop-Free Zone*, 43 VAL. U. L. REV. 989, 1019 (2009); see also 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, 215-16 (2011) (noting that of students

observed classes, the proportions were probably similar to those reported in the survey.²⁸

The study had at least eight methodological problems. First, the observations took place at very few law schools and so the observations may not predict laptop use at other schools. In the interests of confidentiality, it seems preferable not to identify the law school or law schools in which classes were observed other than to note that my classes were at St. John's and so obviously at least two St. John's classes were observed. Colleagues who have taught at other schools have often reported that St. John's students work harder and are more engaged than the students they encountered elsewhere, suggesting that St. John's has lower distraction rates than at other schools. The reason why it matters where the observed classes were is that law schools have cultures. Students who observe other distracted students may conclude that tuning out is an accepted behavior while students who see few distracted students may feel that the practice is frowned upon by their classmates.²⁹ Put another way, laptop use for non-class purposes—or its converse—may be contagious.³⁰ That intuition finds support in the fact that some observers reported that distracted laptop users tended to cluster near each other.³¹

In addition, St. John's has an attendance policy.³² I take attendance in my classes by circulating a sign-in sheet. Consequently, students who are

responding to a survey, "87.9% of them 'usually' or 'always' bring their laptops to class").

²⁸ See generally McCreary, *supra* note 27.

²⁹ See E-mail from Saul Levmore, Dean, Univ. of Chi. Law Sch., to Students and Faculty Colleagues, Univ. of Chi. Law Sch. (Mar. 25, 2008), cited in David Lat, *Update: Hey Teacher, Leave Those Kids (and Their Internet) Alone!*, ABOVE THE LAW (Mar. 26, 2008, 3:45 PM), <http://abovethelaw.com/2008/03/update-hey-teacher-leave-those-kids-and-their-internet-alone/> ("[U]sage appears to be contagious, if not epidemic. Several observers have reported that one student will visit a gossip site or shop for shoes, and within twenty minutes an entire row is shoe shopping.").

³⁰ *Id.*

³¹ See, e.g., Murray, *supra* note 27, at 215. A survey of law students found that while 84.4% always brought laptops to their law school classes, only 12.7% did so as undergraduates. *Id.* About 11% of the students who used laptops in class in law school but not in college based their decision on what other students did, bolstering the idea that for some, laptop use depends on the behavior of others. See *id.* at 215–16.

³² STUDENT HANDBOOK, *supra* note 21, at 23–24. St. John's attendance policy provides in pertinent part:

Regular and prompt attendance is required of all students at the Law School. A student shall be permitted unexcused absences up to, but not exceeding, two times the number of credit hours in a course. For example, in a three credit-hour course, a student is permitted up to six hours (four ninety minute classes) of unexcused absences.

....

When the student exceeds the number of unexcused absences permitted above, the student shall be subject to sanctions. The sanction shall be disqualification from sitting for the final examination and no credit for the course, unless the professor chooses to impose a lesser sanction.

unwilling to miss class but who are not interested in paying attention may show up and surf the web, thus inflating the level of distraction when compared with other schools where uninterested students may simply skip class.

Second, observers sat in on only six courses.³³ Larger classes were chosen for observation because more laptop users could be seen in such classes. Students may take such a course not because of interest in the subject but because it is required, they feel a need to learn the material for bar preparation or a job, because it is a gateway to more advanced courses, or it is a core subject, among other reasons. Accordingly, they may be quicker to tune out. Perhaps smaller classes that students chose because of a particular interest in the subject might have lower distraction rates.³⁴ Certainly classes in which greater class participation would be demanded—such as a small seminar—could be expected to generate greater attention rates.³⁵

Third, student laptop use is a crude measure of how attentive students are. Because the observers were seated behind the students, the observers often could not see where the students were looking. It is entirely possible that students who had a website on their screen were in fact paying attention. Indeed, one observer reported that one student frequently used his laptop for non-class purposes, but would raise his hand and speak or ask questions, suggesting an awareness of what the professor had just said. Conversely, just because a student does not have a solitaire game up does not mean the student is paying attention.

Fourth, while the observers were able to record 1,072 observations during the study, many of those observations were of the same students in session after session of the same course. The observers sat in the rear of the room and were obliged to take seats that had not previously been claimed by enrolled students; as a result, they were limited in the number of observation posts. Because students typically sit in the same seat in each session of a course,³⁶ the observers consequently saw the behavior of the same students over multiple sessions. For example, in Class D, the number of students observed on any given day ranged from eleven to sixteen, but the total number of students observed over the semester was twenty-one.³⁷ The observations in Class A were based on eighteen students, though in any

Id.

³³ See generally *infra* Table 8.

³⁴ See generally Joe Cuseo, *The Empirical Case Against Large Class Size: Adverse Effects on the Teaching, Learning, and Retention of First-Year Students*, J. FACULTY DEV., Jan. 2007, at 1, 5–22, available at http://steenbock.library.wisc.edu/instruct/class_support/imd/Week%2013%20Cuseo.pdf.

³⁵ See generally *id.* at 4.

³⁶ Sometimes professors use seating charts, essentially freezing students in their classes.

³⁷ See *infra* Table 5.

given class only seven to fifteen students could be seen.³⁸ The two observers in Civil Procedure collectively saw thirty-nine to forty-three students over the course of the semester, even though they were never able to observe more than thirty-nine in any individual class session.³⁹

Fifth, the observations were all made in a single semester—the fall of 2010—and perhaps other semesters would have yielded different results. It is plausible, for example, that students would behave differently in the spring semester, given that they have already undergone a full semester of classes, weather conditions are different, students in their last semester may already have secured jobs or be more concerned with bar exam preparation, or for other reasons.

Sixth, sometimes observers noticed students using the web for class purposes. For example, a student might read a case mentioned in class but not included in the course materials or look up a term at a dictionary site.⁴⁰ When the observers became aware that students were using the Internet in such a way, they did not count the student as distracted. Nevertheless, given the distance between the observers and some of the students, and what the observers could see of the laptop screens, it is possible that some such laptop use was incorrectly considered to be distracted.

Seventh, the staffing may have affected the observations. We never had more than two observers in my classes and never more than one in the upper-year classes, with the result that some laptop use probably escaped detection.⁴¹ In addition, some errors might have occurred because of a lack of consistency. Different observers may have interpreted the instructions differently, which could have led to coding errors. The coding categories were necessarily somewhat vague and overlapping and consequently observers had to interpret behavior. For example, what appeared to one observer to be a tangent might have seemed relevant to another, especially since the observers could not give their full focus to the content of the class

³⁸ See *infra* Table 2.

³⁹ See *infra* Table 6.

⁴⁰ See Murray, *supra* note 27, at 212. Similarly, one survey of law students found that “60.9% of the respondents have used e-mail and instant messaging services to send messages to students in class about the class generally; 11.3% have sent messages ‘to receive assistance when answering questions in . . . class’; and 13.9% have sent a message to a classmate answering questions in class ‘to provide helpful assistance.’” *Id.*

⁴¹ The staffing was set up this way for a number of reasons. Initially, my primary concern was with the way students in my classes behaved because I thought it might affect my own teaching. It was only later that it seemed desirable to broaden the study beyond my classes and by then it was difficult to schedule more than one observer per class. Scheduling problems were a consideration, and in addition, it seemed preferable not to switch observers from class to class because students in the classes might have noticed the switches and speculated about why different people were sitting in the rear of their rooms, which might have impaired the study.

and so might have missed connections between the supposed tangent and the material. For another example, a professor calling on students sometimes blended seamlessly into lecturing, but the observers had to pinpoint the moment at which the shift occurred—and do so not only while class continued, but also while they were required to record additional observations. To give a further sense of the demands upon the observers, the content and format might shift from minute to minute, as, for example, when a professor called on a student to recite the facts of a case, took a question, called on a student to state the case's procedural posture, read some text from the case, called on a student to explain the text, and posed a hypothetical about the scope of the case's rule. Under the circumstances, the observers did an impressive job, but it is inevitable that errors crept into their work. It would have been better if we could have videotaped classes so that we could have given more thought to how to record observations instead of making them contemporaneously while under time pressures as classes proceeded.

Finally, and this builds on the points made in the last paragraph, the observers were required to do several things at once, and that may have introduced errors.⁴² They were obliged to record what was happening in the class in at least two ways—both the format of what was happening (e.g., lecture, calling on students) and the content (e.g., rule of law, facts of a case)—while simultaneously keeping track of how many out of as many as twenty-three students were distracted.⁴³ They were also required to determine whether the students they could see were never distracted, were distracted for up to five minutes, for more than five minutes but less than half the class, or for more than half the class.⁴⁴ Because some students were not constantly distracted, but might, say, check e-mail several times over the course of a session, that last task involved some estimation, which might have caused inaccuracies.

III. HOW MUCH DID STUDENTS USE LAPTOPS FOR NON-CLASS PURPOSES?

A. Upper-Year Classes

The short answer to how much students used laptops for non-class purposes in the upper-year classes is a lot.⁴⁵ Table 1 shows the aggregate

⁴² This is somewhat ironic, in light of the nature of the study: observers had to multitask even as they watched to see if students multitasked.

⁴³ See *supra* Part I; *infra* Table 8.

⁴⁴ See *supra* Part I; see, e.g., *infra* Table 1.

⁴⁵ See *infra* Table 1. This is consistent with the observations of others. See, e.g., James M.

amount of laptop use for the four upper-year courses; a graphical representation appears in Figure 1. Of the 387 observations, 223 students, or 58%, were distracted at least half the time.⁴⁶ Another 113, or 29%, were distracted more than five minutes but less than half the time per class.⁴⁷ In other words, 87% of the upper-year students observed used laptops for non-class purposes for more than five minutes during the class.⁴⁸ Those numbers raise serious questions about how much students are learning in class.⁴⁹

Kraushaar & David C. Novak, *Examining the Affects [sic] of Student Multitasking with Laptops During the Lecture*, 21 J. INFO. SYS. EDUC. 241, 241 (2010) (noting that a study of ninety-seven undergraduates who consented to have observing software placed on their computers found that students “have non course-related software applications open and active about 42% of the time”); Nancy C. Maxwell, *From Facebook to Folsom Prison Blues: How Banning Laptops in the Classroom Made Me a Better Law School Teacher*, 14 RICH J.L. & TECH. 4, ¶ 24 (2007) (“Although this tracking is highly unreliable from a scientific perspective, it does point out that in only one class session out of a total of seventy-six sessions, there was no inappropriate use of the visible laptop screens at every ten minute data collection point. In other words, law school professors should assume at any given moment in class, at least one student, and probably more, are engaged in inappropriate use of the laptop, particularly considering that a high percentage of the laptop screens were not visible to the trackers.”) (footnote omitted); see also Sherry F. Colb, *Should Law Students’ Use of Laptops Be Limited to Prevent Web-Surfing in Class?*, FINDLAW (Mar. 26, 2008), <http://technology.findlaw.com/articles/00006/010231.html> (reporter told professor she had a “low rate” of “about forty percent” of students surfing the web during class); Tim Hurley, *The Downfall of Legal Education*, 75 J. KAN. B. ASS’N 10, 10 (2006) (first-year Washburn law student observing that “almost every laptop I can see [in a class] has one or more conversations, a solitaire game, or the Internet opened to something other than Lexis or Westlaw”); McCreary, *supra* note 27, at 1020–22 (survey of law students found “14.5% of students use their laptops to play games” and “70.5% admit to surfing the Web” in class, while “[o]nly 3.2% of the students who used a laptop in class reported that they never used the Internet during class”).

⁴⁶ See *infra* Table 1. As noted above, those 223 students included many multiple observations of the same students in different sessions of courses. See *supra* note 36 and accompanying text.

⁴⁷ See *infra* Table 1.

⁴⁸ See *infra* Table 1. This is consistent with some other reports. See Orly Lobel, *Banning Laptops from the Classroom*, PRAWFSBLAWG (July 27, 2006, 2:34 PM), http://prawfsblawg.blogs.com/prawfsblawg/2006/07/banning_laptops.html (“Michigan law professor Don Herzog . . . said that when he first suspected students were checking the Internet during class, he sat in the back of his colleagues’ classes as an experiment and saw that about 85 to 90 percent of students were surfing.”).

⁴⁹ See *infra* Table 1. For other studies showing lower distraction rates, see, for example, Murray, *supra* note 27, at 210 (survey found that 55.6% of students used laptops in class for non-class purposes “occasionally”; 4.1% reported never doing so; 13% acknowledged doing so “about half the time”; “21.3% said they ‘usually’ do, and 5.9% said they ‘always’ do”); Scott A. Taylor, *Laptops, Wi-Fi, Social Networks, Blogs, Expert Daily Emails, and Podcasts: A Survey of Learning Enhancement 3–4* (Mar. 13, 2009) (unpublished manuscript), available at <http://ssrn.com/abstract=1355942> (in a survey of students with thirty-four respondents, 27% reported no or little laptop use in class for non-class purposes; 59% reported “about 20%”; 9% “about 40%”; 6% “about 60%”; and 0% “80% or more”). The explanation may lie in the fact that the other studies depended on students to self-report. One study that compared self-reported tuning out to data collected via spyware placed on computers found significant under-reporting. See Kraushaar & Novak, *supra* note 45, at 248–49 (“Approximately 87% of students reported using email during class lectures, while 94% were actually recorded using email during the lecture. More notably, 25% of students reported using IM during class lectures, while 61% were actually observed by the spyware using IM during lectures. Email use was

Examination of the numbers for the individual classes is quite discouraging. Table 2 shows the figures for the 146 observations during fifteen sessions in Class A. Overall, 62% of the students were strongly distracted, and in only three of the fifteen classes observed did the proportion of strongly distracted students fall below half.⁵⁰ It never fell below 40%.⁵¹ The observer reported that in one session every student observed was strongly distracted, while in three sessions 70% of the students were.⁵² Fully 90% were distracted for at least five minutes a class while only five times, or a depressing 3%, out of the 146 observations, did a student refrain from using a laptop for non-class purposes for an entire class.⁵³

An observer sat in on three sessions of Class B, and made thirty-three observations, as reflected in Table 3. More than three-quarters of the students observed were strongly distracted and in no class were less than 62% of the students strongly distracted.⁵⁴ In one session, all eleven students observed used their laptops for non-class purposes more than half the time.⁵⁵ Only once—or 3% of the observations—did a student not use a laptop for a non-class purpose.⁵⁶

An observer was able to record fifty-three observations in four sessions in Class C, as seen in Table 4. Overall, 53% of the students were strongly distracted, and 96% used laptops for non-class purposes for more than five minutes in a class.⁵⁷ Every student observed used a laptop for a non-class purpose at some point during each class, and only twice in a class did students confine their non-class laptop use to less than five minutes.⁵⁸

Table 5 shows the figures for the 155 observations in eleven sessions for Class D. Overall, 51% of the students observed were strongly distracted, and for nine of the twelve classes observed, at least half were

under reported by 7% while IM use was under reported by 40%.”). Taylor’s study, *supra*, at 4, also asked students to estimate whether other students engaged in non-class use of laptops during class more, less, or the same as the student answering the question. Not one of the thirty-three students responding reported that others used laptops less. *Id.* at 5. Eighteen—or 55%—said others used their laptops more, while fifteen—or 45%—claimed that others used their laptops the same amount. *Id.* As a mathematical matter, those responses simply cannot be correct, suggesting again that students think they use laptops for non-class purposes less than they actually do. Another possible explanation involves one or more of the methodological problems described above. See *supra* Part II.

⁵⁰ See *infra* Table 2.

⁵¹ See *infra* Table 2.

⁵² See *infra* Table 2.

⁵³ See *infra* Table 2.

⁵⁴ See *infra* Table 3.

⁵⁵ See *infra* Table 3.

⁵⁶ See *infra* Table 3.

⁵⁷ See *infra* Table 4.

⁵⁸ See *infra* Table 4.

strongly distracted.⁵⁹ In only two sessions were as few as a third of the students strongly distracted.⁶⁰ Only 10% of the students never used their laptops for non-class purposes.⁶¹

These numbers should be deeply distressing to those who believe that students learn in upper-year doctrinal survey courses. Indeed, they raise questions about the value of such classes. Of course, because of the methodological problems listed above,⁶² the findings are far from definitive and may not reflect what actually happens in most, or even many, upper-year classes. Additional observations of other classes are needed to determine how common tuning out is. But if other classes experience the same level of distraction, law professors should consider, as discussed below, banning laptops, along with whether the upper-year survey class provides a useful way of conveying legal doctrines.⁶³ Many students, it would seem, are voting with their fingers that such a class does not.

B. Civil Procedure

Table 6 displays the amount of distraction for Civil Procedure, as seen in over 600 observations in twenty-two sessions.⁶⁴ The numbers are far more heartening than for the upper-year courses.⁶⁵ Only 4% of the students were strongly distracted while 44% were never distracted; nearly a fifth were occasionally distracted and less than a third used laptops for more than five minutes but less than half the class.⁶⁶

C. Introduction to Law

As noted above, the observers had to attend a number of classes before we could come to conclusions about what was worth tabulating.⁶⁷ As a result, the Introduction to Law course ended before we created the form we

⁵⁹ See *infra* Table 5.

⁶⁰ See *infra* Table 5.

⁶¹ See *infra* Table 5.

⁶² See *supra* Part II.

⁶³ See discussion *infra* Part V.C.

⁶⁴ See *infra* Table 6.

⁶⁵ Compare *infra* Table 6 with *infra* Table 1. Anecdotal evidence raises questions about whether other first-semester students are equally attentive. See Paras D. Bhayani, *HLS Debates Laptops in Class: Some Worry That Net Surfing Distract Law Students from Class Discussions*, HARV. CRIMSON (Apr. 11, 2006), <http://www.thecrimson.com/article/2006/4/11/hls-debates-laptops-in-class-as/> (quoting Professor Richard D. Parker that six weeks into a first semester contracts class, “two-thirds of the students had stuff on their screens that was completely unrelated to contracts”).

⁶⁶ See *infra* Table 6.

⁶⁷ See discussion *supra* Parts I.A, II.

used to track non-class laptop use. Nevertheless, one observer took sufficiently detailed notes to permit filling out the form for four sessions of Intro. The results appear in Table 7.

Some other observations also merit comment. While few students in Intro had access to the law school's wireless Internet connection until the fourth class,⁶⁸ observers spotted three students texting during the first class. The first of these did so seventeen minutes into the class—and her law school career. The observers reported that she texted frequently that evening.

By the second night, at least four students were using laptops for non-class purposes—three of whom began doing so eight minutes into the class—and several were texting, at least one frequently. Habitual non-class use of laptops was not common during the first week, however.⁶⁹ Thus, one observer reported that while she could see thirty-two students using laptops on the fourth night of class, which was the last class of the first week, only two or three used their laptops often for non-class purposes.⁷⁰ The other reported that out of the fourteen laptop users she could see that night, four used them for non-class purposes, including one frequently.⁷¹ In other words, of the forty-six laptop users observed that evening, at most three, or 7%, used laptops often for non-class purposes.⁷² In a three-hour session at night—which, for some, meant after a full day of work—in a pass-fail course, that finding compares favorably with the upper-year courses.⁷³

Table 7's observations were of two classes in the second week of the course—before the regular semester schedule began—and the last two classes in the course. Session three took place after the students had attended one of their regular semester classes; though the regular semester schedule had officially begun, session three took place on its first night and so was almost an extension of the front-loaded period. But session four occurred after the students had attended two weeks of their regular semester classes. Session four shows a steep increase in the level of distraction; indeed, twice as many students were observed tuning out for more than half the class in that one session as in the three previous sessions combined.⁷⁴

⁶⁸ See discussion *supra* Part I.A.

⁶⁹ Compare *infra* Table 7.

⁷⁰ Compare *infra* Table 7.

⁷¹ Compare *infra* Table 7.

⁷² Compare *infra* Table 7.

⁷³ Compare *infra* Table 7 with *infra* Table 1.

⁷⁴ See *infra* Table 7.

IV. WHEN DID STUDENTS USE LAPTOPS FOR NON-CLASS PURPOSES?

One goal of the study was to discover whether what happens in class affects the number of students who tune out. Thus, I wanted to compare the percentage of students who were distracted when, say, a professor was lecturing, to the proportion that tuned out when the professor took questions. Ideally, this information would have been recorded by the amount of time devoted to the various activities and the amount of time that students were distracted, but that simply was not possible, given our resources. Consequently, we took a different approach. First, we recorded the number of times a professor engaged in a particular activity—such as lecturing or exploring the facts of a case—during the class.⁷⁵ We treated each of these activities as an opportunity to pay attention (or an opportunity to be distracted).⁷⁶ We also tracked the number of students who were distracted during each such activity.⁷⁷ Next, we divided the number of students who were distracted during the opportunities by the number of opportunities to arrive at an average for each activity, so that those averages could be compared.⁷⁸

We kept track of what was occurring in classes in two ways: the content of what was covered (e.g., a discussion of policy or the facts of a case) and the format of the class (e.g., calling on students, lecture).⁷⁹ This method of coding resulted in many moments being counted twice: once for the content, and a second time for the format. Occasionally, when a professor used a PowerPoint slide, the same moment could even be recorded in three ways: once for the format, a second time for the content, and a third for use of the slide. On the other hand, because the content sometimes did not fit within any category, some moments were coded only once, for format.⁸⁰

This method of recording distractions probably overstated the amount of distraction. Suppose, for example, that a professor lectured for three minutes, and that in the first minute one student was distracted; in the second minute, two were; and in the third, three were. This was recorded as three students distracted, even though for two of the three minutes, fewer than three students were distracted. This was a concession to how much the

⁷⁵ See *infra* Table 8.

⁷⁶ See *infra* Table 8.

⁷⁷ See *infra* Table 8.

⁷⁸ See *infra* Table 8.

⁷⁹ See *infra* Table 8.

⁸⁰ Some events occurred so infrequently that it did not seem worthwhile to create a separate content category for them. Examples include: comments about upcoming classes, discussing the syllabus, showing a video, inviting students for drinks at a local establishment, and breaking students into small groups to discuss hypotheticals.

observers were required to observe. But while this measure may exaggerate the amount of distraction, it probably still makes it possible to compare the number of students who were distracted during two different activities. That is to say, assuming that the amount of exaggeration is consistent across various activities, it is possible to determine whether students are more likely to be distracted during one activity than another.

A. Upper-Year Students

Table 8 reports the aggregated observations for various activities during the classes; Figure 3 presents a graphical representation. The average level of distraction for upper-year students was 35%, though as discussed above, that figure probably overstates the amount of distraction.⁸¹ For most activities, the level of distraction was remarkably stable: ten of the sixteen activities drew a distraction level of 33% to 37%; of the remaining six activities, three had 108 or fewer opportunities, meaning that the observations are less valuable as to them.⁸² It thus appears that upper-year student decisions to tune out are usually not responsive to what the professor is covering—though, as discussed below, there are exceptions.

For activities as to which upper-year students had more than 100 opportunities, Table 8 shows the highest level of distraction—42%, or about 7% higher than the average level of distraction—occurred when professors took questions from students.⁸³ This difference was statistically significant, according to a paired t-test, at the 5% level.⁸⁴ The increased tendency to tune out student questions and answers may reflect a student assumption that the matters about which students ask questions are less likely to surface on exams and so students can safely tune out. Of course, that assumption is often not true. Student questions sometimes anticipate matters that professors intend to cover later in the course and professors sometimes reply to questions with material they intended to present later.

This increased tendency to tune out when classmates ask and professors respond to questions creates several issues for professors. Should professors take fewer questions, on the theory that fewer students will listen anyway, so that class time is better used for other purposes? Professors

⁸¹ See *infra* Figure 3.

⁸² See *infra* Table 8.

⁸³ See *infra* Table 8. Upper-year students were more likely to be distracted when professors went off on tangents, such as announcing upcoming events, but because that occurred infrequently—students had only seventy-six opportunities in the classes observed, and even those were confined to two classes—the observations seem less likely to be useful. See *infra* Table 8.

⁸⁴ See *infra* Table 8.

may disagree about whether the increase in distraction level—about one extra student in fourteen—justifies such a decision.⁸⁵ In addition, it is impossible to tell from the data whether students are exercising discretion in tuning out. For example, some may ignore answers to less useful questions or questions to which they already know the answer, but pay attention to other exchanges which the professor would agree are more useful for students. Students have told me that they do make judgments based on the student who posed the question and the content of the question in deciding whether to tune out.

Still another issue: should professors, anticipating that more students than usual will tune out in response to questions, make explicit that the answer includes matters that would have been covered in the normal course of the class, in an attempt to reduce the level of distraction? However, if professors adopt such a strategy as to such matters, when they omit that statement students may conclude that they have a license to tune out, and so the level of distraction may increase.

Upper-year students were least likely to tune out—with a 32% distraction rate—when the professor stated a rule or when text was read, though that distraction rate was only 3% below the average rate.⁸⁶ Still, using a paired t-test, the differences were found to be statistically significant.⁸⁷

B. First-Semester Students

Table 8 also shows the aggregated observations for Civil Procedure; Figure 4 presents a graphical representation. The average level of distraction was 14%, though again that probably overstates the level of distraction.⁸⁸ The Civil Procedure students share some behaviors with their upper-year colleagues.⁸⁹ Thus, the Civil Procedure students also exhibit a higher level of distraction (19%) when students asked and I responded to questions, but the increase—about 5%—is slightly lower than the 7% increase seen in upper-year classes.⁹⁰ Another similarity is seen in the

⁸⁵ See *infra* Table 8.

⁸⁶ See *infra* Table 8. Two other topics elicited low distraction rates but the small number of opportunities for these items reduces the utility of the observations. Less than 30% of the students tuned out discussion of the procedural posture of cases, but there were only 108 opportunities devoted to that topic in the only two classes to explore it. See *infra* Table 8. Policy discussions drew a 33% distraction rate on forty-nine opportunities, again in only two classes. See *infra* Table 8.

⁸⁷ See *infra* Table 8.

⁸⁸ See *infra* Table 8; *infra* Figure 4.

⁸⁹ See *infra* Table 8.

⁹⁰ See *infra* Table 8.

slightly lower percentage of distracted students when a rule is discussed or text is read.⁹¹ Both of these differences were found to be statistically significant through a paired t-test.

One difference between upper- and first-year students is that the level of distraction fell to its lowest point—under 10%—when I displayed PowerPoint slides in Civil Procedure.⁹² That drop too was statistically significant.⁹³ I do not post my slides on the web. The observers in Civil Procedure reported that when I displayed a slide, distracted students abandoned the Internet to take down the information on the slide. By contrast, in the classes in which the professor posted slides on the course website, distracted students stayed distracted. Because professors sometimes display important information on slides, Civil Procedure students might have thought that failing to record the contents of a slide would deprive them of something they would need to know, while students in classes in which the professors made the slides available after class faced no such penalty.⁹⁴ But it cannot be certain that this explanation accounts for the different responses; the different behavior may simply reflect the differences between first-semester and upper-year students because all the professors who posted the slides on the web taught upper-year students and my students were, as noted above, all first-semester students.⁹⁵ Civil Procedure students also displayed a statistically significant drop in attention when we worked through problems and hypotheticals.⁹⁶

One striking finding is that the Civil Procedure students were more likely to tune out during policy discussions than anything else except for when I took questions (imagine how bad it gets when students ask questions about policy justifications).⁹⁷ Nearly 18% were distracted during those discussions, a difference that, using a paired t-test, was found to be statistically significant.⁹⁸ First-semester students also differed from upper-year students in that attention levels were less stable across different

⁹¹ See *infra* Table 8.

⁹² See *infra* Table 8.

⁹³ See *infra* Table 8.

⁹⁴ Cf. Maxwell, *supra* note 45, ¶ 4 (professor posted to website notes she typed during class).

⁹⁵ Even assuming that not posting the slides explains the different behavior, it is not clear that such a practice actually is helpful to students. Some class time is taken up by students copying down information on slides, while the students who were distracted before the slide went up may simply return to the distraction when they have finished recording the contents of the slide. On the other hand, students who copy information on a slide have that information in their thoughts, however briefly, though some claim that taking down information is not of much value. See *infra* notes 154–55 and accompanying text.

⁹⁶ See *infra* Table 8.

⁹⁷ See *infra* Table 8.

⁹⁸ See *infra* Table 8.

activities for the Civil Procedure students than they were for the upper-year students.⁹⁹ Six of the sixteen activities drew distraction levels between 12% and 16% from the Civil Procedure students.¹⁰⁰

Intro students showed different patterns of attention than the other students, though whether that was because it was their first law school course, and so students had not yet developed laptop habits, because it was a pass-fail course, because students were not tested in the course, or for some other reason, is impossible to know. Inasmuch as only four sessions were tracked in such a way as to permit assembling the data displayed in Table 8, it is also possible that a fuller picture of Intro would look different.

The average level of distraction in Intro was 22%.¹⁰¹ The level of attention by activity varied more in this course than in any other, with only two activities drawing distraction levels in the 20% to 24% range,¹⁰² but again, that may be because the data is based on only four sessions. For activities in which students had more than 100 opportunities, the level of distraction ranged from 9% to 46%.¹⁰³ As with the Civil Procedure students, the Intro students were most likely to tune out during policy discussions, with a distraction level of 46%, or more than twice the average distraction rate.¹⁰⁴ And again, like the Civil Procedure students, distraction levels fell to 15% when slides were displayed.¹⁰⁵ But unlike the other students, Intro students were more likely to pay attention when students asked questions, with an average distraction level of 12%, and less likely to pay attention to rules.¹⁰⁶

C. Some Good News and Some Bad News

Law professors sometimes argue that students should learn that policy arguments and the facts and procedural posture of cases matter.¹⁰⁷ The study offers some evidence about their success in doing so. First, the good

⁹⁹ See *infra* Table 8.

¹⁰⁰ See *infra* Table 8.

¹⁰¹ See *infra* Table 8.

¹⁰² See *infra* Table 8.

¹⁰³ See *infra* Table 8.

¹⁰⁴ See *infra* Table 8.

¹⁰⁵ See *infra* Table 8. The level of distraction also fell when text was read, but students faced only seventy-six opportunities so the data may be less meaningful. See *infra* Table 8.

¹⁰⁶ See *infra* Table 8.

¹⁰⁷ See, e.g., Judith L. Maute, *Response: The Values of Legal Archaeology*, 2000 UTAH L. REV. 223, 227 (2001) (“[F]or years I kept a taped note on the cover page of my contracts casebook: ‘If you don’t get it factually, you can’t get it right legally.’”); Russell L. Weaver, *Langdell’s Legacy: Living with the Case Method*, 36 VILL. L. REV. 517, 584 (1991) (urging professors to emphasize policy considerations in teaching case law).

news: student attentiveness to the facts of cases is comparable to their overall attention levels.¹⁰⁸ The level of distraction among all laptop users observed when facts were explored was 24%.¹⁰⁹ Upper-year students were slightly less likely to tune out during discussions of facts (34%) than during other activities (average of 35%), while Civil Procedure students were a hair more likely to ignore the facts (16%) than usual (average of 14%), a difference that was not statistically significant.¹¹⁰ Intro students paid much closer attention to the facts (14%) than most matters (22.3%).¹¹¹

The evidence is less clear—but still encouraging—concerning the degree to which students are distracted during discussions of the procedural postures of cases. While the overall distraction level for such discussions was 18%, that figure is disproportionately affected by Civil Procedure: of the 649 opportunities on procedural background, 479, or 74%, were in Civil Procedure.¹¹² Because that course involves procedure, and because we pay particular attention in Civil Procedure to case procedural postures, the distraction level in that class may not be typical of law school classes generally. Taking Civil Procedure out of the numbers yields 170 opportunities and forty distracted laptop users, for a percentage of 24%, which is still a low level of distraction—though with only 170 opportunities, the data is far from definitive.¹¹³

The data on policy discussions is disappointing. Students had only forty-nine opportunities for policy discussions in the upper-year courses so the data is based largely on the first-semester classes.¹¹⁴ Intro students tuned out more during policy arguments than for any other activity; similarly, policy arguments generated the second lowest amount of attention among Civil Procedure students.¹¹⁵ I can only hope that the professors who followed me were more effective at teaching students the significance of public policy.

¹⁰⁸ See *infra* Table 8.

¹⁰⁹ See *infra* Table 8.

¹¹⁰ See *infra* Table 8.

¹¹¹ See *infra* Table 8.

¹¹² See *infra* Table 8.

¹¹³ See *infra* Table 8.

¹¹⁴ See *infra* Table 8.

¹¹⁵ See *infra* Table 8. This may have something to do with student perceptions that professors do not test policy questions. See Weaver, *supra* note 107, at 577–78 (reporting on survey of students finding that “few students” say they have been tested on policy considerations).

D. Format

The study suggests that the choice of whether to cover content by lecture, calling on students, or discussion (identified in Table 8 as “Student-Volunteered Comments”) makes little difference to student attention (though of course it may matter for such things as student mastery of the material or the amount of time it takes to cover a topic). Thus, for upper-year students, the level of distraction varied from only 34% to 37% for those three activities while for the first-semester students it was in the 14% to 17% range for all three.¹¹⁶

E. Stickiness of Laptop Use

Because distracted students are likely to miss some of the content of the class, they may lose the thread of the conversation. Students who no longer understand what is going on may decide to tune out for the balance of discussion of a topic, on the theory that they have nothing to gain by paying attention until the topic shifts. If that were so, we would expect to see more increases in the number of distracted students, as first one, and then another, student becomes momentarily distracted, and then decides to tune out until the topic covered changes. In fact, the study found no evidence for this hypothesis.¹¹⁷ Table 9 shows the number of times that the number of distracted students increased or decreased in selected courses. As seen there, it was slightly more common for the number of distracted students to drop rather than increase.¹¹⁸ It thus appears that for many students the state of being distracted is not “sticky,” in that they can return from a distracted state to paying attention, or at least to not being distracted by their laptop.¹¹⁹

V. SOME COMMENTS ON THE DATA

A. The Role of Incentives and Temptation

The difference in distraction levels among the Civil Procedure and upper-year students is striking.¹²⁰ The most plausible explanation for the difference lies in the role of incentives. As is well known in the law school community, first-year grades have far more significance for most students

¹¹⁶ See *infra* Table 8.

¹¹⁷ See *infra* Table 9.

¹¹⁸ See *infra* Table 9.

¹¹⁹ See *infra* Table 9.

¹²⁰ See *infra* Table 8.

than upper-year grades.¹²¹ Law Review eligibility depends in part on first-semester grades.¹²² Obviously, employment and internships during the summer after first year—which can be remunerative in the short term and have resume and other value in the longer term—depend to some extent on first-semester grades.¹²³ Similarly, employment during the summer between second and third year at the top firms—the most highly paid employment, and which can lead to full-time jobs upon graduation—is typically decided in the fall of second year, before second-year grades are available.¹²⁴

Upper-year students know all this and perhaps feel freer to ignore what is happening in the classroom because they understand that their grades are less significant and the cost of not mastering the material is lower.

Other explanations for the distraction differences are also possible.¹²⁵ Perhaps the temptation to use a laptop increases over time. Students come to law school to learn, and that may propel them to pay attention in the early going. In addition, law school is still new in the first semester, and so students may find it more interesting—even exciting—and be less tempted to play solitaire, etc. But by the third and fifth semesters of law school, students may have become bored and their interest in learning may decline.¹²⁶

¹²¹ Paul T. Wangerin, *Calculating Rank-in-Class Numbers: The Impact of Grading Differences Among Law School Teachers*, 51 J. LEGAL EDUC. 98, 104 (2001).

¹²² *Id.* at 115.

¹²³ *Id.* at 104.

¹²⁴ Simon Lamb, *The Importance of First Year Law School Grades*, BLUEPRINT, http://blueprintprep.com/free-lsat-help/article/law_school_and_beyond/first_year_law_school_grades/2 (last visited Apr. 28, 2013).

¹²⁵ The most flattering explanation, of course, is that students responded better to my teaching (since I was the only professor observed teaching first-semester students) than the upper-year students responded to the teaching of their professors. Colleagues have assured me, however, that this cannot possibly be true. It would obviously be desirable to observe other first-semester classes to see if the pattern observed in my classes is true of them as well. Another reason to study other first-semester classes is to test the hypothesis that the more difficult the class, the more students pay attention. Because Civil Procedure is commonly thought of as the most difficult first-semester class, comparing distraction levels in Civil Procedure with those in other first-semester classes might make it possible to determine if this hypothesis is true. A student suggested that one reason first-semester students focus more on classes is that first-semester students “must do more mental work than upper year students in order to reach the same understanding of the material.” Put another way, he argued that because first-semester students are newer to the process of “thinking like a lawyer” and less familiar with legal materials, they must concentrate more than upper-year students, who can grasp the material without giving it their full attention. This is inconsistent with the idea that teachers of upper-year students tend to take into account the greater experience of their students and demand more by, for example, moving more quickly through material, explaining less, and working with more challenging concepts, but the study’s data does not disprove the hypothesis.

¹²⁶ Jason M. Dolin, *Opportunity Lost: How Law School Disappoints Law Students, the Public, and the Legal Profession*, 44 CAL. W. L. REV. 219, 251 (2007).

The data offers a way to test this hypothesis to some extent. If boredom accounted for the effect, we might expect to see an increasing number of students tuning out over time. In fact, the level of distraction did increase in Civil Procedure somewhat, as Figure 2 shows. Table 10 shows the percentage of students observed tuning out in Civil Procedure for each of the last three months that class was observed.¹²⁷ The percentage of students who never used laptops for non-class purposes dropped somewhat over that span, from 46% to 39%, and the percentage of students who were distracted at least half the time increased slightly, from 3% to 7%.¹²⁸ Similarly, the percentage of students who used laptops for non-class purposes for more than five minutes in a class increased from 32% to 44% from the first month to the third.¹²⁹ But while the amount of laptop use for non-class purposes increased over time in the first semester, it still falls well short of the amount observed in the upper-year courses.¹³⁰ It may be that the increase accelerated in the second semester, which of course we did not observe. In any event, boredom remains a possible alternative—or complementary—explanation for the differences in laptop use between the first and later semesters. By contrast, the distraction levels in the upper-year classes seemed fairly stable over time.¹³¹ It may be that boredom accounts for some amount of distraction, but that by the time students reach their second year, boredom has had as much an effect as it will.

The effect of incentives is also visible in the Intro data. Though the class was graded on a pass-fail basis, students still had an incentive to pay attention to it in the early going.¹³² It was their only class during the first two weeks, and they were eager to learn what law school is like and whether they could meet its challenges. I described Intro to the students as the chair in which the other courses sit. We spent an enormous amount of time exploring the “lawyer’s toolbox”; that is, techniques—such as distinguishing cases, synthesizing cases, arguing that statements in opinions are dicta, examining legislative intent, and so on—that lawyers use to formulate arguments and interpret cases and statutes, and that they were told would be needed in their other classes. But by session four, when the distraction level soared,¹³³ the other classes had begun, and students perceived more to gain by focusing on graded courses than on a pass-fail

¹²⁷ One class was observed before the three months in Table 9 and so is not reflected in them.

¹²⁸ See *infra* Table 10.

¹²⁹ See *infra* Table 10.

¹³⁰ Compare *infra* Table 10 with *infra* Table 1.

¹³¹ See *infra* Table 10.

¹³² See *infra* Table 7.

¹³³ See *infra* Table 7.

course. In addition, students had completed the written assignments for Intro before the fourth session and so the material covered in that session did not affect whether the students received a passing grade. Consequently, for some the incentive to pay attention yielded to the temptation offered by laptops.¹³⁴

Incentives may also explain when students are more or less likely to pay attention in class. Students facing a law school exam probably expect to be tested on rules more than anything else, and so students might have a greater incentive to pay attention when classes explore them. While discussion of rules drew less attention in Intro,¹³⁵ perhaps that is because students were not tested on rules in that course. In addition, rules are less important in Intro as the goal of the course is to convey techniques, rather than legal doctrines. Similarly, my students may have chosen to pay attention when I displayed a slide on the theory that if something was important enough to merit displaying on a slide, it may show up on an exam.¹³⁶ Conversely, students probably believe that tests are unlikely to cover student questions and the accompanying answers, and so they tune them out.¹³⁷ In the same way, the first-semester students may have anticipated that policy justifications will not be the subject of test questions. It is harder to account for the tendency to pay attention when a text is read,¹³⁸ especially because students usually have a copy of the text in question in their books; perhaps students believe that when a professor singles out a passage to be read in class, it could be the subject of a test question. And of course, often the text so singled out consists of a rule.¹³⁹

One story to emerge from the data involves what happened when, during one session, I offered my Civil Procedure students small Hershey chocolates—Mr. Goodbars, Krackels, etc.—for making good points during that session. The number of distracted students fell. Thus, instead of the normal 37% of students who were distracted for more than five minutes, only 20% of the students were ($n=29$), and none were distracted for more than half the class (though it was not uncommon for no Civil Procedure

¹³⁴ See *infra* Table 7.

¹³⁵ See *infra* Table 8.

¹³⁶ See *infra* Table 8.

¹³⁷ See *infra* Table 8. I have not come up with a satisfactory hypothesis to explain why the Intro students paid more attention when students asked questions, rather than less, as in the other classes. See *infra* Table 8. Perhaps it was a function of their newness to law school.

¹³⁸ See *infra* Table 8.

¹³⁹ That does not account for the drop in distraction when text was read in Intro, but because students had only seventy-six opportunities during the reading of texts in Intro, the data is not very robust. See *infra* Table 8.

students to be distracted for more than half a session).¹⁴⁰ Initially, that seems irrational: the prospect of earning grades that could help a student secure a job paying \$160,000 a year was not enough to concentrate student attention, but a piece of candy that could be bought for a quarter or less was. Twelve days later, I repeated the experiment, but with trading cards instead of chocolates.¹⁴¹ This time the level of distraction was comparable to other classes: a third of the students were distracted for more than five minutes, and one was distracted for at least half the class (n=30).

We also tried offering chocolates as a reward for participating to students in an upper-year course. The chocolates did not increase upper-year student attention levels; indeed, quite the reverse happened. The percentage of students distracted for more than half the class hit its highest level of the semester in that session for the course (66%; n=12), about 16% higher than the course average.¹⁴²

Given the small numbers involved, first-semester student responses to the chocolates may be no more than a statistical quirk, but other explanations are possible, including both the boredom and incentive hypotheses. The competition aspect of the chocolates as reward may have relieved some of the tedium, but by the second time—with the cards—perhaps it was old hat and so not enough to sustain interest. A student in the class suggested that the explanation was that students value chocolate more than trading cards. But if chocolate was such a powerful inducement, the upper-year students would probably have paid as much attention as the first-semester students; there is no reason to suppose first-semester students have a stronger sweet tooth than upper-year students.¹⁴³ Perhaps upper-year students found the contest uninteresting. Another student suggested that first-semester students, who take nearly all their classes together, are an important social group, and that their greater interest depends on that; upper-year classes are drawn from multiple sections and even years and so are less significant as a social group. But that fails to explain the diminished attention during the card experiment.

As for the incentive hypothesis, first-semester students have far less information than upper-year students about their ability to succeed in law school. Many are desperate for feedback. They may also be curious about the talents of their classmates. Competing for rewards offers information about their proficiency while observing whether classmates earn tokens

¹⁴⁰ See generally *infra* Table 6.

¹⁴¹ Specifically, I let them choose between football cards and cards based on Club Penguin.

¹⁴² See *infra* Table 5.

¹⁴³ In addition, some students valued the cards enough that they were still carrying them months later.

enables them to learn about their classmates' abilities. By contrast, upper-year students have already received at least a year's worth of grades. They also have some information about the performance of their classmates. They may know the grades of some classmates, and can discover more information about students' academic performance from their extracurricular activities; service on law review, for example, implies academic success.¹⁴⁴ Consequently, the upper-year students had less incentive to pay attention. They already had far better indicators of talent.

While incentives may account for the differences in student behavior, they do not do so entirely. For example, presumably all the students in the Civil Procedure classes faced the same incentives, and yet some behaved differently in that some students tuned out despite the incentive to pay attention.¹⁴⁵ In other words, some were more responsive to the incentive to do well than others. Indeed, in Intro, one student began texting seventeen minutes into her law school career and continued throughout the evening. It is inconceivable that she could have known enough about law school that quickly to determine whether she needed to pay attention. In short, while incentives offer the most probable explanation for some student behavior, other explanations, probably including innate differences among students, must also play a part.

B. Prohibiting Laptop Use for Non-Class Purposes While Allowing Laptops in Class

The study found no evidence that allowing students to have laptops but announcing a prohibition on laptop use for non-class purposes has an impact. When a professor announced that students could not use laptops to surf the web, the three students who were on websites at that moment did not close their browsers; instead they continued to be distracted. Of course, that number is so small as to be statistically insignificant, but other evidence supports it. Nancy G. Maxwell reports a similar result in a course in which the professor announced during the first session that "laptops were to be used for note-taking only"; during that very session, "every single data collection point showed inappropriate [laptop] use" while non-class laptop use occurred in each of the remaining thirty-three classes observed as well.¹⁴⁶ And the St. John's laptop policy obviously did not eliminate

¹⁴⁴ See *supra* notes 121–22 and accompanying text.

¹⁴⁵ See *infra* Table 7. It is possible that some first-semester students actually had different incentives. For example, a student with a lawyer-parent who has promised to employ the student upon graduation may feel a reduced incentive to earn top grades.

¹⁴⁶ Maxwell, *supra* note 45, ¶ 21.

classroom laptop use for non-class purposes in the St. John's classes observed.¹⁴⁷

The Maxwell study did turn up some evidence that a policy on laptop use makes a difference, however.¹⁴⁸ Her tracker found the highest non-class laptop use in the only class observed in which the syllabus did not state a laptop policy and the tracker could not recall the professor announcing such a policy.¹⁴⁹

Students also feel free to lie about laptop use. On some occasions in class, I called on students who then asked me to repeat the question. On one such occasion, I asked the student if he had been surfing the web. He denied having done so; behind him, my observer nodded that he had been. Another time, I suggested that a student had been sending e-mail; she said that she would never do so during class, but my observers reported that she was one of the most frequently distracted students in the course.¹⁵⁰ Obviously, some students feel entitled to tune out despite restrictions on their doing so.¹⁵¹

C. Should Professors Prohibit Laptop Use Altogether?

Banning laptops has a cost.¹⁵² This Part addresses the question of whether professors should impose the costs inherent in foregoing laptops on

¹⁴⁷ See *infra* Figure 1; see also Mangan, *supra* note 7 (noting that some students ignore professors who ask students not to use the Internet during class).

¹⁴⁸ See Maxwell, *supra* note 45, ¶ 20.

¹⁴⁹ *Id.* ¶ 22.

¹⁵⁰ See also *id.* ¶ 12 (reporting that a student seated behind student who had been on the Internet, but denied doing so when the professor asked, wondered if he should report that fact to the professor as an honor code violation).

¹⁵¹ See Mangan, *supra* note 7. Some do even more:

Many professors initially asked offending students [at Darden] to log off at the beginning of class. When that didn't work, Darden installed kill switches [for turning off the Internet] in each of the M.B.A. classrooms. . . . "At first, the teacher would turn the system off, and when he wasn't looking, students would turn it back on," says [Darden spokesman Phillip] Giaramita. The switches were moved to hidden locations inside classroom closets. "If students wanted it on badly enough, they'd pull the old 'I have to hang up my coat' routine" and duck into the closet," says James M. Fink, who received his M.B.A. in May. "That would be their cover for flipping the switch back on."

Id.

¹⁵² See McCreary, *supra* note 27, at 989 ("[S]ome students use laptops effectively and appropriately and benefit from having them in the classroom."); Murray, *supra* note 27, at 192 ("On the other side of the debate are those who believe that laptops should be welcomed into law school classrooms because students are technologically savvy, can use them for active learning, and should use laptops in law school because they will have to use technology in practice."). Some law schools have recommended to

students.¹⁵³ Of course, those costs are not overwhelming; generations of students, including many who are now professors, graduated without using laptops.¹⁵⁴

In Kristen E. Murray's words, laptops are a "powerful learning tool"¹⁵⁵ Some—perhaps many—students agree with her that laptops aid learning.¹⁵⁶ Some students may take notes more efficiently on laptops, and may have an easier time converting those notes to an outline.¹⁵⁷ They may be unaccustomed to taking notes manually and the quality of their notes may suffer if they are barred from using laptops.¹⁵⁸ When David

students or required that they purchase laptops. See McCreary, *supra* note 27, at 990 nn.2–3 (noting that, among others, Northwestern Law requires students to have a computer and Saint Louis University School of Law highly recommends students purchase a laptop). Professors may also incur costs by barring laptops because students may resent the ban and that resentment may be reflected in weaker course evaluations or in other ways. See Maxwell, *supra* note 45, ¶¶ 46–47 (discussing the possibility of "poor teacher evaluations" and "an adversarial and resentful relationship in the classroom").

¹⁵³ For other scholarship addressing this question, see McCreary, *supra* note 27, at 991 ("The question should be whether banning laptops from the law school classroom is the best thing we can do for our students—having considered all of their concerns.").

¹⁵⁴ See Justin Reich, *Laptops in the Classroom: Mend It, Don't End It*, CHRISTIAN SCI. MONITOR (May 15, 2007), <http://www.csmonitor.com/2007/0515/p09s01-coop.html>. Studies have also raised questions about how much aid laptops actually provide. See Anne L. Fay, *Impact of Laptop Computers on Students' Academic Lives* 11 (2006) (unpublished manuscript) (on file with Carnegie Mellon University), available at <http://www.cmu.edu/teaching/resources/PublicationsArchives/StudiesWhitepapers/LaptopStudyReport-2006.pdf> ("Although students reported spending significantly more time on their assignments when they had laptops, there was no relationship between time spent and grades.").

¹⁵⁵ Murray, *supra* note 27, at 185. Of course, when professors integrate the use of laptops into instruction by, for example, having students employ them during class for assessment, laptops can be even more valuable in class. For a discussion of the ways professors can have students use laptops during class to enhance instruction, see James Efaw et al., *Miracle or Menace: Teaching and Learning with Laptop Computers in the Classroom*, 27 EDUCAUSE Q. 10, 14 (2004) ("Students of instructors who integrated laptop computers into their classroom strategies . . . scored significantly higher on all six exams and the final exam than students of instructors who used traditional instructional and note-taking methods."); Barbara E. Weaver & Linda B. Nilson, *Laptops in Class: What Are They Good For? What Can You Do with Them?*, NEW DIRECTIONS FOR TEACHING & LEARNING 3, 6–11 (2005) (survey of students found that 61% said they were more engaged in such classes while 86% of faculty so reported; 48% of students claimed they learned more in such classes than in traditional classes while 13% said they learned less).

¹⁵⁶ See Murray, *supra* note 27, at 200 ("While recognizing the potential for distraction, most [students responding to a survey] felt that the benefits outweighed the distraction. . . . [W]hat I learned from the survey data—and other research on adult learning, learning styles, technology, and generational studies—is that professors should allow, if not welcome, laptops into the law school classroom because the net benefit of allowing students to use them outweighs the countervailing considerations.").

¹⁵⁷ See McCreary, *supra* note 27, at 1035 (finding that 72.4% of laptop users forced to give up laptops in class believed the quality of their notes was weaker); Tracy L. McGaugh, *Laptops in the Classroom: Pondering the Possibilities*, 14 PERSP.: TEACHING LEGAL RES. & WRITING 163, 164 (2006) (laptops are "faster and neater than handwriting").

¹⁵⁸ See McCreary, *supra* note 27, at 992 ("[F]or many . . . students, banning laptops would hinder their organizational skills, impede their time-management, and possibly force them to adopt a new system of learning during the time when they are arguably facing the most difficult curriculum of study in their lives."); *id.* at 1019 ("Of all of the students who reported using laptops in class, 96.1% use them

Thomson surveyed his students in the spring semester of 2007, nineteen of thirty-four respondents said that laptops supported their learning in class “to a great degree”; another eleven reported that they did so “somewhat.”¹⁵⁹ Only three said that laptops did “not very much” support their learning, and just one said they did not do so at all.¹⁶⁰ But the evidence is not conclusive. Thus, when forced to forgo laptops, nearly a third of the students responding to one survey who “usually or almost always use laptops” said they “paid better attention in class without laptops,” though a majority stated that they saw no difference in the level of their attention.¹⁶¹ Some students subject to a laptop ban reported that discussions were more involved, though others disagreed.¹⁶²

Some professors have already banned laptop use in the classroom.¹⁶³ They offer a variety of arguments for doing so. Some complain that students use laptops as virtual dictation devices, taking down everything that is said during the class rather than weighing the points before deciding to write them down.¹⁶⁴ Of course, another reason given for banning them is

to take class notes. Over half of those students use their laptops to organize their notes while they take them.”).

¹⁵⁹ David Thomson, *Laptops in the Classroom: Don't Ban Them. Use Them.* (Jan. 3, 2008), available at [http://law.du.edu/thomson/AALS2008/AALS2008\(c\)DavidThomson.pdf](http://law.du.edu/thomson/AALS2008/AALS2008(c)DavidThomson.pdf). Professor Thomson reported his results at the 2008 Meeting of the American Association of Law Schools on January 3, 2008. The results reported here are taken from his slides. *Id.*; see also Taylor, *supra* note 49, at 3 (reporting on survey with thirty-four student respondents in which 56% viewed laptops as a “slight positive” in learning and 18% described laptops as a “major positive”).

¹⁶⁰ Thomson, *supra* note 159.

¹⁶¹ McCreary, *supra* note 27, at 1034.

¹⁶² See *id.* at 1036 (noting that 56.9% and 46.9% of laptop users and non-laptop users, respectively, claimed not to have noticed a difference in class discussion; 32.7% and 46.9%, respectively, found the discussions more involved).

¹⁶³ See Maxwell, *supra* note 45, ¶ 48 (“Two days before the beginning of classes I sent out an e-mail to my students, informing them laptops, Blackberries and other electronic devices were not allowed in my classroom.”); McCreary, *supra* note 27, at 989 (professor noting that she bans laptops from the first rows of class only); Kevin Yamamoto, *Banning Laptops in the Classroom: Is it Worth the Hassles?*, 57 J. LEGAL EDUC. 477, 483 (2007) (listing examples of professors who ban laptops); *Law Professor Bans Laptops in Class, over Student Protest*, USA TODAY (Mar. 21, 2006, 7:44 PM), http://www.usatoday.com/tech/news/2006-03-21-professor-laptop-ban_x.htm (discussing a University of Memphis law professor who banned laptops in her class).

¹⁶⁴ See Eric Chen, *Laptops Nixed in Some Law Classes: Profs Split on Whether the Devices Are Bane or Boon for Learning*, DAILY PENNSYLVANIAN (Apr. 13, 2006, 5:00 AM), http://www.thedp.com/article/2006/04/laptops_nixed_in_some_law_classes (paraphrasing University of Pennsylvania Law School professor to the effect that “students are more focused and engaged without laptops”); Maxwell, *supra* note 45, ¶ 6 (noting that students “were attempting to transcribe everything said in class”); Yamamoto, *supra* note 163, at 503 (“The process of transcribing, either by typing or the use of short-hand, seems to bypass the areas of critical thinking in the brain.”); *Law Professor Bans Laptops in Class, over Student Protest*, *supra* note 163 (“My main concern was they were focusing on trying to transcribe every word that was I saying, rather than thinking and analyzing”); see also McGaugh, *supra* note 157, at 164 (noting that one downside of laptop use is that such use “encourages taking dictation rather than synthesis and organization of material”). For criticism of this view, see

the distraction issue.¹⁶⁵ This study obviously supports the claim that laptops generate temptations, and so strengthens the argument for banning laptops, at least for large survey-style upper-year classes.¹⁶⁶

But several arguments against such bans exist. First, a laptop ban is paternalistic.¹⁶⁷ Some believe that students, in their role as consumers of education, should be able to make the judgment that they do not have to pay attention in class.¹⁶⁸ A variant of this argument depends on the fact that as long as students are tested on the subject, they will still have to learn it; they just may learn it outside of class.¹⁶⁹ Under this view, students should be able to choose for themselves whether they will learn the material by paying attention in class or mastering it outside of class—or not learn it at all.¹⁷⁰

Another argument arises from the suggestion of this study that students are responding to an absence of incentives to pay attention when they tune

McCreary, *supra* note 27, at 1000–01, 1003 (noting that “[m]ost professors claiming laptops have a detrimental effect on note taking do so without any supporting authority for their assumptions,” and arguing that the exception—Professor Yamamoto—relies on studies that are inapplicable to legal education. “Additionally, students who are able to write fast may very well continue to take nearly verbatim notes. Should professors, then, ban pen and paper from classrooms? Should professors inspect students’ notes to see if anyone used short-hand to take nearly verbatim notes?”); Murray, *supra* note 27, at 202–04 (arguing that some students benefit from transcript-like notes and reporting that 70.5% of students in survey stated that they use laptops to take down important points in notes rather than record everything said).

¹⁶⁵ See Maxwell, *supra* note 45, ¶¶ 6, 7. Not everyone agrees that students are distracted by using laptops for non-class purposes. Thus, Murray, *supra* note 27, at 212, reports based on her survey of students that “[t]he overwhelming number of students found that their class-related activities involving their laptops had little effect on their ability to follow discussions in class. Of the students who said they engaged in class-related activities during class, 61.8% said they ‘never miss anything’ or ‘occasionally miss something minor.’” Of course, this claim raises questions about how students who are not paying attention could know that what they missed was minor, or even that they have not missed anything. In addition, as noted *supra* note 49, some empirical evidence shows that students under-report the amount they use laptops for non-class purposes; it is therefore also plausible that they under-report how much they miss. See *supra* note 49.

¹⁶⁶ The methodological limits discussed in Part II limit what the data add to the argument. See *supra* Part II. Students who have chosen to take a smaller specialized class because of a particular interest in the subject may be less tempted to use laptops for non-class purposes. See *supra* Part II. Alternatively, professors can more readily move around in such classes to police non-class laptop use. See Maxwell, *supra* note 45, ¶ 9 (noting that a professor “walks around the classroom. . . . When he finds a student on the Internet, he prohibits the student from bringing the laptop to class in the future.”).

¹⁶⁷ See Maxwell, *supra* note 45, ¶ 7 (“[S]ome professors took the position that students were adults and they should be able to decide how to use their class time, risking whatever consequences may result from their behavior.”); see also Mangan, *supra* note 7 (quoting investment banker and business school graduate Christian Lown: “People who are going to graduate school should be at a stage in their life where they take responsibility for their actions. . . . What you want to get out of school should be your business.”).

¹⁶⁸ See generally McCreary, *supra* note 27; Ann E. Woodley, *A Student-Centered Approach to Teaching Excellence: 10 Ways to Identify Opportunities for Improvement Through the Observation of Students in the Classroom*, 4 PHOENIX L. REV. 155, 170–71 (2010).

¹⁶⁹ See Murray, *supra* note 27, at 227–28.

¹⁷⁰ See *id.* at 228–29 (arguing that laptops are more beneficial to student learning than detrimental).

out.¹⁷¹ In Barbara Glesner Fines's words, "[w]hile the distractions are new, the issue is as old as daydreaming."¹⁷² Those incentives will be just as absent even if laptops are barred, and so students might seek other distractions—with the result that students will incur the cost of doing without laptops without any corresponding gains.¹⁷³ Jana McCreary's survey found that 29% of the students claimed they would "daydream anyway" if laptops were banned.¹⁷⁴ Students may text—something that is harder for professors to ban than laptops because it is more difficult to see a cell phone than to spot a laptop. Because students can surf the web and play solitaire on smartphones, laptop bans may not even eliminate many distractions.¹⁷⁵ But they will make it impossible for students to use laptops appropriately during class.¹⁷⁶

Counter-arguments certainly exist. The American Bar Association, the accreditor for law schools, has already rejected the paternalism argument. The ABA obliges law schools to require students to attend classes regularly.¹⁷⁷ Presumably they wish students not just to attend class but also to pay attention. As a thought experiment, imagine an applicant to the bar before a character committee in such a state defending surfing the web during class. Or imagine visiting a doctor for an ailment and learning that the doctor was playing solitaire when the ailment was taught. Law professors not only have an obligation to their students; they also have an obligation to the clients their students will someday represent. That obligation suggests that students should not have the last word on what they attend to during class.

The anti-paternalism argument assumes that paying attention in class affects students' performance later on in their careers.¹⁷⁸ This study did not

¹⁷¹ See *Computers in the Classroom: New Distraction, as Old as Day Dreaming*, LAW TCHR., Spring 2003, at 6, available at <http://lawteaching.org/lawteacher/2003spring/lawteacher2003spring.pdf>; *supra* Part III.

¹⁷² *Computers in the Classroom*, *supra* note 171, at 7.

¹⁷³ See Maxwell, *supra* note 45, ¶ 7 ("[S]tudents have always found ways to disengage from the classroom, such as working on crossword puzzles, reading other material, or simply daydreaming."); Avi Zenilman, *The Rules of Distraction*, SLATE (Nov. 18, 2005, 4:19 PM), <http://slate.com/id/2130600> (questioning whether laptop distractions are "worse than the old-fashioned ones—doodling, dozing, reading, playing footsie, passing notes"). Maxwell also notes that some suggest that "if the class was more interesting and engaging, then students would not be tempted to 'check out' of class by using their laptops as a diversion from engaging in class." Maxwell, *supra* note 45, ¶ 17.

¹⁷⁴ McCreary, *supra* note 27, at 1024.

¹⁷⁵ This assumes that cell phones are usable in the classroom; in most of our classrooms, for example, that is the case, but in some basement rooms, cell phones cannot connect to the network.

¹⁷⁶ See McCreary, *supra* note 27, at 1003 ("[B]anning laptops would do nothing but punish . . . [students who use laptops effectively] and strip them of a useful educational tool.").

¹⁷⁷ See, e.g., ABA STANDARDS FOR APPROVAL OF LAW SCHOOLS § 304(d) (2010) ("A law school shall require regular and punctual class attendance.").

¹⁷⁸ See Murray, *supra* note 27, at 189–90.

compare the grades of distracted students with attentive students, and so it cannot demonstrate that students' mastery of material correlates with paying attention in class.¹⁷⁹ But while this study did not demonstrate that paying attention in class yields greater mastery, it also did not demonstrate the converse.¹⁸⁰ Though no study appears to address specifically whether the performance of law students suffers when they are multitasking, the existing evidence does suggest that multitasking impairs student performance.¹⁸¹ Studies of student performance in non-law school contexts offer lukewarm support for the proposition that students who are distracted by laptops perform less well on tests of learning, while other studies have found that multitasking degrades the quality of some tasks.¹⁸² Even

¹⁷⁹ The study did not examine the grades of distracted students for several reasons. Chief among these is that it is impossible to conceal from the observers and other students which students are distracted, and so reporting the grades of those who were distracted, even if aggregated, would have risked a breach of privacy.

¹⁸⁰ See *supra* Introduction.

¹⁸¹ See, e.g., Kraushaar & Novak, *supra* note 45, at 249. In Kraushaar and Novak's study, the authors placed spyware on consenting students' laptops. *Id.* at 243. They found "limited and mixed support for the hypothesis that a higher frequency of multitasking is correlated with lower academic performance levels," and that "students who allocate more cognitive resources to generating distractive rather than productive software windows exhibit lower academic performance." *Id.* at 249. Additionally, see Helene Hembrooke & Geri Gay, *The Laptop and the Lecture: The Effects of Multitasking in Learning Environments*, 15 J. COMPUTING IN HIGHER EDUC. 46, 53, 59–61 (2003), discussing that on a quiz following a lecture:

[S]tudents in the open laptop condition perform[ed] significantly poorer than those in the closed laptop condition

. . . .

. . . The sustained distraction, regardless of content relevance appears to be the nemesis of the multitasker; if one is adroit at staccato-like browsing, processing multiple inputs simultaneously may not suffer to the same extent.

. . . .

. . . While students were obviously distracted by having access to the Internet . . . as evidenced by their performance on traditional tests of memory, their performance in the class overall does not reflect this same disruption. The average final grade for the class was a strong B+, and students had been multitasking in class since the beginning of the semester. The structure of the class was nontraditional, highly interactive and dynamic Had the class been more traditional and grades determined by conventional tests of memory, the outcome may have been different.

. . . [T]here is also the possibility that over time, students became increasingly adept at multitasking in the classroom setting.

Id.

¹⁸² See Brian P. Bailey & Joseph A. Konstan, *On the Need for Attention-Aware Systems: Measuring Effects of Interruption on Task Performance, Error Rate, and Affective State*, 22 COMPUTERS IN HUM. BEHAV. 685, 685, 701–02, 705 (2006) ("[W]hen peripheral tasks *interrupt* the execution of primary tasks, users require from 3% to 27% more time to complete the tasks, commit twice the number of errors across tasks, experience from 31% to 106% more annoyance, and experience twice the increase in

students acknowledge that laptop use causes them to miss information in class.¹⁸³ All this is consistent with Tim Hurley's intuition that "[s]tudents cannot possibly learn everything from class when they have four conversations going and a solitaire game."¹⁸⁴ And of course, the traditional view is that classes enhance learning. In that light, those who argue that using laptops for non-class purposes does not affect performance in law school should bear the burden of proof.

It is certainly possible that laptop advocates can carry that burden. Perhaps future studies will show that law student performance does not suffer from multitasking. The fact that distraction seems not to be sticky¹⁸⁵ lends some support to the notion that students gain something from class even when they are distracted, because it suggests that they can retain enough of a hold on what is being covered that they can return to an

anxiety than when those same peripheral tasks are presented at the boundary *between* primary tasks. . . . [D]egradation tended to increase with the difficulty of the primary task Degradation was likely due to users needing more time to re-orient to tasks that induced higher mental demands at the point of interruption [I]nterruptions have a residual effect that transcends the immediate task."); Kraushaar & Novak, *supra* note 45, at 242 ("While routine or familiar tasks can be often be [sic] performed with relatively little cognitive effort, more complex, new, or unfamiliar tasks pose a cognitive processing load that may exceed the capacity of an individual's working memory. If this happens, some of the primary information will not be encoded in long-term memory and will be lost. . . . When cognitive resources are demanded by reorientation and/or by distractive tasks, primary tasks may not receive the cognitive resources they need—leading to increases in learning errors, learning times, annoyance, and anxiety."); Joshua S. Rubinstein et al., *Executive Control of Cognitive Processes in Task Switching*, 27 J. EXPERIMENTAL PSYCHOL.: HUM. PERCEPTION & PERFORMANCE 763, 790 (2001) ("We found that in two different task domains, visual pattern classification and arithmetic problem solving, reliable mean switching-time costs occurred, and their magnitudes increased with the complexity of the rules needed for performing the tasks between which participants had to switch."); Nash Unsworth & Randall W. Engle, *Speed and Accuracy of Accessing Information in Working Memory: An Individual Differences Investigation of Focus Switching*, 34 J. EXPERIMENTAL PSYCHOL.: LEARNING, MEMORY, & COGNITION 616, 628 (2008) ("[A]ccuracy tended to decrease as the frequency of object switches increased, and this impacted low-ability individuals more than high-ability individuals. Taken together, these results suggest that it takes time to switch the focus of attention between objects in [working memory], and the more times individuals have to switch the focus between objects, the more likely they are to switch to the wrong representation."); see also M. H. Sam Jacobson, *Paying Attention or Fatally Distracted? Concentration, Memory, and Multi-Tasking in a Multi-Media World*, 16 J. LEG. WRITING INST. 419, 439 (2010) ("Because of the time it takes to perform . . . cognitive shifts [from one task to another while multitasking], trying to do more than one task at a time takes longer than doing each task sequentially."). Jacobson states that errors increase with the frequency of switching from one activity to another, "with the greatest interference occurring when a person is doing intellectually demanding work, such as struggling with problem-solving and reasoning tasks," and that "multi-tasking is slower, less accurate, and less likely to be remembered than doing one task at a time." *Id.* at 440–41 (footnotes omitted). But Jacobson also notes that the time it takes to switch from one task to another declines with practice. See *id.* at 439–40. Perhaps, then, the increased distraction levels of upper-year students is less costly to them, which might help explain why they tune out more.

¹⁸³ See McCreary, *supra* note 27, at 1026 ("Between 45% and 50% of students admitted that they had missed something said in class due to their own laptop usage.").

¹⁸⁴ Hurley, *supra* note 45.

¹⁸⁵ See *infra* Table 9.

attentive state and learn. In trying to carry the burden, laptop advocates should also take into account the possibility that when large numbers of students ignore classes, the curve may be affected, creating the illusion that attending to classes does not matter.¹⁸⁶ In other words, when many students disregard what is happening in the classroom, overall learning may be impacted, resulting in students attaining the same grade with a weaker performance.¹⁸⁷ As a result, laptops may impair learning without affecting grades.

Laptops may also affect students who do not use them themselves. Some students reportedly find their use by others distracting.¹⁸⁸ Moreover, to the extent that distracted students do not participate in class discussions, they may diminish the quality of other students' learning.¹⁸⁹

Finally, eliminating laptops may affect student behavior by eliminating one temptation. Allowing students to have laptops is like placing beer in front of alcoholics.¹⁹⁰ Indeed, because students can see other students using laptops for non-class purposes, it may be comparable to placing beer in front of alcoholics as they watch other alcoholics imbibing.¹⁹¹

Students face extra temptations when they have laptops—temptations some find impossible to resist. Take away the laptops and perhaps students will resist the remaining temptations they face. Banning laptops does not

¹⁸⁶ See generally Hembrooke & Gay, *supra* note 181, at 60–61.

¹⁸⁷ See generally *id.*

¹⁸⁸ See Maxwell, *supra* note 45, ¶ 7 (“[A] laptop screen, displaying a colorful and motion-filled game or Internet site, is far more distracting to others than a student working on a crossword puzzle.”); *id.* ¶ 50 (reporting that one student “found the use of laptops distracting because of the noise of the key tapping”); McCreary, *supra* note 27, at 989 (“[Some] students cannot resist the temptation to look at another student’s screen and therefore need a place to sit in the classroom free from distraction.”); Yamamoto, *supra* note 163, at 488 (“One person [using a laptop] in the front row can distract almost the entire class if the screen is large, and what he is viewing is provocative.”); *Computers in the Classroom*, *supra* note 171, at 6 (describing how Professor Daniel A. Levin was distracted by another’s laptop use when he took a seminar). But when David Thomson asked students whether they found laptop use by others distracting, out of thirty-one respondents, sixteen said that they “very rarely” found them so, and another twelve said “rarely”; two stated that they were “often” distracted, and one said “very often.” See Thomson, *supra* note 159; see also McCreary, *supra* note 27, at 1030 (reporting that more than half of laptop users report never missing anything in class as a result of looking at another laptop screen while only 20% of non-laptop users make a similar claim); Murray, *supra* note 27, at 213 (“Thirty-seven percent of respondents said that they have never been distracted by the laptop-related activities of their classmates. No activity commonly believed to be a potential distraction affected more than half of the students surveyed.”) (footnote omitted).

¹⁸⁹ See Maxwell, *supra* note 45, ¶ 27 (“One tracker stated ‘that laptops diminish classroom discussion because some people are not paying attention and when the discussion happens upon them, they are unprepared to respond.’”).

¹⁹⁰ See Mangan, *supra* note 7 (quoting Elliott N. Weiss, Associate Dean at University of Virginia’s Darden School of Business, that “having Internet access [in class] was like placing a big bowl of candy in front of students . . . They’d eat, whether they were hungry or not.”).

¹⁹¹ See Maxwell, *supra* note 45, ¶¶ 7, 26.

affect the incentive to pay attention, but it does affect the temptations students experience. For example, imagine a professor conducting class while projecting a silent movie or a conventional movie with closed captioning on a screen overhead (students can, in fact, watch movies on laptops).¹⁹² It is hard to believe that the level of distraction would not increase in such a class over what it would have been if the movie had not been projected, simply because of the temptation to watch the movie. I have never heard of a professor displaying a movie that way and I doubt any do, but allowing laptops is in some respects the equivalent.¹⁹³

For my classes, the option I have chosen is to balance the value of laptops against the likelihood of distraction. The study suggests that first-semester students use laptops for non-class purposes much less than upper-year students¹⁹⁴ and so, as of this writing, my inclination is to permit laptop use in first-semester classes, but not upper-year courses.

VI. CONCLUSION—AND A PLEA

This study has found that many students are significantly distracted in law school classes.¹⁹⁵ If educators required upper-year survey classes to meet the 85% attention threshold reached by *Sesame Street* segments, the upper-year classes studied in this Article would have been cancelled.¹⁹⁶ For many upper-year students, temptation trumps incentive. For first-year students, however, the news is more encouraging.

Because of the methodological limits described above in Part II, however, it is difficult to be certain of the extent to which the study reflects the behavior of law students or students generally. And so, a plea: I hope others will conduct similar studies.¹⁹⁷ Professors may benefit from conducting similar studies in their own classes because they may learn how

¹⁹² Cf. Daniel de Vise, *Wide Web of Diversions Gets Laptops Evicted from Lecture Halls*, WASH. POST, Mar. 9, 2010, at A01, available at <http://www.washingtonpost.com/wp-dyn/content/article/2010/03/08/AR2010030804915.html> (quoting Georgetown Law Professor David Cole saying that allowing laptops in class “is like putting on every student’s desk, when you walk into class, five different magazines, several television shows, some shopping opportunities and a phone, and saying, ‘Look, if your mind wanders, feel free to pick any of these up and go with it.’”).

¹⁹³ This discussion assumes that students without laptops are less tempted to tune out than students with laptops. This study sheds no light on the validity of that assumption, because it did not attempt to measure the engagement of laptop-less students. Professors who view the assumption as invalid should not ban laptops, on the theory that learning will suffer under such a ban, but attention will be no greater.

¹⁹⁴ See *infra* Figure 1. In Intro, I plan to permit laptops until the regular classes begin.

¹⁹⁵ See *infra* Figure 1.

¹⁹⁶ See discussion *supra* Introduction and *infra* Figures 1, 3.

¹⁹⁷ A student suggested that future studies might also profitably evaluate whether students using laptops performed better in class than those not using laptops, when called on in class.

to increase student attention—thereby presumably enhancing learning—or what increases distracted behavior, which professors presumably wish to avoid, all other things being equal.

In addition, more data would shed greater light on what conduct increases student attention and distraction. That data should inform professors generally in their teaching. It will also eliminate some of the methodological problems with this study. Students in other classes and disciplines may behave differently. They may face different incentives, or their behavior may not respond to incentives. If we want to enhance student learning, we must ourselves learn more about when it occurs in the classroom. If the producers of *Sesame Street* can choose what to show based on their audience's attention, can professors afford to do less?

Table 1: Number and Percentage of Students Using Laptops for Non-Class Purposes in Upper-Year Classes

**Amount of Time
Number / Percentage**

Class	Total Laptops Observed	Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	≤ Half the Class
A	146	5 / 3.42%	9 / 6.16%	42 / 28.77%	90 / 61.64%
B	33	1 / 3.03%	1 / 3.03%	5 / 15.15%	26 / 78.79%
C	53	0 / 0.00%	2 / 3.77%	23 / 43.40%	28 / 52.83%
D	155	16 / 10.32%	17 / 10.97%	43 / 27.74%	79 / 50.97%
Totals	387	22 / 5.68%	29 / 7.49%	113 / 29.20%	223 / 57.62%

Table 2: Number and Percentage of Students Using Laptops for Non-Class Purposes in Class A

**Amount of Time
Number / Percentage**

Session	Total Laptops Observed	Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	≤ Half the Class
1	15	0 / 0.00%	0 / 0.00%	0 / 0.00%	15 / 100.00%
2	10	1 / 10.00%	1 / 10.00%	4 / 40.00%	4 / 40.00%
3	10	1 / 10.00%	2 / 20.00%	3 / 30.00%	4 / 40.00%
4	9	0 / 0.00%	0 / 0.00%	4 / 44.44%	5 / 55.56%
5	7	0 / 0.00%	1 / 14.29%	3 / 42.86%	3 / 42.86%
6	8	0 / 0.00%	1 / 12.50%	2 / 25.00%	5 / 62.50%
7	9	0 / 0.00%	1 / 11.11%	3 / 33.33%	5 / 55.56%
8	9	1 / 11.11%	0 / 0.00%	3 / 33.33%	5 / 55.56%
9	10	1 / 10.00%	0 / 0.00%	2 / 20.00%	7 / 70.00%
10	10	0 / 0.00%	1 / 10.00%	2 / 20.00%	7 / 70.00%
11	10	1 / 10.00%	0 / 0.00%	2 / 20.00%	7 / 70.00%
12	11	0 / 0.00%	0 / 0.00%	4 / 36.36%	7 / 63.64%
13	9	0 / 0.00%	1 / 11.11%	3 / 33.33%	5 / 55.56%
14	10	0 / 0.00%	0 / 0.00%	4 / 40.00%	6 / 60.00%
15	9	0 / 0.00%	1 / 11.11%	3 / 33.33%	5 / 55.56%
Totals	146	5 / 3.42%	9 / 6.16%	42 / 28.77%	90 / 61.64%

Table 3: Number and Percentage of Students Using Laptops for Non-Class Purposes in Class B

**Amount of Time
Number / Percentage**

Session	Total Laptops Observed	Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	\leq Half the Class
1	11	0 / 0.00%	0 / 0.00%	0 / 0.00%	11 / 100.00%
2	14	1 / 7.14%	0 / 0.00%	3 / 21.43%	10 / 71.43%
3	8	0 / 0.00%	1 / 12.50%	2 / 25.00%	5 / 62.50%
Totals	33	1 / 3.03%	1 / 3.03%	5 / 15.15%	26 / 78.79%

Table 4: Number and Percentage of Students Using Laptops for Non-Class Purposes in Class C

**Amount of Time
Number / Percentage**

Session	Total Laptops Observed	Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	\leq Half the Class
1	12	0 / 0.00%	0 / 0.00%	5 / 41.67%	7 / 58.33%
2	14	0 / 0.00%	1 / 7.14%	5 / 35.71%	8 / 57.14%
3	13	0 / 0.00%	0 / 0.00%	7 / 53.85%	6 / 46.15%
4	14	0 / 0.00%	1 / 7.14%	6 / 42.86%	7 / 50.00%
Totals	53	0 / 0.00%	2 / 3.77%	23 / 43.40%	28 / 52.83%

Table 5: Number and Percentage of Students Using Laptops for Non-Class Purposes in Class D

**Amount of Time
Number / Percentage**

Session	Total Laptops Observed	Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	≤ Half the Class
1	15	4 / 26.67%	1 / 6.67%	1 / 6.67%	9 / 60.00%
2	14	0 / 0.00%	2 / 14.29%	5 / 35.71%	7 / 50.00%
3	15	3 / 20.00%	3 / 20.00%	4 / 26.67%	5 / 33.33%
4	12	1 / 8.33%	1 / 8.33%	4 / 33.33%	6 / 50.00%
5	12	1 / 8.33%	2 / 16.67%	5 / 41.67%	4 / 33.33%
6	16	4 / 25.00%	0 / 0.00%	6 / 37.50%	6 / 37.50%
7	13	1 / 7.69%	1 / 7.69%	3 / 23.08%	8 / 61.54%
8	11	2 / 18.18%	2 / 18.18%	0 / 0.00%	7 / 63.64%
9	12	0 / 0.00%	0 / 0.00%	4 / 33.33%	8 / 66.67%
10	12	0 / 0.00%	2 / 16.67%	3 / 25.00%	7 / 58.33%
11	12	0 / 0.00%	2 / 16.67%	4 / 33.33%	6 / 50.00%
12	11	0 / 0.00%	1 / 9.09%	4 / 36.36%	6 / 54.55%
Totals	155	16 / 10.32%	17 / 10.97%	43 / 27.74%	79 / 50.97%

Table 6: Number and Percentage of Students Using Laptops for Non-Class Purposes in Civil Procedure

Session	Total Laptops Observed	Amount of Time Number / Percentage			
		Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	≤ Half the Class
1	38	22 / 57.89%	4 / 10.53%	12 / 31.58%	0 / 0.00%
2	17	8 / 47.06%	3 / 17.65%	5 / 29.41%	1 / 5.88%
3	18	9 / 50.00%	2 / 11.11%	7 / 38.89%	0 / 0.00%
4	18	9 / 50.00%	3 / 16.67%	6 / 33.33%	0 / 0.00%
5	19	10 / 52.63%	5 / 26.32%	4 / 21.05%	0 / 0.00%
6	36	16 / 44.44%	7 / 19.44%	10 / 27.78%	3 / 8.33%
7	32	10 / 31.25%	10 / 31.25%	10 / 31.25%	2 / 6.25%
8	38	23 / 60.53%	5 / 13.16%	9 / 23.68%	1 / 2.63%
9	31	12 / 38.71%	10 / 32.26%	9 / 29.03%	0 / 0.00%
10	20	8 / 40.00%	6 / 30.00%	6 / 30.00%	0 / 0.00%
11	10	2 / 20.00%	4 / 40.00%	4 / 40.00%	0 / 0.00%
12	29	14 / 48.28%	9 / 31.03%	6 / 20.69%	0 / 0.00%
13	39	18 / 46.15%	6 / 15.38%	13 / 33.33%	2 / 5.13%
14	37	16 / 43.24%	4 / 10.81%	15 / 40.54%	2 / 5.41%
15	30	14 / 46.67%	6 / 20.00%	9 / 30.00%	1 / 3.33%
16	28	10 / 35.71%	4 / 14.29%	12 / 42.86%	2 / 7.14%
17	26	10 / 38.46%	7 / 26.92%	8 / 30.77%	1 / 3.85%
18	27	9 / 33.33%	5 / 18.52%	12 / 44.44%	1 / 3.70%

(Cont'd) **Table 6: Number and Percentage of Students Using Laptops for Non-Class Purposes in Civil Procedure**

Session	Total Laptops Observed	Amount of Time Number / Percentage			
		Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	≤ Half the Class
19	15	10 / 66.67%	3 / 20.00%	2 / 13.33%	0 / 0.00%
20	28	10 / 35.71%	5 / 17.86%	10 / 35.71%	3 / 10.71%
21	38	14 / 36.84%	5 / 13.16%	16 / 42.11%	3 / 7.89%
22	26	9 / 34.62%	4 / 15.38%	10 / 38.46%	3 / 11.54%
Totals	600	263 / 43.83%	117 / 19.5%	195 / 32.5%	25 / 4.17%

Table 7: Number and Percentage of Students Using Laptops for Non-Class Purposes in Intro to Law

Session	Total Laptops Observed	Amount of Time Number / Percentage			
		Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	≤ Half the Class
1	18	6 / 33.33%	3 / 16.67%	8 / 44.44%	1 / 5.56%
2	22	14 / 63.64%	2 / 9.09%	4 / 18.18%	2 / 9.09%
3	22	10 / 45.45%	2 / 9.09%	6 / 27.27%	4 / 18.18%
4	23	5 / 21.74%	1 / 4.35%	3 / 13.04%	14 / 60.87%
Totals	85	35 / 41.18%	8 / 9.41%	21 / 24.71%	21 / 24.71%

Table 8: Distraction Levels for Classes by Activity

Class	LECTURE		CALLING ON STUDENTS		PROFESSOR TAKING & ANSWERING QUESTIONS	
	Opportunities	Number/Percentage Distracted	Opportunities	Number/Percentage Distracted	Opportunities	Number/Percentage Distracted
A	4843	1833 / 37.85%	397	143 / 36.02%	554	274 / 49.46%
B	464	197 / 42.46%	96	40 / 41.67%	19	8 / 42.11%
C	493	162 / 32.86%	26	7 / 26.92%	84	36 / 42.86%
D	2695	776 / 28.79%	552	176 / 31.88%	605	209 / 34.55%
Totals Upper-Year Classes	8495	2968 / 34.94%	1071	366 / 34.17%	1262	527 / 41.76%
Civ Pro	8206	1094 / 13.33%	9327	1448 / 15.52%	1337	255 / 19.27%
Intro to Law	1033	229 / 22.17%	1131	284 / 25.11%	146	18 / 12.33%
Totals First Semester Classes	9239	1323 / 14.32%	10458	1732 / 16.56%	1483	273 / 18.41%
Total	17734	4291 / 24.20%	11529	2098 / 18.20%	2745	800 / 29.14%

(Cont'd) Table 8: Distraction Levels for Classes by Activity

Class	PEP TALKS		READING TEXT		TANGENTS	
	Opportunities	Number/Percentage Distracted	Opportunities	Number/Percentage Distracted	Opportunities	Number/Percentage Distracted
A			420	151 / 35.95%	48	20 / 41.67%
B			22	8 / 36.36%		
C						
D	44	15 / 34.09%	325	90 / 27.69%	28	13 / 46.43%
Totals Upper-Year Classes	44	15 / 34.09%	767	249 / 32.46%	76	33 / 43.42%
Civ Pro	131	21 / 16.03%	3106	327 / 10.53%	1556	190 / 12.21%
Intro to Law			76	4 / 5.26%	128	12 / 9.38%
Totals First Semester Classes	131	21 / 16.03%	3182	331 / 10.40%	1684	202 / 12.00%
Total	175	36 / 20.57%	3949	580 / 14.69%	1760	235 / 13.35%

(Cont'd) Table 8: Distraction Levels for Classes by Activity

Class	STUDENT-VOLUNTEERED COMMENTS		TRANSITIONS, INTRODUCTIONS & CONCLUDING COMMENTS		CASE FACTS	
	Opportunities	Number/Percentage Distracted	Opportunities	Number/Percentage Distracted	Opportunities	Number/Percentage Distracted
A	235	89 / 37.87%	614	232 / 37.79%	643	237 / 36.86%
B	36	16 / 44.44%	30	15 / 50.00%	71	27 / 38.03%
C	248	100 / 40.32%	132	44 / 33.33%	63	24 / 38.10%
D	1002	353 / 35.23%	284	84 / 29.58%	436	128 / 29.36%
Totals Upper- Year Classes	1521	558 / 36.69%	1060	375 / 35.38%	1213	416 / 34.30%
Civ Pro	1680	222 / 13.21%	1223	130 / 10.63%	1404	231 / 16.45%
Intro to Law	268	64 / 23.88%	430	124 / 28.84%	160	23 / 14.38%
Totals First Semester Classes	1948	286 / 14.68%	1653	254 / 15.37%	1564	254 / 16.24%
Total	3469	844 / 24.33%	2713	629 / 23.18%	2777	670 / 24.13%

(Cont'd) Table 8: Distraction Levels for Classes by Activity

Class	CASE PROCEDURAL POSTURE		CASE HOLDING / RATIONALE		RULES	
	Opportunities	Number/Percentage Distracted	Opportunities	Number/Percentage Distracted	Opportunities	Number/Percentage Distracted
A	43	16 / 37.21%	633	242 / 38.23%	1340	469 / 35.00%
B			71	32 / 45.07%		
C			52	21 / 40.38%	12	5 / 41.67%
D	65	16 / 24.62%	425	133 / 31.29%	558	143 / 25.63%
Totals Upper-Year Classes	108	32 / 29.63%	1181	428 / 36.24%	1910	617 / 32.30%
Civ Pro	479	76 / 15.87%	1319	198 / 15.01%	4292	470 / 10.95%
Intro to Law	62	8 / 12.90%	156	21 / 13.46%	180	48 / 26.67%
Totals First Semester Classes	541	84 / 15.53%	1475	219 / 14.85%	4472	518 / 11.58%
Total	649	116 / 17.87%	2656	647 / 24.36%	6382	1135 / 17.78%

(Cont'd) Table 8: Distraction Levels for Classes by Activity

Class	HYPOTHETICAL AND PROBLEMS		EXAMPLES		POLICY DISCUSSION	
	Opportunities	Number/Percentage Distracted	Opportunities	Number/Percentage Distracted	Opportunities	Number/Percentage Distracted
A	705	289 / 40.99%	591	230 / 38.92%	37	13 / 35.14%
B	127	47 / 37.01%				
C	14	5 / 35.71%	26	9 / 34.62%		
D	1524	459 / 30.12%	107	35 / 32.71%	12	3 / 25.00%
Totals Upper-Year Classes	2370	800 / 33.76%	724	274 / 37.85%	49	16 / 32.65%
Civ Pro	3590	615 / 17.13%	265	31 / 11.70%	382	67 / 17.54%
Intro to Law	297	75 / 25.25%	22	3 / 13.64%	127	59 / 46.46%
Totals First Semester Classes	3887	690 / 17.75%	287	34 / 11.85%	509	126 / 24.75%
Total	6257	1490 / 23.81%	1011	308 / 30.46%	558	142 / 25.45%

(Cont'd) Table 8: Distraction Levels for Classes by Activity

CLASS	VISUAL AIDS	
	Opportunities	Number / Percentage
A	10	2 / 20.00%
B	100	45 / 45.00%
C	252	84 / 33.33%
D		
Totals Upper-Year Classes	362	131 / 36.19%
Civ Pro	3231	302 / 9.35%
Intro to Law	397	60 / 15.11%
Totals First-Semester Classes	3628	362 / 9.98%
Total	3990	493 / 12.36%

**Table 9: Number of Times the Amount of Distracted Students
Increases or Decreases in Selected Classes****STICKINESS OF LAPTOP USE**

Class	Increase	Decrease
A	200	208
D	122	131
Total	322	339

Table 10: Percentage Amount of Distraction by Month**SEPTEMBER**

Class	Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	\leq Half the Class
A	4.55%	6.82%	25.00%	63.64%
D	14.29%	12.50%	25.00%	48.21%
Civ Pro	46.41%	21.53%	28.71%	3.35%

OCTOBER

Class	Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	\leq Half the Class
A	4.76%	6.35%	26.98%	61.90%
D	12.50%	7.81%	28.13%	51.56%
Civ Pro	42.01%	21.00%	33.33%	3.65%

NOVEMBER

Class	Never	≥ 5 Minutes	< 5 Minutes, but > Half the Class	\leq Half the Class
A	0.00%	5.13%	35.90%	58.97%
D	0.00%	14.29%	31.43%	54.29%
Civ Pro	38.52%	16.30%	37.04%	7.41%

Figure 1: Percentage of Students Using Laptops for Non-Class Purposes

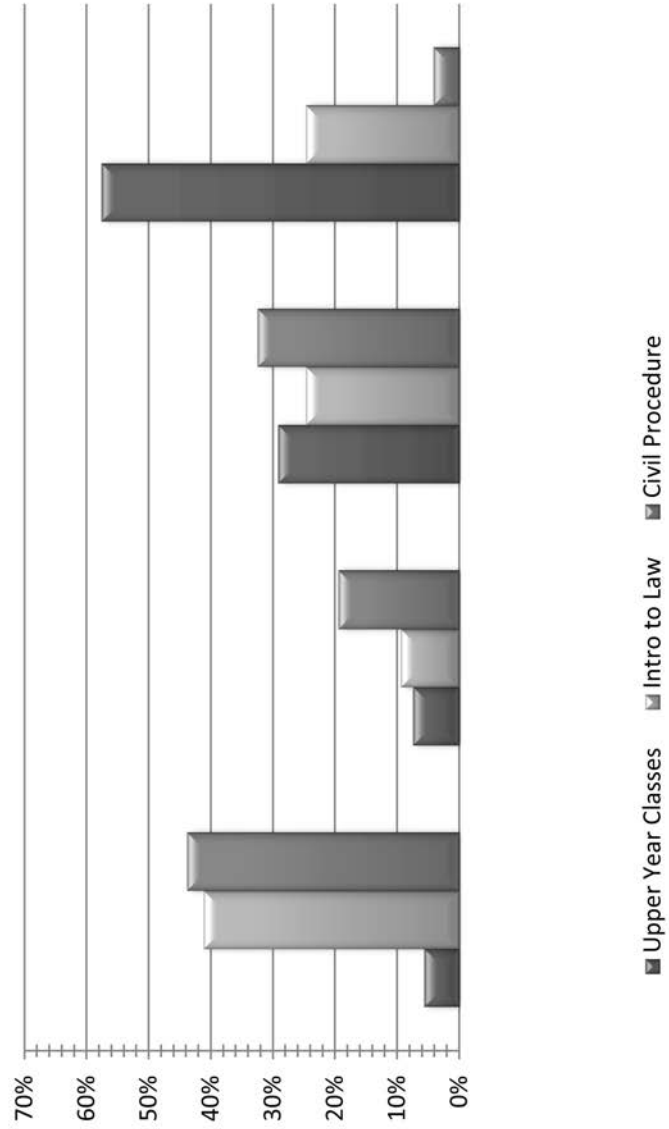


Figure 2: Distraction Levels in Civil Procedure Over Time

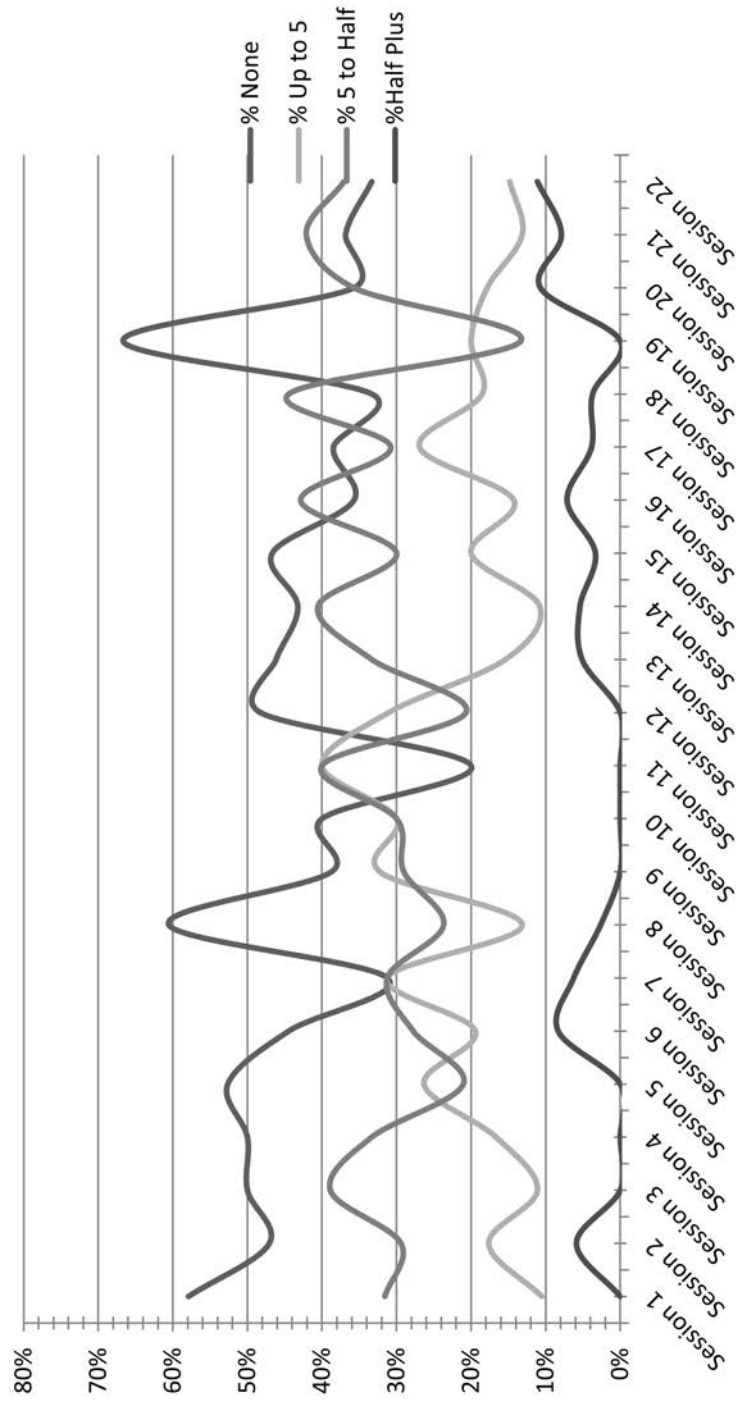


Figure 3 - Distraction by Activity for All Upper-Year Classes

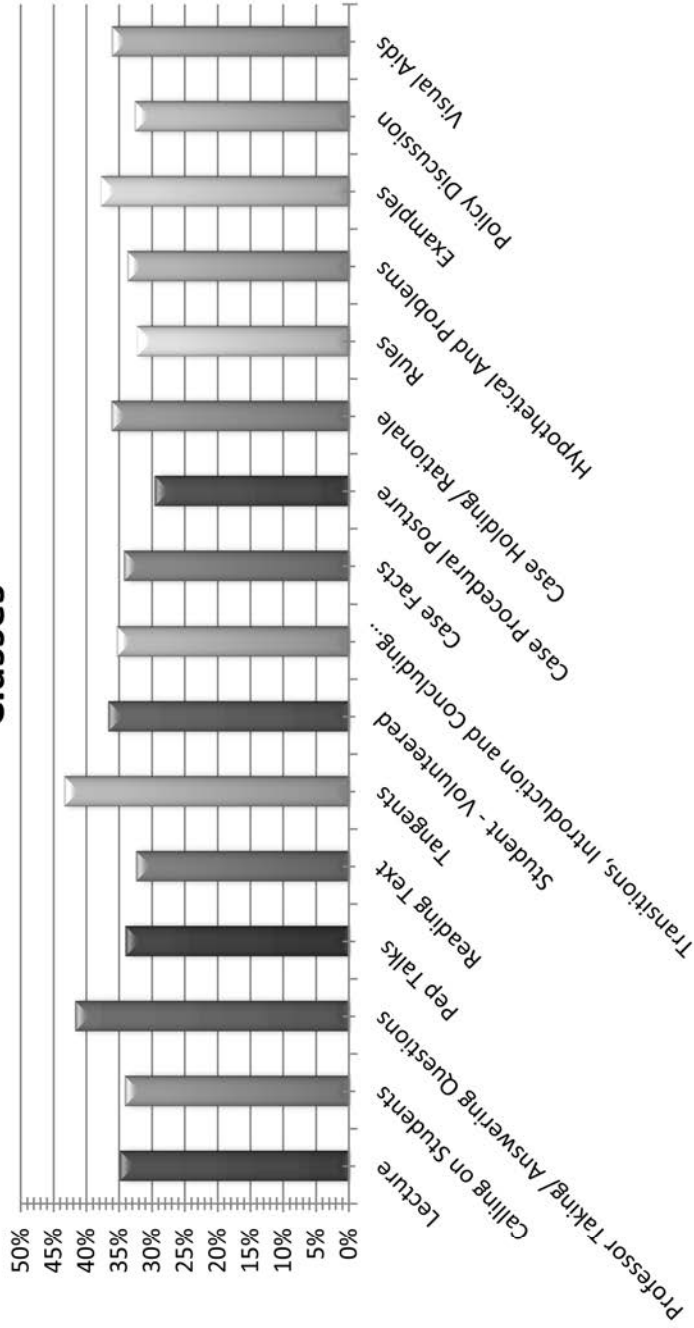


Figure 4 - Distraction Levels by Activity for All Civil Procedure Classes

