

**FROM FACEBOOK TO FOLSOM PRISON BLUES:
HOW BANNING LAPTOPS IN THE CLASSROOM MADE ME A
BETTER LAW SCHOOL TEACHER**

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INTRODUCTION

[1] A well-respected judge recently was asked to speak to a law school Administrative Law class. When he took the podium, he noticed that most of the students had laptops in front of them. As he was talking, the students' fingers were flying across the keyboards, making clicking noises, their eyes fixed on the screens in front of them. Several times he noticed grins or frowns on the students' faces, but the facial expressions were clearly unrelated to what he was saying. About twenty minutes into

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his talk, the judge, exasperated, clapped his hands together several times, calling out, “Is anyone listening out there?” Stunned, the students looked at him, some of them for the first time.¹

[2] Much like the frog put in a pot of water being heated to a slow boil, it was the slow, incremental increase of laptops that contributed to my failure to recognize the impact they were having in the classroom. First it was only one or two laptops in the classroom, the next semester three or four. Then the law school added wireless Internet connections and finally, one day I realized there was a sea of laptop lids facing me,² and my students’ eyes were fixed on the screens on the other side of the lids. For the judge who was a guest speaker, the contrast was more dramatic. The last time he spoke to a law school class, there were almost no laptops. A few years later, the classroom was filled with them. It only took twenty minutes for the judge to take some sort of direct action because of the overwhelming sense of disconnection he felt with the students using laptops in the classroom. It took me five years before I felt confident enough to take action. In the fall of 2005, I reached the decision to institute a no-laptop policy in my law school classes.

[3] This article reports on the recent scientific research, as well as summarizing the data I collected, on the use of laptops in the classroom. My decision to adopt a no-laptop policy, however, was the genesis of a

¹ Interview with The Honorable Eric S. Rosen, Associate Justice, Supreme Court of Kansas, in Topeka, Kan. (Jan. 22, 2006). Justice Rosen also stated that, when he was a trial court judge, the prosecutors began to use their Blackberries in the courtroom. He noticed that prosecutors were no longer watching cross-examinations of the state’s witnesses, instead they were communicating with their offices through the Blackberry. He stated, “I found it not only rude, but distracting and inattentive” and he prohibited the use of Blackberries in his courtroom. An argument might be made that an attorney’s lack of attention to a witness’s demeanor and body language could have an adverse impact on attorney effectiveness. *See also* Jeff Wuorio, *7 Rules for Using Laptops in Meetings*, <http://www.microsoft.com/uk/smallbusiness/default.mspx> (discussing proper etiquette for using laptops at business meetings).

² *See* The Associated Press, *Law Professor Bans Laptops in Class, Over Student Protest*, USA TODAY.COM, Mar. 21, 2006, http://www.usatoday.com/tech/news/2006-03-21-professor-laptop-ban_x.htm?POE=TECISVA (“The computers interfere with making eye contact. You’ve got this picket fence between you and the students.”) (quoting Interview by The Associated Press with June Entman, Professor, University of Memphis, in Memphis, Tenn. (Mar. 6, 2006)).

more contemplative approach to teaching. Consequently, this article also discusses how adopting a no-laptop policy caused me to examine my teaching, resulting in the implementation of a variety of teaching techniques, based on learning theory and findings about good teaching.

I. USING TECHNOLOGY IN THE CLASSROOM

[4] At the same time there was the incremental increase of laptops in the classroom, I was incorporating technology into my teaching, so it did not occur to me that I should restrict the students' use of technology. In the fall of 2001, I began using the classroom computer as a sophisticated blackboard. I would type and project on an overhead screen the material that, in the past, I had written on the board. Using the computer in the classroom meant that what I had written was not "erased" at the end of class, but could be saved for later use. Consequently, I began to use TWEN,³ posting online the material I typed during class, which allowed the students to access the "class notes." In addition, I posted the course syllabus and old exams with model answers.⁴ Students also could use TWEN for threaded discussions, although they have not used this feature with much regularity.⁵

[5] One of the benefits of having the "class notes" posted on the course web page was that, the next time I taught the course, I could use the old notes as a skeleton for material that I wanted to discuss in class. As I prepared for class, I began to think of how to display and project the information and how to generate better student discussions. When I introduced hypotheticals or asked questions for class discussion, I could project the text of this material on the screen in sixteen or eighteen point font,⁶ and then leave some blank space for me to type the students'

³ See TWEN, <http://lawschool.westlaw.com/twen/> (last visited Oct. 29, 2007). TWEN is the acronym for The West Education Network.

⁴ I give examinations that have both an essay section and a multiple choice section.

⁵ On one occasion I used TWEN's live CHAT feature with my students. During a final examination period, when I was in the Netherlands presenting a paper at a conference, I used the live CHAT feature for a question and answer session with my students as they were preparing for their final exam. We had a ninety minute CHAT, after which I was able to save the transcript and post it on the course TWEN page.

⁶ Later, a student suggested that I merely enlarge a twelve point font document with the 150% "zoom" setting on the word processing toolbar. One of the benefits of using

responses or questions to move the discussion in a particular direction. I also added information if more clarity was necessary. I found that this technique was more flexible than PowerPoint, at least as it existed in 2001, because I could continue to add, highlight, or change the “notes” during the class, based on the students’ responses and questions.⁷ These class notes were not a complete explanation of every concept discussed in class, but rather they served as a roadmap for students to follow during class. After class, the notes were posted on TWEN, so the students could access the notes, using them to augment their own class notes, review for the next class, and prepare their course review when studying for the exams.⁸

[6] Because I was learning and applying technology, which resulted in my thinking more deeply about teaching, I had a positive attitude toward technology in general, including the use of laptops in the classroom. However, as more laptops came into the classroom, I began to notice a decrease in student engagement in the classroom. One cause of the

technology in the classroom has been my students, who are far more sophisticated than I am with the technology, showing me different shortcuts in word processing or troubleshooting technology problems that occur during class. Because I am willing to try the technology, the students seem eager to share their technical knowledge, resulting in a beneficial role reversal, with them becoming the “experts.” Many times students have solved technical difficulties with the classroom technology, thus saving classroom time that would otherwise have been spent waiting for the computer technicians to arrive. See Posting of James Edward Maule to MauledAgain, http://mauledagain.blogspot.com/2006_03_01_archive.html (Mar. 24, 2006, 8:56 A.M.) (“[S]tudents appreciate faculty efforts to modernize and are very tolerant of shaky faculty technology learning curves.”).

⁷ I could also type more information on a page, whereas the PowerPoint slide format did not allow as much room for text as did a regular word processing document.

⁸ Some might suggest that this allows the students to be dependent on my class notes rather than take their own notes, and that these notes can be passed on to future students, who will not have to struggle preparing for class. This is true to some extent, but because I can change notes before, during, and after class, the notes become specific to the discussions and issues raised in that particular semester’s class. In addition, most law schools have student-written “class notes,” or course outlines, which are passed from former students to future students. Having seen some of these collections of student-written class notes and course outlines, which contain misunderstandings or simply incorrect information, I would much rather the students were passing on my class notes instead of the student-written notes and outlines that contain misleading or incorrect information. In addition, having the class notes does not necessarily mean that students know how to apply the information; the opportunity to apply the information comes during class discussions, writing exercises, and taking examinations.

disengagement appeared to be the result of some students' unwillingness to become involved in the class discussion because they were attempting to transcribe everything said in class.⁹ The second problem became apparent when law school faculties began debating whether to allow wireless Internet access in the classrooms, as that form of technology became available. Like many of my colleagues, I worried that students could be distracted by Internet access, rather than engaging in class. This second concern was more problematic than the first because transcribing students were attempting to capture what was being said in class. Students distracted by the Internet, however, may not be listening to or comprehending anything occurring in the classroom.

[7] In the debates about whether to have wireless Internet access in the classrooms, some faculty members answered the concerns about students' lack of attention by pointing out that students have always found ways to disengage from the classroom, such as working on crossword puzzles, reading other material, or simply daydreaming.¹⁰ Also, some professors took the position that students were adults and they should be able to decide how to use class time, risking whatever consequences may result from their behavior.¹¹ Critics of this *laissez faire* approach to teaching, however, argued that 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.¹² In addition, these critics noted that very

⁹ See The Associated Press, *More Professors Ban Laptops in Class*, MSNBC.com, May 3, 2006, <http://www.msnbc.msn.com/id/12609580/from/RS.3/> ("At the University of Pennsylvania, law professor Charles Mooney banned laptops from his classes . . . Around that time, said Mooney, he was serving as an expert witness in a lawsuit. During a break in his deposition, he recalled asking the stenographer if she found the case interesting. She replied that she didn't remember anything she had taken down, Mooney said. I thought, 'That's what my students are doing,' he said.").

¹⁰ See also Posting of James Edward Maule, *supra* note 6. See generally Richard Warner, Stephen D. Sowle & Will Sadler, *Teaching Law with Computers*, 24 RUTGERS COMPUTER & TECH. L.J. 107 (1998) (discussing positive and negative issues pertaining to the increase of technology in law schools).

¹¹ See Posting of Michael to Discourse.net, http://www.discourse.net/archives/2007/02/tell_the_prof_to_talk_faster.html (Feb. 14, 2007, 11:50 AM).

¹² See Posting of Daniel Weddle to http://lawprofessors.typepad.com/academic_support/2007/03/laptops_in_the_.html (Mar. 6, 2007) ("I hear complaints from students about how distracting it is to have nearby students surfing the Internet, etc. It can be tough to pay close attention when a screen

few professors would allow students to sit in class with a fully opened newspaper propped under their noses or play solitaire on the desk in front of them,¹³ so the argument about allowing students to do whatever they please in the classroom was not completely convincing.¹⁴ Ultimately, law schools began to add wireless Internet access in the classrooms, leaving the professors to decide, individually, how to deal with the potential distraction of inappropriate laptop usage.

[8] Many faculty members decided to tell the students they were not to access the Internet during class, unless specifically directed to do so. But then came the problem of enforcement. One has to decide how to enforce the policy in addition to deciding the consequences for violating the policy—and does one set out the consequences in the syllabus, providing fair notice?

[9] Professor Dan Markel, of Florida State University School of Law, walks around the classroom, allowing him to see what is on his students'

three feet in front of them is flashing websites and videos. How many of us could conduct class while trying to look past a screen full of moving images?"); Posting of Recent Grad to http://prawfsblawg.blogs.com/pawfsblawg/2006/07banning_laptops.html (July 27, 2006, 4:29:46 P.M.) ("As a [law] student, I found others' computer use distracting at best and disrespectful at worst – not only disrespectful of the professor but also of the other students."). This is particularly problematic if the professor requires students with laptops to sit in the front rows so the professor can more easily see if the students are accessing the Internet. See Jeffrey R. Young, *The Fight for Classroom Attention: Professor v. Laptop*, CHRON. HIGHER EDUC. (Waltham, Mass.), June 6, 2006, at A27, available at <http://chronicle.com/free/v52/i39/39a02701.htm>. Other professors have resigned themselves to students using the Internet and request these students sit in the back rows to reduce distractions of other students. See John Schwartz, *Professors Vie with Web for Class's Attention*, N.Y. TIMES, Jan. 2, 2003, at A1, available at <http://chesslaw.com/profsvcomputers.htm>. Perhaps the most *laissez faire* approach to laptops in the classroom is Ohio State University law professor Douglas A. Berman, who "isn't bothered by what his students do in class. If students want to . . . watch porn during class, so be it he says . . ." See Jill Schachner Chasen, *Profs Kibosh Students' Laptops*, ABAJournal.com, Nov. 2007, http://www.abajournal.com/magazine/profs_kibosh_students_laptops.

¹³ See Young, *supra* note 12; see also Posting of James Edward Maule, *supra* note 6 (discussing note passing and card playing in the back of the classroom). Such behavior would be readily apparent in the classrooms where I teach.

¹⁴ Some professors also question the teaching philosophy that the law professor merely is "delivering" a service, legal education, which the law student "consumer" can accept or reject at his or her own peril.

laptop screens in order to prevent students from accessing the Internet.¹⁵ When he finds a student on the Internet, he prohibits the student from bringing the laptop to class in the future.¹⁶ This enforcement mechanism, however, requires the professor to police the classroom, instead of focusing his or her energy on teaching.¹⁷

[10] Some professors report having their teaching assistants patrol the classroom,¹⁸ or they give extra points to students for reporting classmates who are violating the “no-Internet policy,” to the professor.¹⁹ Some professors use the technology in the classrooms, which allows them to view what the students have on their computer screens, and they project the offending student’s laptop screen on the overhead screen, so the entire class can see who is violating the no-Internet policy.²⁰

[11] Other professors, however, may object to these procedures on various grounds, such as concerns about the appropriate use of research assistants’ funds, or whether peer reporting may interfere with collaborative learning.²¹ There appears to be a contradiction when professors argue that banning laptops is too parental and controlling, but then, when they impose a no-Internet policy, they resort to public

¹⁵ See Posting of Dan Markel to PrawfsBlawg, http://prawfsblawg.blogs.com/pawfsblawg/2006/07banning_laptops.html.

¹⁶ See *id.*

¹⁷ Since I use the computer and projector as my “blackboard,” policing the classroom is not an option for me because I need to remain close to the front of the room with ready access to the keyboard.

¹⁸ See Tracy McGaugh, *Laptops in the Classroom: Pondering the Possibilities*, 14 PERSP.: TEACHING LEGAL RES. & WRITING 163, 165 (2006) (reporting on professors who use teaching assistants to enforce no-Internet rules in the classroom); Anya Sostek, *Laptops Give Students a License to Roam*, PITT. POST-GAZETTE, Nov. 6, 2005, <http://post-gazette.com/pg/05310/601626.stm> (discussing a professor who asks his teaching assistants to “keep an eye on” his students’ laptops).

¹⁹ Sostek, *supra* note 18.

²⁰ Interview with Lori McMillan, Associate Professor, Washburn University School of Law, in Topeka, Kan. (May 30, 2008) (describing a 1L class at Osgoode Hall during the 2005-2006 school year).

²¹ See Robert P. Schuwerk, *The Law Professor as Fiduciary: What Duties Do We Owe Our Students*, 45 S. TEX. L. REV. 753, 791 n.84 (2003) (discussing various collaborative learning experiments in law school classrooms).

shaming,²² they patrol the classroom, or they reward others for patrolling the classroom for violators of their policy. In addition, patrolling the classroom merely may set up an interesting game of “cat and mouse” for those students with several windows open and who hope they can “minimize” a violating website, returning to a screen displaying their class notes, with a quick click on the keyboard.

[12] In addition to enforcement problems, the no-Internet policy can generate honor code issues. For example, one student who came to me for advice, said that in another class, which had a “no-Internet” policy, the professor became suspicious that a student was on the Internet. He asked the student directly, during class, if she was on the Internet. Although the students behind her could see that she was, indeed, on the Internet, she lied to the professor. The student who came to see me wondered if this lie was an honor code violation, and, if so, whether he should report the lie to the professor.

II. TEACHING WITH UNRESTRICTED INTERNET ACCESS DURING CLASS

[13] In adjusting to the introduction of wireless access in the classroom, I decided that I would inform my students in the course description that they could not access the Internet with their laptops during class. I did not include any consequences for the violation of the policy, preferring to deal with any problems on a case-by-case basis. In the spring of 2005, however, I resumed teaching a large upper-level class of 85 students, which I had not taught for several years, prior to the introduction of wireless access in the classrooms. I forgot to include in the course description the no-Internet policy. Instead of announcing a no-Internet policy during the first class, I decided to use this oversight as an opportunity to see if unrestricted access to the Internet had a noticeable impact on the classroom experience. Because some professors have taken the position that Internet browsing is merely the modern version of

²² One colleague reported tricking students so that he could see if they were violating the no-Internet policy by telling the students to take a little break during class and stand up and stretch with their hands over their heads. Once the students had their hands in the air, he told them to “freeze” as he went around the room looking at their laptop screens to see who was violating the no-Internet policy. Afterwards, he worried about the ethics of using this form of trickery in the class. His trickery, however, did reveal violations of the no-Internet policy.

reading a novel, doodling, or passing notes in class,²³ it was possible that I would not notice any difference in student attentiveness or participation.

[14] Over the years I had developed a style of classroom participation by using a mix of volunteers and calling on students. In the large classes, I would keep track of the students' participation, making sure all students in the classroom were called on at least once during the semester. When I did not restrict Internet access in my classroom, however, I noticed almost immediately that the level of student volunteers dropped significantly. The core of the volunteers fell to a small handful of students. I also found, when I called on students, many of their responses were not as thoughtful or as complete as they had been in the past. More students responded to being called on with a "deer in the headlights" reaction²⁴ and it took longer to orient the student to the nature of the questions.²⁵ I also discovered students were not looking up from their laptops with as much frequency as in the past. I suspected these differences were the result of student distraction by surfing the Internet and not paying close attention to the class.²⁶ As evidence of this fact, I received student e-mails, written while the students were actually sitting in my class, something I had not experienced before. One e-mail asked me what the reading was for the next class—something that was announced in the class the student was sitting in, writing the e-mail to me.

[15] I asked several students in this upper-level class whether they thought there was a decrease in classroom participation and preparation when students were allowed access to the Internet. Not only did the students agree, but they also said it was not merely the distraction of Web

²³ See Posting of James Edward Maule, *supra* note 6.

²⁴ See Maia Ridberg, *Professors Want Their Classes 'unwired'*, USA TODAY, May 3, 2006, available at http://usatoday.com/tech/news/2006-05-03-unwired-grad-school_x.htm ("As a teacher, you can tell when someone is there, but it's just their body that is there," says Douglas Haneline, a professor of English literature at Ferris State University in Grand Rapids, Mich. "Their face is on 'screensaver,' so to speak . . .").

²⁵ See Sherry F. Colb, *Should Law Students' Use of Laptops Be Limited to Prevent Web-Surfing in Class?*, FINDLAW, Sept. 6, 2006, <http://technology.findlaw.com/articles/00006/010231.html> ("I found people less attentive, more likely to respond 'what?' or 'can you repeat that?' when I called on them to answer a question, and less able to handle complex ideas than in the past.").

²⁶ See Posting of Recent Grad, *supra* note 12 ("I can't count the number of times when a student who was surfing the Internet would be called on, yet unable to answer, thereby leaving the rest of the students to pick up their slack in the discussion.").

browsing, but that something more insidious was affecting classroom discussion. Apparently students were sending Instant Messages (IM) to each other and when a student was called on, the other students would make critical or disparaging remarks about the student on the hot seat. If the student who was called on also happened to be one of the participants in the IM, he or she could actually read the IM commentary at the same time he or she was attempting to answer my questions. Very few people were willing to volunteer in class if they were going to be the target of their classmates' critical and deriding comments.²⁷ Although these students' behavior displayed a certain level of engagement in the class, the use of the laptop in this fashion did not enhance the learning environment.

[16] My increasing dissatisfaction with laptops in the classroom caused me to think about how to overcome student passivity and increase student engagement. Professors Caron and Gely encouraged law professors to use technology in the classroom to foster active learning through the use of the Classroom Performance System (CPS) by eInstruction Corporation.²⁸ Another version of this type of technology is the Personal Response System by EduCue LLC.²⁹ Sometimes referred to as using "clickers," individual handheld wireless transmitters similar to remote controls, are given to all the students in the class.³⁰ The professor uses the software to create multiple choice questions, which are then projected on an overhead screen.³¹ The students use their remote "clickers" to respond to the questions. In addition, a professor can use the oral question option and create questions on the spot, getting immediate feedback on students' understanding of the concepts being discussed.³²

²⁷ See Posting of Daniel Weddle, *supra* note 12 ("[L]aw schools are finding that students are using their computers to attack other students during class by spreading messages simultaneously to all the students – ridiculing answers, attacking individuals' intelligence or character, etc. It is bad enough when someone does that to a student on a particular day, but what schools are finding is that some students are routinely targeted by a handful of other students. It was so bad at one school that the dean wrote an article about it, warning other schools that the practice is more rampant than we realize.").

²⁸ Paul L. Caron & Rafael Gely, *Taking Back the Law School Classroom: Using Technology to Foster Active Student Learning*, 54 J. LEGAL EDUC. 551, 560 (2004).

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

³² *Id.* at 561.

[17] The use of this type of technology, which allows the professor to keep track of the individual students' responses, can be used in every class and, if the students receive credit for their correct answers, can provide an important incentive for the students to be engaged in class. Professors Caron and Gely promote this technology as a method to "empower the students to resist their laptop's siren song."³³ In other words, the CPS technique is used to minimize the distraction of the laptop. Commentary about the use of laptops in the classroom, particularly by students, adopts a similar position: 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.³⁴ It was my suspicion, however, that students found it difficult to resist the temptation of the laptop,³⁵ regardless of what is happening in class, and, if the laptops were not present, the students would be more engaged in class.

III. LAPTOP USE IN THE CLASSROOM

A. AN UNSCIENTIFIC STUDY IN THREE LAW SCHOOL CLASSES

[18] To have a sense of laptop usage in the classroom, I set up an unscientific, but revealing, research project to record laptop use in the classroom.³⁶ A law school librarian³⁷ asked several students to keep track

³³ *Id.* at 552.

³⁴ See Barbara Glesner Fines, *Computers in the Classroom*, THE LAW TEACHER, Spring 2003, at 7 ("If we're really looking for root causes of student disengagement in learning, I wouldn't point a finger at technology. I'd look at large enrollments, auditorium-style seating, etc."); Avi Zenilman, *The Rules of Distraction*, SLATE, Nov. 18, 2005, <http://www.slate.com/id/2130600> (concluding that, "[p]erhaps the real problem with laptops in lectures isn't the laptops, but professors' over-reliance on the lecture as a learning tool.").

³⁵ See generally Anita Ramasastry, *Technology Addiction Lawsuits: Will They Succeed?*, FINDLAW, Jan. 9, 2007, <http://writ.news.findlaw.com/ramasastry/20070109.html> (discussing Internet addiction claims).

³⁶ As a point of reference, the law school where I teach has 450 students, with first-year sections of seventy-five students (except for the legal writing sections of twenty-two students and one substantive first semester, first-year class of approximately thirty-eight students). The largest classroom seats 100 students, but rarely is there a class larger than ninety students.

³⁷ A law librarian was used to recruit the laptop trackers so that a professor's request for the data would not unduly influence the trackers.

of laptop usage in one of the classes they attended.³⁸ The “trackers” were asked to record, starting at five minutes into class, what was on the laptops screens that were visible to them every ten minutes (hereinafter referred to as the “data collection points”), for the first two weeks of each month. Of the laptop screens that were visible, the trackers recorded whether the laptop was being used for taking notes, or whether the screens showed that students were using the laptop for e-mailing, sending IM, or browsing the Internet (hereinafter referred to as “inappropriate use”).³⁹

[19] The students tracked three upper-level classes, referred to as Class 1, Class 2 and Class 3. In Class 1, which had an enrollment of twenty-eight students, the median number of laptops that were visible to the student tracker was seventeen, but the median number of visible screens was only five, thus twenty-nine percent of laptops that the tracker could see in the classroom could be viewed for tracking. In Class 2, which had an enrollment of sixty students, the number of laptops the tracker could see being used in the class ranged from eleven to twenty-two, with a median number of eighteen laptops within eyesight of the tracker. The median number of visible screens was ten, resulting in fifty-six percent of the eighteen laptops being tracked. Class 3, with an enrollment of forty-nine students, had a wide range of laptop usage, from six to twenty laptops within eyesight of the tracker, with a median of twelve laptops within view. Of these twelve visible laptops, the tracker was able to see only a median of six screens so that about fifty percent of the laptops, within the eyesight of the tracker, could be tracked.

[20] In Class 1 the course syllabus stated the use of laptops for non-course related reasons, such as e-mailing and sending IM, was “strictly prohibited.” The syllabus did not state, however, the consequences for violating this prohibition. The student tracker for this class reported that the professor stated if a student was using a laptop inappropriately, that

³⁸ Five classes were to be tracked in the spring semester of 2006, two first-year classes and three upper-level classes. After one week, one of the trackers in a first-year course withdrew from the study because tracking the laptop screens every ten minutes was too disruptive to her concentration during class. The other first-year class tracker misunderstood the directions and the data was not usable.

³⁹ Besides tracking inappropriate use, one of the trackers occasionally recorded the Internet sites that appeared on the screens at the ten minute intervals. The most popular site was Facebook.com, followed by CNN.com, Myspace.com, and BBC.com.

student would not be allowed to continue using the laptop in class. To enforce this policy, the professor would walk around the classroom and when he saw a law student on the Internet, he would reach over and close the student's laptop lid. The tracker also reported that the professor had mentioned in class several times that, in the past, he sent students out of the classroom if they were inadequately prepared; however no students actually were sent out of the classroom during the semester he tracked the laptop usage. Not surprisingly, this class had the lowest percentage of inappropriate use. Even so, out of fifteen class sessions and a total of ninety-eight data collection points, in only the first class session were the students with visible laptop screens engaged in note-taking at each of the seven data collection points. Of the remaining fourteen class sessions that were tracked, at least one visible screen showed inappropriate use at a data collection point. In one class session, the tracker recorded inappropriate use at every single data collection point. In ten of the fifteen classes, at least thirty-three percent of the data collection points showed inappropriate use. In four of these ten class sessions, at least one half of the data collection points showed inappropriate use.

[21] In Class 2 the course syllabus did not mention inappropriate laptop usage, but the student tracker reported that the professor announced during the first class that laptops were to be used for note-taking only. Out of thirty-three class sessions and a total of 183 data collection points, at least one screen displayed inappropriate use in all thirty-three classes. In fact, in the very first class, every single data collection point showed inappropriate use. One other class session also showed inappropriate use at every single data collection point. In thirty-one of the thirty-three classes, at least thirty-three percent of the data collection points showed inappropriate use. In twenty-four of these thirty-one class sessions, at least one-half of the data collection points showed inappropriate use.

[22] Class 3 also did not have a laptop policy in the syllabus and the student tracker did not recall the professor stating any policy about laptop usage. Predictably, Class 3 showed the highest level of inappropriate use. There were twenty-eight class sessions tracked, with a total of 142 data collection points. Not only did all class sessions have at least one screen showing inappropriate use during a data collection point, but in all class sessions at least thirty-three percent of the data collection points showed inappropriate use. In twenty-six of the twenty-eight class sessions, one-

half of the data collection points recorded inappropriate use and in eighteen of these twenty-six class sessions, seventy-five percent of the data collection points showed inappropriate use. In thirteen class sessions, every single data collection point showed inappropriate use.

[23] One could argue that this data proves that having a strict laptop policy is an effective way to reduce inappropriate laptop use, based on the data from Class 1. The student tracker in that class, however, stated he did not enjoy this class because the class structure imposed more external controls on students than any other class during his legal education. Studies on law student morale support this dynamic finding that excessive external controls correlate with students' lack of enjoyment in law school.⁴⁰ On the other hand, the faculty member in Class 3, who had the most inappropriate use, was an extremely popular classroom professor.

[24] 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,⁴¹ particularly considering that a high percentage of the laptop screens were not visible to the trackers. The highest percentage of visible laptop screens was in Class 2, where only fifty-six percent of the laptops could be viewed for data collection purposes.

[25] The trackers also were given questionnaires to complete shortly after the semester ended. The trackers agreed with the statement that "at least

⁴⁰ See Kennon M. Sheldon & Lawrence S. Krieger, *Understanding the Negative Effects of Legal Education on Law Students: A Longitudinal Test of Self-Determination Theory*, 33 PERSONALITY AND SOC. PSYCHOL. BULL. 883, 884, available at <http://psp.sagepub.com/cgi/content/abstract/33/6/883> (discussing how excessive external controls correlate with depression and lack of enjoyment of the law school experience).

⁴¹ See Colb, *supra* note 25 (reporting that the laptop usage in her class as observed by a journalist visiting her class was low – *only* forty percent of her students were engaging in inappropriate use during class); see also Sostek, *supra* note 18 (reporting a similar result at Carnegie Mellon University in a statistics class that "[n]early all of the students with laptops took a cyber detour from strictly class business at some point during the lecture.").

one student in every class was using a laptop to engage in non-note-taking activity, such as browsing the Internet, playing computer games, e-mailing or using instant messaging.” Although there were data collection points showing no inappropriate use, trackers stated that students were engaged in inappropriate use at other times during the class, which accounts for their agreement with this statement.⁴² Another question asked if there were certain times the tracker noticed more non-note-taking activity on the laptops than at other times. One tracker stated that “there was more non-note-taking when the class was covering a fairly understandable topic during the semester,” while another tracker noticed there was more non-note-taking activity at the beginning and at the end of class.

[26] In answering the question “Do you find the use of laptops in the classroom distracting for you? For other students? Explain.,” one of the trackers, who did not use a laptop, stated “I find the laptops are distracting sometimes because something grabs my attention and I zone out for just a moment. I imagine that it is the same way with other students.” Another tracker stated “I have spoken with some of my classmates who find the laptops are distracting.”

[27] Another question asked if the tracker thought “the use of laptops impacts (good or bad) classroom discussions.” 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.” Another tracker stated “I think that students [if they were prevented from using laptops] would be more forced to participate in discussions, but then there are others that I have seen who can be on the Internet and still chime in when a question is asked.” This student concluded the questionnaire by stating

⁴² The following semester, on Halloween, I sent out an e-mail to my students, which was labeled a “mental test.” In reality, the e-mail was a practical joke – while the reader is trying to figure out the “mental test,” the screen suddenly changes to a screaming ghoul. I sent the e-mail shortly before 8:00 a.m., not realizing my students were just beginning their Property class. Within a few minutes I received an e-mail from one of my students that said “I’m sure glad I opened [your e-mail] in class with the volume ALL THE WAY UP! Very nicely done.” I received four more student e-mails concerning the Halloween practical joke – all written within forty-five minutes, while the students were in class.

I don't use a laptop in class and will not, so my views about laptops may be different than the majority of my classmates who do use laptops. I also believe that I have paid a great amount of money and want to get the most out of my law [school] experience and feel like I'd be throwing my money away by playing games on the [I]nternet or doing something unrelated to the class I'm sitting in.

[28] During this same semester, a law student wrote an article in the state bar journal that referred to the use of laptops in the classroom.⁴³ He stated that "I look around the room and almost every laptop I can see has one or more conversations, a solitaire game, or the Internet opened to something other than Lexis or Westlaw. There are no [class] notes to obtain."⁴⁴ Although this student believes law schools "have good intentions by putting wireless Internet in the school and professors have good intentions when allowing laptops in the classroom," he believes the technology is "robbing students of a good legal education" and "robbing us from learning from each other in class."⁴⁵

[29] This student's article, and the data collected from the student trackers, supported my acute sense of disconnection from my students during the previous year, when students had no restrictions on their laptop usage in my upper-level class. Although that semester I tried various different teaching techniques, became much more animated and created interesting and even provocative hypotheticals, I was not able to feel the same level of student engagement. Not only was the lack of connection with my students supported by the tracking data, but recent scientific research on laptops in the classroom substantiated my experience.

B. SCIENTIFIC RESEARCH ON LAPTOPS IN THE CLASSROOM

[30] Cornell researchers Helene Hembrooke and Geri Gay have conducted several studies on the use of laptops in the classroom. The students in these studies consented to researchers tracking the students' online laptop activity such as using e-mail, CHAT IM, or browsing the

⁴³ Tim Hurley, *The Downfall of Legal Education*, 75 J. KAN. B. A. 10, 10 (2006).

⁴⁴ *Id.*

⁴⁵ *Id.*

Web. One study involved forty-four students, divided into two groups of twenty-two students.⁴⁶ Both groups were comprised of students in an upper-level communications course.⁴⁷ While one group of twenty-two was in a different room doing a project, the remaining twenty-two students were allowed to use laptops and access the Internet during a course lecture.⁴⁸ Then the groups were switched, so that the group doing the project was moved into the lecture room, and the other group went to the project room.⁴⁹ The second lecture group, however, was not allowed to use their laptops during the lecture.⁵⁰ The experiment was done a second time two months later with the same group of forty-four students; however in the second experiment the student groups were switched, so the students who were not allowed to use their laptops during the lecture in the first experiment were allowed to use their laptops in second experiment, and the students who were allowed to use their laptops in the first experiment were not allowed to use their laptops in the second experiment.⁵¹

[31] Following each lecture, the students were given a surprise quiz of ten multiple choice questions (recognition questions) and ten short answer questions (recall questions).⁵² All students finished the quiz within ten minutes.⁵³ In both experiments, the students who were allowed to use laptops performed significantly more poorly on the short answer questions and received lower total scores than those students who were not allowed to use their laptops.⁵⁴ The scores on the multiple choice questions “approached significance” for poorer performance for the students using laptops.⁵⁵

⁴⁶ See Helene Hembrooke & Geri Gay, *The Laptop and the Lecture: The Effects of Multitasking in Learning Environments*, 15 J. COMPUTING IN HIGHER EDUC. 1, 6-7 (2003).

⁴⁷ *Id.* at 6.

⁴⁸ *Id.* at 7.

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ *Id.* at 8.

⁵² *Id.* at 7.

⁵³ *Id.*

⁵⁴ *Id.* at 8.

⁵⁵ *Id.*

[32] The researchers stated that the data were “hardly surprising.”⁵⁶ Based on the prior research, experiments on subjects doing two tasks at the same time have found that “[a]lmost without exception performance on one or both task suffers a decrement as a direct result of having to perform the two tasks simultaneously.”⁵⁷ In fact, the “finding of a performance decrement under divided attention conditions is so robust as to consider it a guiding theoretical principle” in investigating attention, learning and memory.⁵⁸

[33] The researchers then compared the online activity of the students to see if there was any significance concerning the students’ use of the Internet.⁵⁹ Students were given three different “relevant” websites that dealt with the topic of the lecture.⁶⁰ The research tracked students who accessed these particular websites to see if the content of the website was significant.⁶¹ What the data showed, however, was that it was not the particular websites the student visited which were significant, but rather, how the students accessed the Internet.⁶²

[34] Two groups of users were identified.⁶³ Those students who spent a longer period of time at the sites they visited on the Internet were classified as “seekers.”⁶⁴ The other students, who spent less time on the sites they visited but visited many sites, were classified as “browsers.”⁶⁵ The browsers “appear not to have been ‘pulled in’ by the sites they visited.”⁶⁶ When comparing the test scores of the “seekers” with the “browsers” the researchers discovered that the “browsers” had

⁵⁶ *Id.* at 9.

⁵⁷ *Id.* at 4.

⁵⁸ *Id.*; see also Karin Foerde, Barbara J. Knowlton & Russell A. Poldrack, *Modulation of Competing Memory Systems by Distraction*, 103 PROC. OF THE NAT’L ACAD. OF SCI. 11,778 (Aug. 1, 2006), available at www.pnas.org/cgi/doi/10.1073/pnas.0602659103 (discussing how distractions affect the way people learn, making it more difficult to use the knowledge in the future).

⁵⁹ Hembrooke & Gay, *supra* note 46, at 9-14.

⁶⁰ *Id.* at 9.

⁶¹ *Id.* at 9-14.

⁶² *Id.* at 14.

⁶³ *Id.* at 10-11.

⁶⁴ *Id.* at 11.

⁶⁵ *Id.*

⁶⁶ *Id.* at 14.

significantly higher scores than the “seekers” on all of three test measures (multiple choice, short answer, and total scores).⁶⁷ The researchers noted a previous study supported this result. An earlier study in 2001 “found that longer browsing sessions [‘seekers’] throughout the course of the semester resulted in lower overall class performance, and, that many and shorter browsing sessions [‘browsers’] during a class period, irrespective of content, led to higher class grades.”⁶⁸

[35] The researchers then eliminated the test scores of the “seekers” and instead compared the “browsers” scores with ten randomly selected closed laptop test takers.⁶⁹ Between these two groups, however, there was not a statistical difference between the “browsers” and the students who were not allowed to use their laptops, on all three test measures (multiple choice, short answer and total scores).⁷⁰

[36] One may be tempted to argue that, because browsers do as well as students without laptops, these multi-taskers are not harmed by having Internet access in the classroom, thus laptops with Internet access should be allowed in the classroom because there is no academic harm to these students. However, this conclusion ignores the substantial harm the “seekers” experience. Their test scores are not only significantly lower than the “browsers,” but these scores go even lower when compared to the closed laptop group. It should be remembered that the “seekers” in the first experiment became the control group in the second experiment. Consequently, when “seekers” are in a no-laptop environment, they do significantly better on their test scores. Not having a laptop in the classroom significantly improves these students’ test scores, whereas not having a laptop has no significant impact on the “browsers” test scores.⁷¹

[37] Another study in 2005 by Gregory E. Truman attempted to see the difference between students who were using laptops in classrooms that had unrestricted access to the Internet and classrooms where access was

⁶⁷ *Id.* at 11.

⁶⁸ *Id.* at 14.

⁶⁹ *Id.* at 12.

⁷⁰ *Id.*

⁷¹ See Posting of Daniel Weddle, *supra* note 12 (discussing how he has discovered that struggling students share common features, such as accessing the Internet during class, transcribing what is being said in class without comprehension and engaging in IMing).

restricted.⁷² Two teams of instructors were used in this research study, with each team assigned a restricted and an unrestricted classroom.⁷³ The students consented to having their laptop usage screened and logged during class.⁷⁴ The students' laptop behavior was classified as "applicable" to the course or as "extraneous" to the course.⁷⁵ According to the results, students in the restricted classrooms engaged in significantly more "applicable" behavior when compared with the unrestricted classrooms.⁷⁶ There was, however, no significant difference in "extraneous" behavior.⁷⁷ In other words, students engage in extraneous behavior regardless of whether the classroom is restricted or unrestricted. "Consequently instructors may have an effective means to encourage applicable behavior, and only impaired means to discourage extraneous behavior. Nevertheless, the increase in applicable behavior may alone give sufficient justification to restrict access level for students while in the classroom."⁷⁸

[38] In addition, the amount of time a student engaged in "extraneous" behavior was negatively associated with exam performance, particularly for information delivered through computer-based exercises.⁷⁹ On the other hand, the amount of time the student engaged in "applicable" behavior was not significantly related to the examination performance.⁸⁰ In other words, when the laptop was needed in the classroom to do computer-based exercises, "applicable" behavior on the laptop did not significantly improve the students' examination scores. When comparing students between the classrooms, the researcher discovered that the students who were in the classrooms where access to the Internet was unrestricted were engaging in much higher levels of "extraneous" behavior.⁸¹ In fact, for some of the measures, the "extraneous" behavior

⁷² Gregory E. Truman, *An Empirical Assessment of Student Computer Use Behaviors in the Classroom*, PROC. OF THE 38TH HAWAII INT'L CONF. ON SYS. SCI. (2005), available at <http://truman.gtdngt.com>.

⁷³ *Id.* at 3.

⁷⁴ *Id.* at 5.

⁷⁵ *Id.* at 4.

⁷⁶ *Id.* at 6.

⁷⁷ *Id.*

⁷⁸ *Id.* at 6-7.

⁷⁹ *Id.* at 7.

⁸⁰ *Id.*

⁸¹ *Id.*

in unrestricted classrooms was twice as high as that of the students in restricted classrooms.⁸² Therefore, students most at risk for poor examination performance are those students who engage in high levels of “extraneous” behavior on their laptops, with the greatest risk occurring in those classrooms in which there is unrestricted access to the Internet.⁸³ On the other hand, “applicable” behavior on laptops is not significantly related to improved examination performance.⁸⁴

[39] Based on this research, laptops in the classroom do not improve student performance on examinations. In fact, even in situations in which laptops are required in order for the students to complete computer-based exercises, “applicable” use of laptops in the classroom does not improve student scores on exams that test the information learned in these computer-based exercises. On the other hand, the detriments of having laptops in the classroom are substantial. Students who spend longer periods of time engaged in extraneous activities on their laptops will perform more poorly on examinations, and among those students, the ones who have access to the Internet are most at risk.

[40] The researchers of these studies recommend more research, particularly because of the differences in teaching styles and course structure. For example, the first study only looked at the lecture format and memory (cognition), whereas the second study found significance in the portion of the examination that involved terminology and concepts delivered through computer-based exercises.

⁸² *Id.* at 6.

⁸³ *Id.* at 7; see Posting of Daniel Weddle, *supra* note 12 (discussing how he has discovered that struggling students share common features, such as accessing the Internet during class, transcribing what is being said in class without comprehension and engaging in IMing).

⁸⁴ See Brock Read, *Laptops Change How Students Work but Do Not Improve Their Performance Study Finds*, CHRON. OF HIGHER EDUC., Nov. 29, 2006, <http://chronicle.com/daily/2006/11/2006112901t.htm> (“[A] report on the study says, students with laptops tend to spend ‘significantly more time’ working on assignments than other students do. But that extra time is not reflected in their finished products: Students with laptops get roughly the same grades as those who trek to computer labs. Instead of saving time, the report argues, laptop users are often killing it - firing off e-mail messages, sending instant messages, and surfing the Web.”).

IV. DESPERATION AND DRASTIC MEASURES: IMPLEMENTING A NO-LAPTOP POLICY

[41] My sense of disconnection from my students, after a semester of unrestricted laptop use, significantly reduced my enjoyment in the classroom. Although some may argue professors experience dissatisfaction in the classroom when laptops are present because the professor can no longer be the center of attention,⁸⁵ this criticism simply did not capture the sensation I was feeling. It was only when I read Professor Ken Bain's description of how effective teachers conduct their classes that I understood what I was experiencing.⁸⁶ Professor Bain stated that

The most effective teachers might begin a point by looking at one student then move their eyes from one person to another before finishing the explanation with someone across the room. . . . They watched their students' reactions, read their eyes and other body language, and adjusted what they said to the enlightened, confused, bewildered, or even bored looks they saw in the classroom. . . . They moved from behind the podium, or avoided artificial obstructions altogether.⁸⁷

[42] It became obvious to me, when students have their own artificial obstructions in front of them, the laptop, this prevents me from interacting with them. The sensation I had of trying to teach, only to be bouncing off a blank wall, began to make sense. When laptops were present in the classroom, human interactions of receiving and sending cues through body language and facial expressions had fallen to a bare minimum. The students seemed to look up from their laptop screens only if they were

⁸⁵ See Posting of JR to Wsj.com, <http://blogs.wsj.com/law/2006/06/14/laptops-in-the-classroom-debate-rages-on> (June 14, 2006, 12:42 P.M.) ("Professors that whine about being ignored during class should get over themselves."); Posting of James Edward Maule, *supra* note 6 ("So, if the distraction, eye contact, and transcription rationales aren't all that compelling, what is the dislike of laptops all about? I think it is about control. It's tough to be in control of a classroom if the students are more experienced and familiar with using laptops in a classroom than the professor is.").

⁸⁶ KEN BAIN, WHAT THE BEST COLLEGE TEACHERS DO (Harv. Univ. Press, 2004).

⁸⁷ *Id.* at 118.

being called on, and there was little initiative to raise one's hand, because to do so meant taking that hand off the laptop keyboard.⁸⁸

[43] There were various options to deal with the sense of disconnection I was experiencing in the classroom. One option was to allow the laptops but deny access to the Internet. In fact, a student survey at Harvard Law School showed that, of the students surveyed, seventy-four percent of the respondents stated that a ban on wireless access in the classroom would have no effect on their class attendance.⁸⁹ Several universities have installed Internet blocking devices, allowing the professor to "turn off" the Internet while teaching class.⁹⁰ This technology is expensive, and it can block nearby areas where Internet access is needed, such as student common areas, faculty offices or the library.⁹¹ Other universities have used software that denies the student access to the school's Internet server when the student's class schedule shows the student should be in class.⁹² Again, the cost can be prohibitive for many universities, not only because the universities must purchase the software, but also the labor costs are high since technicians are required to input the students' class schedules. Even at schools that have implemented this software, however, students can bypass the university's server and use an alternate server to gain access to the Internet.⁹³

⁸⁸ Eric Finkelstein, *No Logoff in Fight Over Laptops in Class*, NAT'L. L. J., June 30, 2006, <http://www.law.com/jsp/article.jsp?id=1151571921521> ("[S]tudents try to transcribe every word spoken in class, leading them to abandon the practice of participating in the discussion.").

⁸⁹ See Law School Council Survey, www.law.harvard.edu/students/orgs/lsc/wireless_survey.pdf. In addition, the highest percentage of students answered the question "How would a ban on wireless in the classroom affect your level of attention?," with the response "I would pay more attention." *Id.* Interestingly, 64.6 percent of the students responded that they would not support a ban on wireless in the classroom. *Id.*

⁹⁰ Young, *supra* note 12; Gary McWilliams, *Laptops in Classrooms Not Working Out as Hoped*, PITT. POST-GAZETTE, Oct. 14, 2005, available at <http://www.post-gazette.com/pg/05287/588740.stm>; Tim Scannell, *Banned in Boston: Laptops at Harvard*, Wi-fiplanet.com, June 9, 2006, <http://www.wi-fiplanet.com/news/article.php/3612571>.

⁹¹ Young, *supra* note 12; McWilliams, *supra* note 90; Scannell, *supra* note 90.

⁹² See Finkelstein, *supra* note 88.

⁹³ See Ridberg, *supra* note 24 (reporting that in 2005 UCLA Anderson School of Management took the block off wireless access in the classrooms because students were hooking up their laptops through their cell phones to access the Internet).

[44] Another option was trying to use the Internet to engage students during class. Some professors report having IM capability with all the students using laptops and when one student is on-call, the other students can send the professor an IM with their responses and the professor sends back a short IM.⁹⁴ Initially this idea sounded ludicrous. It seemed that instead of sending IMs, the students should be raising their hands and getting into the discussion. Professors who use this system, however, may engage in a Socratic dialogue with only one student for an extended period of time, rather than taking volunteers to join the discussion. Thus, sending IMs becomes a way to involve more students. Some professors also reported more IM involvement by students who, in the past, did not engage in classroom discussion voluntarily because they were too shy to speak.⁹⁵ For me, however, this system would close down involvement. First of all, I tend to go from one student to another, to engage as many students in the discussion as possible. Another problem is that I have mild dyslexia, making it very difficult to try to read and type back IM while I am engaging in a dialogue with a number of students.

[45] Even though there is a lively discussion on ways to engage students in the classroom when faced with laptops and Internet access,⁹⁶ I decided

⁹⁴ See Posting of Ann Althouse to <http://althouse.blogspot.com/2005/04/lets-encourage-students-to-im-in-law.html> (Apr. 12, 2005, 2:14 p.m.) (discussing IM use in law school classrooms).

⁹⁵ See posting of JK to Althouse to <http://althouse.blogspot.com/2005/04/lets-encourage-students-to-im-in-law.html> (Apr. 12, 2005, 6:10 P.M.).

⁹⁶ See Karen Dybis, *No Laptops Allowed*, THE NAT'L JURIST, Sept. 2006, at 18; David Cole, *Laptops vs. Learning*, WASH. POST, Apr. 7, 2007, at A13 (discussing the benefits of a laptop free classroom); Posting of Carolyn Elefant to http://legalblogwatch.typepad.com/legal_blog_watch/2007/04/laptop_bans_in_.html (Apr. 10, 2007, 2:47 P.M.) (arguing that laptops in the classroom cause distractions for other students); Posting of Gene Koo to http://lsi.typepad.com/lsi/2006/12/power_to_the_st.html (Dec. 12, 2006); Posting of Laptops and Law-School Learning to http://prawfsblawg.blogs.com/prawfsblawg/2007/04/laptops_and_law.html (debating the ban of laptops in the classroom); Posting of David Lat to Abovethelaw.com, http://www.abovethelaw.com/2007/04/laptops_vs_learning_once_more_1.php (Apr. 9, 2007, 4:54 P.M.) (noting that Yale law professor Ian Ayres wrote an opinion editorial on laptops in the classroom in the New York Times on March 20, 2001); Posting of Peter Lattman to WSJ.com, <http://blogs.wsj.com/law/2007/04/09/georgetown-law-prof-david-cole-no=laptops-for-you/>; posting of JohnPMayer to http://caliopolis.classcaster.org/blog/legal_education/2007/01/28/laptopban (Jan. 28, 2007, 1:45 P.M.); Posting of Law Professor: Why I Don't Allow Laptops in Class to

to trust my instincts. I sensed my feeling of disconnection would not be eliminated as long as laptops were in the classroom in large numbers. It reminded me of the advice I had been given as a new parent—I should not read stories to my child that I, myself, disliked because the child would sense that reading was not an enjoyable activity. For me, the enjoyment of being in the classroom was rapidly fading and I was going to do whatever I could to reclaim my joy of teaching—not only for myself, but also for my students.⁹⁷ I ultimately decided the only way to reclaim that joy was to return to a classroom where the object of my disconnection, the laptop, was no longer present.⁹⁸

[46] Of course there is the concern that a no-laptop policy would result in student backlash, generally in the form of poor teacher evaluations.⁹⁹ I had been tenured a long time, however, and because I had received higher

http://obscurestore.typepad.com/obscure_store_and_reading/2007/04/law_prof_why_i_.html (discussing David Cole's article in the Washington Post); Eric Noble, *Laptops in the Classroom (hot topic, Fall 2006)*, <http://www.uchastings.edu/?pid=1307> (summarizing the arguments and providing a listing of articles, blogs, and web pages on the issue of laptops in the classroom); John Roach, *Laptops: A College Essential, But for Class?*, <http://tech.msn.com/guides/backtoschool/article.aspx?cp-documentid=5179414>; Posting of Daniel Weddle, *supra* note 12.

⁹⁷ See Kent D. Syverud, *Taking Students Seriously: A Guide to New Law Teachers*, 43 J. LEGAL EDUC. 247, 248 (1993) (“[I]f somehow you can make your attitude shine out as: ‘I love being here with you; I can’t believe I am getting paid well to do this’ – the students will pick that attitude up, will receive it well, and will reflect that attitude back . . . to what you are trying to teach . . .”).

⁹⁸ I have allowed students who need a laptop for ADA accommodation to have a laptop in the classroom. Although one commentator has raised concerns that allowing only differently-abled students to use a laptop draws attention to their condition, the students, who have been differently-abled, have not expressed concerns at being singled out, perhaps because their need for accommodation is immediately apparent to their classmates. See generally Jennifer Jolly-Ryan, *Disabilities to Exceptional Abilities: Law Students with Disabilities, Nontraditional Learners and the Law Teacher as a Learner*, 6 NEV. L. J. 116 (2005) (discussing barriers in legal education and the legal profession). In order to avoid the impact of drawing attention to less-obvious accommodation needs, one could adopt Professor Colb's “virtual” no-laptop policy. She allows a couple of students to use laptops to take class notes and these students are required to share their notes with the rest of the class. See Colb, *supra* note 25. Students could share class notes by sending the class notes to the professor, who could post the class notes on a course website, such as TWEN.

⁹⁹ See McWilliams, *supra* note 90.

than average teacher evaluations most of my teaching career, I decided not to worry about teacher evaluations.

[47] On the other hand, I did not want student backlash to create an adversarial and resentful relationship in the classroom. I realized substantial student negativity in the classroom could obstruct a positive learning environment. I also did not want to implement a policy mid-semester, as a form of punishment for lack of attentiveness; I had learned very early in my teaching career that punishing everyone in a class, or making major structural changes mid-course, is guaranteed to create an instant negative class environment.¹⁰⁰ The next semester, however, I would be teaching a first-semester, first-year course, Criminal Law, which was divided into two smaller sections of approximately thirty-five students each. Because first semester, first-year students are new to legal education, they are unsure about what to expect in the law school classroom.

[48] In addition, this course was divided into small sections in order to teach students essay examination writing skills, and the students were assigned written exercises throughout the semester. Consequently, these classes already were distinguishable from the other large section substantive first-year courses. Because of these differences, it would be easier to implement a no-laptop policy, with a minimal amount of student resistance. 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.¹⁰¹

[49] That evening, I was at a social event with several of my former students, one who had been in the upper-level class and two who had been in my first semester, first-year small section classes. I told them about my decision to implement a no-laptop policy in the classroom and, to my surprise, they all responded that they thought it was a good idea. They expressed several reasons for their support. First, they found their own use of laptops was not helpful in their studies. One student said she found

¹⁰⁰ This may have been one of the reasons for the strong negative student response, resulting in a complaint to the American Bar Association, when Professor Entman implemented a laptop ban mid-semester.

¹⁰¹ I did, however, inform the students that tape recorders were allowed.

she was merely transcribing the class and, when she tried to study her class notes, she discovered she did not have a working grasp of the material she had transcribed.¹⁰² She no longer brought her laptop to class because she realized she was not learning the material by transcribing it.

[50] Another student said he found the use of laptops distracting because of the noise of the key tapping,¹⁰³ as well as the bright colors of Internet site browsing and the movement of various games students played on their laptops during class. Most surprising, though, was their statements that students did not need a laptop in my classes. When I asked them why, they said that, because I used the computer during class to project material and type in new material on the overhead screen, and I then posted the material on TWEN after class, they could pay closer attention in class. They found they were less worried about taking copious notes and, instead, they took notes to supplement their understanding of the material that was projected on the screen, allowing them to have a better grasp of the concepts and material being discussed.

[51] Although I was more confident in my decision to implement a no-laptop policy in the classroom after this discussion with my former students, nonetheless, I wanted to address legitimate uses of a laptop in the classroom, trying to minimize the impact of the policy. The obvious legitimate use of the laptop was to take class notes. Because I posted the class notes on the TWEN site after each class, however, I believed this procedure would reduce student anxiety about not having a laptop. To further assist the students with their note taking, I decided I would post, at least twenty-four hours before class, key “class questions” about the reading material, which the students could print and bring with them to class.¹⁰⁴

[52] These class questions could be particularly helpful to first semester students, who have a hard time discerning issues, finding holdings, or perceiving the correct rationale in the cases. In fact, it is not uncommon

¹⁰² See The Associated Press, *supra* note 9.

¹⁰³ See Finkelstein, *supra* note 88 (describing the “angry typist”).

¹⁰⁴ See Joanne Ingham & Robin A Boyle, *Generation X in Law School: How These Students Are Different from Those Who Teach Them*, 56 J. LEGAL EDUC. 281, 290 (2006) (finding that Generation X students “prefer more structure, such as working models, samples and clear guidelines.”).

for students to read and brief a case in the first few weeks of law school, only to have the sensation in class that they completely missed what was important in the case. Instead of instilling feelings of confidence and competency in the students, professors were creating students who were confused and discouraged.¹⁰⁵ If I posted several questions prior to class, however, the students could focus their class preparation. Class would then become a place where students developed a sense of mastering the material, replacing their feelings of being lost and bewildered. I also made certain the questions were repeated in the class notes I projected on the overhead screen during class. This way I made certain I covered the questions in the class, which encouraged the students to prepare their answers to the questions. The students could rely on the questions being discussed in class, creating an incentive for them to prepare their answers for class and allowing them to check their understanding of the material.¹⁰⁶

[53] Although all the questions were covered in class, I did not type in the answers to each of the questions. When one of the questions came up in the class notes, which were being projected on the screen, there would be a blank space under the question. During the class discussion, I could decide whether I would type in the answers, type in the students' responses or have a prepared answer I could scroll up on the screen after the question had been sufficiently examined. By not answering all the questions in the class notes, I ensured that the students would not know which of the questions would have an explanation posted on TWEN after class ended. This uncertainty about what would be posted on TWEN after class encouraged the students to attempt to answer the questions before class and to take notes throughout the class.

¹⁰⁵ See Michael Hunter Schwartz, *Teaching Law by Design: How Learning Theory and Instructional Design Can Inform and Reform Law Teaching*, 38 SAN DIEGO L. REV. 347, 350-58, 371 (2001) (describing current legal education as the "Vicarious Learning/Self Teaching Model" and comparing it to mastery learning, in which eighty percent of the students have learned eighty percent of the material).

¹⁰⁶ Studies have shown that professors who give students an outline or "scaffold" of important points enhance student learning and retention of important information, even more so than if the professor provided typed out lecture notes prior to class. See Ingham & Boyle, *supra* note 104, at 288. I use the class questions in a similar way, signaling important points or information the students should focus on prior to class.

[54] Before the first class session, I posted a question involving the issue statements for the first case covered in the course. This case had two issues but, in past semesters, the students' briefs invariably contained only one issue. By asking the students to state the two issues in the case, the students read the case more carefully and were better prepared for class. As the semester progressed, I included in the class questions some of the hypotheticals that, in the past, I would have raised during class. By having the hypotheticals before class, class time was used more efficiently and there was more depth in the class discussion, with the students having a better understanding of the concepts being raised in the hypotheticals.

[55] Another technique I decided to implement was to assign one-third of the class to be "on call" a specific day of the week. Because being called on activates students' "startle response" making them appear, at least initially, totally inarticulate, I found calling on students did not instill a sense of mastery or competency. If a group of students knew ahead of time they could expect to be on-call, however, they would feel better prepared when the questions were addressed to them, similar to attorneys who have prepared for trial or oral argument. Consequently, because the class met three times a week, with approximately thirty-five students in the class, I assigned one-third of the class to be on-call a specific day of the week.¹⁰⁷

[56] Because there were six rows of tables and chairs in the classroom, I decided two rows of students would be on-call each day. I assigned each student to a seat in order to have a fairly even number of students in each row. In addition, because it was difficult for students in the back of the classroom to hear students in the front of the class, I decided to rotate the two rows each class, with the on-call rows always being the back two rows in the classroom.¹⁰⁸

¹⁰⁷ See Christian Johnson & Linnie Wheelless, *Random Walks Down the Aisle and Classroom Participation*, THE LAW TEACHER, Spring 2003, at 11 (discussing the "on call" method and how it instills confidence in the student).

¹⁰⁸ There also was an unanticipated benefit of making the back two rows the on-call rows. It altered the law school culture of "back benching" where the back rows were the preferred seats of students trying to avoid classroom participation. Having the different groups also made it easy to divide the class into groups for projects and informal discussions. See Schuwerk, *supra* note 21, at 791-92.

[57] When the students came into class for the first time, I handed out three different seating charts, with different assigned seats for each class day. I explained to them the different seating charts and the idea that they would be on-call one day a week. I also told them, however, students could volunteer without being on-call and I might call on students who were not on-call. This way I was not discouraging volunteers, while encouraging all of the students to be prepared for every class.¹⁰⁹

[58] One of the concerns I had about such a highly structured class was that the students would feel overly constrained, causing impediments to learning.¹¹⁰ To lighten this sense of constraining external controls, I decided to play a song on the computer, projecting the lyrics on the overhead screen, as students were getting seated in class, before class began. I selected songs related to the cases or subject matter for that class session.¹¹¹ For the first day of class I wanted a strong beat and compelling lyrics, so I selected the classic “Folsom Prison Blues” by Johnny Cash. As students filed into class, I handed them the multi-paged picture seating chart, with Johnny Cash belting out the lyrics “I shot a man in Reno just to watch him die” and the prisoners cheering in the background.¹¹²

¹⁰⁹ It has been my past experience, with first semester law students, that they were eager to volunteer and they had read the assigned materials. Therefore, I was not concerned that having assigned on-call students would result in the other students not being as well-prepared on the days they were not on-call.

¹¹⁰ See Sheldon & Krieger, *supra* note 40 (discussing how allowing more autonomy to law students is positively correlated with their emotional well-being in law school). In order to provide more autonomy to my students, I no longer assign them to seats and I don’t rotate the rows. Instead, when students arrived for the first class, I sectioned off the middle of the classroom with yellow crime scene tape and asked the students to sit in the middle section of the class, inside the crime scene area. I continue to call on different rows for each class session, however.

¹¹¹ I also invited students to suggest songs that would be appropriate for the assigned reading material. The students introduced me to some very interesting songs, such as “Date Rape” by Sublime and “Crazy Eddie’s Last Harrah” by the Cross Canadian Ragweed. I agree with Boston College Law School Associate Professor Michael Cassidy that one of the many benefits of law teaching is that it keeps us young. “What other profession allows you to work – perennially and almost exclusively – with twenty-five year olds?” R. Michael Cassidy, *Why I Teach (A Prescription for the Post-Tenure Blues)*, 55 J. LEGAL EDUC. 381, 383 (2005).

¹¹² As a reminder that what I intend as an instructor – in this case using music to lighten the sense of constraint that might result from using an assigned seating chart that rotates

[59] Another way I tried to ameliorate the potential for the students to feel overly constrained in the class was to take each one of the groups out to a restaurant-bar across the street from campus, for the purpose of having an informal environment to talk about the class. Mid-semester I told the students I would be taking out the groups to talk about any aspect of the class, but in particular I wanted to know which of the things I was doing in class were helpful to their learning, and which were impediments to their learning. When I met with each group, it was interesting to me that, even though I asked several times for suggestions about what I could do that would assist their learning, no one brought up needing a laptop in the classroom. Consequently, I was the one who brought up the issue of what the students thought about not being able to have laptops in the classroom.

[60] Except for five or six students, the most common response was that it did not make any difference to them because they felt they were getting more out of class through the class questions and the class notes that were posted on TWEN. There was a clear consensus among the students, however, that they would not like the no-laptop policy if those features

daily – might be totally misperceived by the students was brought home through an e-mail I received from a student at the end of the semester. The student wrote:

Now that you are officially done with me, I thought I'd relay my first class story. My first evening after my first day of true law school classes, I called one of my best friends. She has known me since I was in high school. I told her that I was never going to be able to survive Criminal Law. She laughed upon hearing that I walked into a classroom with Johnny Cash implying that I was going to be in a prison. I then proceeded to tell her that I had rotating seating assignments with my PICTURE listed. Lastly, I told her that my professor looked incredibly stern and seemed like a "hardass."

Fortunately, the impression was not lasting. The student went on to write:

Expecting a great deal of sympathy, I was unhappy when she told me that my professor sounded awesome and that I would end up loving the class and that particular professor would end up being my favorite. Don't you hate it when your friends are right? Thank you for making each class interesting, for putting more hours in than mere mortals should, for such an incredible gift for teaching, and for feeling passionate about what you do both for Washburn and for students.

E-mail from Student Requesting Anonymity to Author (Jan. 14, 2006, 06:59 CST) (on file with author).

Interestingly, there is no mention of the no-laptop policy in this student's description of her first day in my classroom.

were not incorporated into the course. I explained to the students that the main reason for the no-laptop policy was my feeling disconnected from them and I decided to post the class questions as a way to address the legitimate need for a laptop, i.e. to take notes and follow along in class. One student, who prior to my explanation, said he did not like the no-laptop policy, stated after hearing my explanation, if given a choice, he would much rather have the class questions than his laptop.¹¹³

[61] The other students who objected to the no-laptop policy commented that not having the laptop in the classroom was more time-consuming because they had to integrate their handwritten class notes with their word processed answers to the questions they had done before class, and then they had to combine these notes with the posted class notes after class. Invariably, however, as the students talked about the difficulty caused by not having a laptop in the class, they began to realize that the process of transferring the handwritten notes and organizing the information after class actually helped them to better understand the material. Without me prompting them, they ended by saying “Maybe that isn’t such a bad thing after all.”

[62] I also implemented the Classroom Performance System (CPS), or the “clickers,” to help students review material during the semester. The students used the clickers with multiple choice questions, to review crimes against the person before the midterm examination, then later in the semester to review crimes against the dwelling and property and finally, during the last class of the semester for a comprehensive review. Besides their enjoyment in using the technology, the students were also preparing for their multiple choice examination, even though the questions for the CPS format were less complex than the multiple choice questions on the final examination. The CPS questions, however, did convey, immediately,

¹¹³ See Posting of Orly Lobel to PrawfsBlawg, http://prawfsblawg.blogs.com/prawfsblawg/2006/07/banning_laptops.html (July 17, 2006, 14:34) (describing a law school colleague who made her students “the following offer – they would begin the semester with two weeks of a no-laptop policy. She would in turn post her teaching notes on TWEN. After the first two weeks, the students would take an anonymous vote on whether the no-laptop policy should remain for the rest of the semester. The results: the students loved it. They found they were more engaged, more involved in class discussions and the course evaluations were the best of all years.”).

to them and to me where their weaknesses were in understanding basic concepts.

[63] Besides using classroom technology to enhance my teaching, I also tried to incorporate some of the research about effective educational techniques. For example, Professor Ken Bain found that “outstanding teachers give comprehensive examinations with each test replacing the previous one.”¹¹⁴ Each test is building on previously learned material and the student continues to be tested over the material in subsequent exercises and examinations.¹¹⁵ “In such a system, students can try, come up short, receive feedback on their efforts, and try again on a subsequent examination. What they understand and can do intellectually by the end of the course matters more than anything else.”¹¹⁶

[64] This formula for teaching is rarely followed in law school courses, with only one examination at the end of the semester. Because I had two small sections in which I was teaching essay examination skills, with a required midterm examination, I had an opportunity to implement the concept of building on previous knowledge. I had noticed in past years when I used a writing exercise over one aspect of crimes against the person, for example, writing a question that had the students discern the difference between murder and voluntary manslaughter in a fact pattern involving an intentional killing, many of the students made errors in format or style, preventing them from displaying their understanding of the substantive material.

[65] Generally, I did not follow this writing exercise or practice examination with another fact pattern involving a nuance of an intentional killing. Instead, the next assignment or examination might involve a negligent killing, or the felony-murder rule, or a defense. Again, the students made errors in format, style or logic, which prevented them from displaying their competency with the substantive material. The students continued skimming the surface, never having an opportunity to synthesize and manipulate the principles in a way that I had hoped when writing the exercise or examination. They never had a sense of mastery of

¹¹⁴ BAIN, *supra* note 86, at 161; *see also* Schwartz, *supra* note 105, at 368-69.

¹¹⁵ BAIN, *supra* note 86, at 161.

¹¹⁶ *Id.*

the material, except for a very few, who I suspect, would have excelled regardless.

[66] I also began to realize there were identifiable levels of complexity to examination questions. For example, the simplest level would require the students to merely take a fact pattern and apply the facts to the elements of a specific crime. The next level would require the students to analyze a fact pattern, deciding between two different crimes. The third level would build on the second level by requiring the application of defenses, and the fourth level would add the skills of synthesizing several concepts and applying them with sophistication and nuance. I discovered I had a propensity to give students an examination question at this fourth level, with only five to eight percent of the students being capable of that level of analysis. The majority of the students, however, were struggling at the first level, not grasping the idea of defining elements and applying facts to these elements. For the most part, the students were far too conclusive, relying on what was required of them in their undergraduate courses, where they were required only to reach correct conclusions.

[67] In order to take law school essay exams successfully, however, students needed several attempts to practice the basic skills required to answer a law school essay exam question. This meant giving the students an understanding of the levels of difficulty in writing exams, as well as opportunities to practice writing essay exam answers.¹¹⁷

[68] To develop student confidence in writing answers to essay exams, I introduced the students to the concept of the four different levels of difficulty in the questions, and posted on TWEN a series of old exam questions they could practice with, identifying the level of difficulty for each exam. Then, prior to their practice exam, I announced that the general topic of the exam would be negligent homicides. When the students took their midterm exam, I once again wrote a question that dealt with negligent homicide, although I did not announce ahead of time this would be the topic of the midterm examination. The final examination

¹¹⁷ See Schwartz, *supra* note 105, at 368-69 (discussing how behavior theorists are developing “the idea that instruction should be sequenced so that students master early steps and easier problems early in instruction. Only later should students progress to more difficult and complex steps and problems.”).

again had at least one question over the same topic. I finally had a sense the students had the ability to show how they understood this legal concept, discussing it with mastery and sophistication. Very few of the students continued to make derailing “level one” errors, by being unable to apply the facts to the legal principles.¹¹⁸

[69] Not only did the students practice their examination writing skills by answering former examination questions posted on TWEN, but they also had the opportunity to take two practice examinations under exam conditions. This included students having the choice of whether to take their examinations in blue books or on laptops. Because my concern about laptops in the classroom was the disconnection I felt between myself and the students, there was no legitimate reason to prohibit the use of the laptops to take essay examinations. Those students who chose to take the essay portion of the examination on a laptop were trained in using ExamSoft, a software that prevents access to the laptop’s hard drive, making unavailable material stored elsewhere on the laptop or accessing the Internet.

[70] Allowing students to use the laptops for the graded examinations also may have resulted in them being less resistant to the no-laptop policy in the classroom because I was being consistent with my rationale for the policy, which was my sense of disconnection from the students. Also, practicing taking the examination on the computer was consistent with my goal of allowing the students numerous opportunities to practice the skills necessary to be successful on a graded exam.

[71] One unexpected use of technology also assisted the students when they were preparing for their practice, midterm and final examinations. I had been asked to videotape my class sessions for viewing by pre-tenured faculty. I posted the videotaped class sessions on the law school webpage, which also allowed my students to have access to the class videos. One of

¹¹⁸ When I posted numerous old essay examination questions on TWEN, identifying their level of difficulty, I also identified the general topic, such as voluntary manslaughter or the insanity defense. Some of the questions had model answers, while others did not. I told the students I would provide individual students with a written critique if they wrote out answers to the posted questions. I also had study groups make office appointments to discuss the answers to the questions, sometimes listening to competing opinions on which was the better answer.

my students told me, after I announced the practice examination was covering negligent homicide, she replayed the class sessions in which we covered negligent homicide as a method to review the material and to clear up questions that developed as she organized her class materials covering this topic.¹¹⁹

V. THE RESULTS—TEACHING (AND LEARNING) HAPPILY EVER AFTER

[72] As I began teaching in the fall semester of 2005, when I instituted the no-laptop policy, I immediately began to feel an increased level of energy and student engagement in the classroom. I watched my students' eyes again, I noticed how they shifted in their seats and how they turned their bodies; I could see if they were comprehending or becoming confused. I could adjust my teaching to match the feedback I was receiving. We were engaged in the communication loop of receiving information and sending feedback—I was no longer bouncing off a blank wall. The excitement and joy I experienced, just to have my students back, was palpable. Numerous times throughout the semester I caught myself saying in my mind, “I haven't felt this way for so long.” It is not about being the center of attention;¹²⁰ it is about being partners in a group process, sharing each other's excitement about learning, and being visibly engaged in

¹¹⁹ The student said she was able to do housework while playing the video because she only needed to listen to the video rather than watch it, which suggests that recording classes and pod-casting them afterwards, might be beneficial for students wanting to review prior classes. Although this idea might encourage students not to attend class, the American Bar Association Standard § 304(d) provides: “A law school shall require regular and punctual attendance.” Many law professors at my institution will not allow students to sit for their final exam if the student has missed a certain number of classes, making physical classroom absences rare. Mental absences, however, are not so easily controlled.

¹²⁰ *But see* Catherine Ross Dunham, *Stretching Toward the Future: A View of Laptop Computers from Both Sides of the Screen*, THE LAW TEACHER, Spring 2007, at 3 (“What we have to realize is that much of a law faculty's apprehension about laptops in the classroom relates to us, not them. Ego is an essential ingredient in the talented scholar-teacher. We need to like the sound of our own voices, in print and in person. And we need others to like it too. When students are engaged with their computers instead of with us, we are slighted. In addition to an essential lack of energy in the classroom, we also lose that terrific side benefit of teaching, the rapt audience. Our egos suffer.”).

intellectual exploration and inquiry.¹²¹ This positive learning environment was reinforced by students who continued to evaluate my classes with above average ratings.¹²²

[73] The semester's successes went beyond the improved classroom atmosphere. Students also had slightly improved test scores. On the multiple choice portion of the final examination,¹²³ I repeated a substantial number of questions that I had used the previous year, but had taken precautions to prevent their release to the students.¹²⁴ I compared the 2005 student scores on identical questions with the students' scores

¹²¹ See Colb, *supra* note 25 ("I have already noticed a higher level of reasoning, after only two weeks of class under the virtual laptop ban, and I am optimistic that student performance throughout the semester will improve as well.").

¹²² For my first year course, the first year I implemented a no-laptop policy, I received no comments on my teacher evaluations about the policy; the second year I received two negative comments about the no-laptop policy and one positive comment about the no-laptop policy. Although my teacher evaluations for this first semester, first-year course continue to be above average, I have noticed more strongly negative ratings from several students having the sense "only her way is acceptable," when they are called on or when they write their practice exams and midterms. I wonder if these comments relate to these students feeling too many external controls in the classroom. See Sheldon & Krieger, *supra* note 40. Or perhaps, because I was the only faculty member in their section teaching a substantive course, while providing significant feedback during their first semester, the students did not appreciate the precision that is required in legal analysis. On the other hand, these negative teacher evaluations are outweighed by strongly positive ratings by students who appreciate the structure and feedback, resulting in my attaining above-average teacher evaluations.

¹²³ The multiple choice portion of the final examination was weighted at forty percent of the students' final grade.

¹²⁴ In past years, I had posted the answers, with explanations, to the multiple choice questions after the exam. By 2004, I had more than six previous multiple choice exams, with answers, posted on TWEN, so I decided not to release the answers in order to keep some of them for future use. I did, however, go over the answers to the multiple choice questions in a special session during the first week of the following semester for those students who were interested in the answers. These students had a computer print-out that showed their answer to each question, as well as the correct answer. Then I projected the multiple choice questions onto the overhead and went through the questions with the students. This way, I did not have to worry about any of the exam questions "leaking" out. The next year, I changed the order of the questions that were repeated, so that even if a student had obtained the computer print out showing the right answer to the numbered questions from the prior year, it would not be helpful for students taking the multiple choice exam in subsequent years. In addition, I added a number of new multiple choice questions to the 2005 examination.

from the previous year, the fall of 2004. That semester I allowed laptops, but did not provide study questions before the class sessions and did not deliberately build on prior learning of the substantive law, as I had done with the students in 2005. The eighty-two students in the fall of 2004 scored an average of 39.987, but in 2005, when the course enrollment was sixty-two students, the average score was 41.172. In addition, not only did three students in 2005 score more points on the identical questions than the highest score in 2004, but the lowest score in 2005 was three points higher than the lowest score in 2004.

[74] Obviously there was a combination of factors that contributed to the students' improved performance. For example, although the 2004 and 2005 students' LSAT scores remained constant, the 2005 students' grade point averages were .12 higher, which might account for improved test scores. I also had a larger number of students in the classroom in 2004, an average of forty-one in each class, whereas in 2005 I had an average of thirty-one students per class. Studies have shown students tend to become more engaged in smaller classes, so the smaller class size may have impacted the improved performance on their examinations.

[75] Although it is not possible to isolate the causes for the improved test scores, it was clear that students were not being harmed academically by implementing a no-laptop policy in the classroom. In addition, adopting a no-laptop policy caused me to think about my teaching and the students' learning in ways that are being substantiated by research on learning. For example, the summary of the Carnegie Foundation's study of legal education found that legal education relies heavily on summative assessment of students, which focuses on ranking, sorting and filtering students:

But there is another form of assessment, formative assessment, which focuses on supporting students in learning rather than ranking, sorting and filtering them. Although contemporary learning theory suggests that educational effort is significantly enhanced by the use of formative assessment, law schools make little use of it. Formative assessments directed toward improved learning

ought to be a primary form of assessment in legal education.¹²⁵

This report supported my decision to provide students multiple opportunities to analyze fact patterns that applied the same legal principles, as I did when I repeatedly tested the students' knowledge of negligent homicide. I also used formative assessment techniques when I identified the increasing difficulty level of previous exams that were posted on TWEN.

[76] In addition, the 2006 Annual Survey Results of the Law School Survey of Student Engagement (LSSSE) supported some of the changes I implemented in my class to compensate for the no-laptop policy. For example, the law student survey found that one out of five law students reported never receiving prompt feedback from professors.¹²⁶ As was noted by correlating student responses, "prompt feedback is associated with most positive educational outcomes, including critical thinking, effective learning, and clear writing."¹²⁷ In addition, the survey revealed that students who received prompt feedback spent more time preparing for class and "were more likely to say they worked harder than they thought they could to meet the expectations of faculty members."¹²⁸ It was the implementation of the a no-laptop policy that prompted me to assign more writing exercises, administer more practice exams and add three class review sessions using the CPS "clickers." Consequently, it was my reassessment of how to teach in a no-laptop environment that resulted in me providing students with more feedback throughout the semester.¹²⁹

¹²⁵ WILLIAM M. SULLIVAN ET AL., EDUCATING LAWYERS: PREPARATION FOR THE PROFESSION OF LAW 7 (Carnegie Foundation for the Advancement of Teaching 2007).

¹²⁶ Law School Survey of Student Engagement, *Engaging Legal Education: Moving Beyond the Status Quo: 2006 Annual Survey Results 2* (2006), available at http://lssse.iub.edu/2006_Annual_Report/pdf/LSSSE_2006_Annual_Report.pdf.

¹²⁷ *Id.*

¹²⁸ *Id.* at 6.

¹²⁹ One of the disadvantages of being one of the only first year professors providing feedback throughout the semester, is that some students who are not performing at their levels of expectation may "blame the messenger," and attribute their less-than-stellar performances on the professor being unfair, hard to please, or unrealistic in his or her expectations, rather than realizing that they are in academic trouble. Research and writing professors, who also provide feedback throughout the semester, are familiar with this phenomenon. If students were receiving feedback from all of their professors,

[77] The most important result of adopting a no-laptop policy, however, has been recapturing the enjoyment of teaching and reconnecting to the students in the classroom. Also, similar to when I was a younger teacher, I found myself discussing teaching techniques with my colleagues, exchanging ideas about teaching strategies and methodologies. For example, one discussion with a colleague¹³⁰ about how to reach different learning styles resulted in me co-teaching, with two students, three different techniques to organize course material for the midterm examination. While I taught the traditional outlining method, one student used PowerPoint to illustrate the use of flash cards and another student handed out a flow chart, divided the class into work groups and had the work groups complete the blanks at the end of the flow chart with the appropriate crimes.

however, at-risk students would realize much earlier that their performance was substandard in the majority of their classes, and early intervention could rectify these students' inadequacies.

¹³⁰ The addition of Professor Michael Hunter Schwartz to the Washburn University School of Law faculty in the fall of 2006 has resulted in rich and engaging discussions about educationally sound teaching strategies and techniques. While I felt my classroom experimentation the year earlier, when I adopted the no-laptop policy, was similar to the old saying that "a blind hog finds an acorn every now and again," Professor Schwartz has developed systematic teaching strategies, and he enthusiastically encourages faculty members to adopt teaching techniques based on his extensive research of learning theory. *See* Michael Hunter Schwartz, *EXPERT LEARNING FOR LAW STUDENTS* (2005). *See generally* GERALD F. HESS & STEVEN FRIEDLAND, *TECHNIQUES FOR TEACHING LAW* (1999).

[78] This past semester I taught the large upper-class course¹³¹ that caused me to implement the no-laptop policy three semesters ago. Enrolled in this course was an equal mix of students from the 2004 first-year class in which I allowed laptops, as well as students from the following year, when I implemented the no-laptop policy. I also had students who had never taken me for a law school course. I wondered if students would drop the course or create a hostile environment because they would not be allowed to use laptops in the classroom.

[79] To provide advanced notice of the no-laptop policy, I sent an e-mail a week before classes resumed, informing the students I did not allow laptops or other electronic devices, except voice recorders, in the classroom. I also informed them the classes would be videotaped and the videos would be posted on the class TWEN site. I did not experience a mass exodus of students withdrawing from the course and, in fact, I had seventy-two students in a classroom that has seventy-five seats.¹³² In addition, I only received humorous responses to my e-mail announcing the no-laptop policy, such as one student who e-mailed me, to say he was looking forward to the class but he wanted to know whether he would be allowed to wear his digital watch in the classroom. He noted that it had a

¹³¹ I also taught a seminar class without laptops for the first time. The last time I taught a seminar, I invited a colleague, Professor Sheila Reynolds, to talk to the class about professional ethics using a short story as the vehicle for the discussion. She commented to me after class that she thought students were not using the laptops for classroom purposes. There was little reason for students in a research paper course to be taking copious notes, particularly when there was a guest professor. She said she deliberately called on a student who was typing during most of the class. The student clearly was not following the discussion. Interestingly, I received an e-mail from that same student, time stamped showing it was written during that very class. In thinking of ways to incorporate more active learning in this seminar class, I have adopted Professor Reynolds' practice of having the seminar students peer-edit their classmates research papers, thereby encouraging students to be invested in their peers' success and preparing them for this activity in law practice. Professor Reynolds suggested using Elizabeth Fajan and Mary R. Falk's 2005 book, *Scholarly Writing for Law Students*, particularly portions of Chapter 9, as a resource for students editing their peers' papers. See ELIZABETH FAJANS & MARY R. FALK, *SCHOLARLY WRITING FOR LAW STUDENTS* (2005). Also, several hours before class time, I have students post two comments or observations about the day's readings, to help shape the class discussion. I have discovered that the more my students are responsible for their own and their classmates' learning, the better the classes become.

¹³² Students also have the option of taking this elective from a faculty member who allows laptops in the classroom.

beep function, but it would be silenced. I jokingly replied that he could wear the watch as long as the beep function was silenced and he had passed the pre-test on reading time with a traditional face clock. Another student e-mailed that although he thought he still remembered how to use a pencil and paper, he would practice using paper and pen before classes started.¹³³

[80] What was interesting about these exchanges was that students felt comfortable to contact me in a humorous and lighthearted way, an attitude that carried over when the class started. Unlike the last time I taught this course, this time the students were freely volunteering in class discussions,¹³⁴ they respectfully listened to each other and the discussions were rich and nuanced.¹³⁵ In addition, a comparison of student scores on identical multiple choice test questions revealed that the mean score for the no-laptop class was 40.528 whereas the mean score for the class that had access to the Internet two years earlier was 39.272. In addition, the overall score on my teacher evaluations actually increased during the semester I implemented the no-laptop policy, going from a 6.5 (on a 7

¹³³ One student complaint about a no-laptop policy is that handwritten notes are not as legible or as comprehensive as laptop-written notes. See Posting of Dave! to http://www.theconglomerate.org/2006/03/banning_laptops.html (Mar. 23, 2006, 11:08) (“I don’t write fast (which means I often can’t get my complete thought written into notes longhand, even if it’s not a ‘transcription’) and frequently I can’t read my own writing 15 minutes later – let alone 4 weeks.”). I have not had this complaint from my students, perhaps because of a combination of factors, such as posting questions before class, summarizing class notes following class, and keeping regular office hours.

¹³⁴ See Schwartz, *supra* note 105, at 421. I have assigned one row to be “on-call” for each class, but I have eager volunteers from other rows as well. As in my first year course, I am using music before this class begins and am posting class questions at least 24 hours prior to the class session, *i.e.* “scaffolding,” in addition to posting the notes following class. I also have been able to generate good class discussions by giving the students three to five minutes to talk over a “summarizing” problem, that I have written for the end of each section of material, with those sitting close to them. This technique is extremely effective to generate more volunteers and a more sophisticated discussion.

¹³⁵ Several students have told me that they were surprised to discover how much they enjoyed the classroom experience without the laptops because students were more engaged in class. See Posting of SLMK to http://www.theconglomerate.org/2006/03/banning_laptops.html (Apr. 1, 2006, 11:59) (“. . . I’m a student IN that first year no-laptops class. More visibly engaged would be an understatement. I remember my shock when a student I’d never seen participate last semester, who’d always been more in touch with their [sic] AIM chats than class, suddenly raised their [sic] hand and asked a question. And it was a good question!”).

point scale) when I allowed Internet access, to a 6.6 for the semester when I adopted the policy.¹³⁶ Although this is only a slight difference in the increased scores for the multiple choice examination and my teacher evaluations, the fact remains that not having laptops in the classroom was not harming student learning,¹³⁷ nor did students show a resentment of the policy through low teacher evaluation scores.

CONCLUSION

[81] It was the feeling of being disconnected from my students in the classroom that resulted in my adoption of a no-laptop policy. I also believed it was my fiduciary duty to address the legitimate uses of laptops and to find ways to compensate for not allowing students to use the laptop in the classroom. It was this second action that led to me to adopt and expand various teaching methodologies to meet the educational needs of my students. In doing so, I was able to reclaim my joy for classroom teaching. The lesson here is not an urgent call for every law professor to adopt a no-laptop policy. Rather, the point is that law school teachers need to be connected to their students in order to educate them. Because I experienced the presence of laptops as preventing that connection, it made sense to remove these obstacles from the classroom. It was, however, my sincere interest in providing students with skills that increased their competency and mastery in the classroom that made the laptop ban a success.

¹³⁶ The average scores on teacher evaluations for all law teachers the second time I taught this course were 6.0.

¹³⁷ See Lorenzo A. Trujillo, *The Relationship Between Law School and the Bar Exam: A Look at Assessment and Student Success*, 78 U. COLO. L. REV. 69, 73 (2007) (“Interestingly, and perhaps not coincidentally, the introduction of laptops in the classroom coincides with the national decline in bar passage rates.”).