Taking Back the Law School Classroom: Using Technology to Foster Active Student Learning

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Recommended Citation

Paul L. Caron & Rafael Gely, Taking Back the Law School Classroom: Using Technology to Foster Active Student Learning, 54 J. Legal Educ. 551 (2004)
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Paul L. Caron and Rafael Gely

Law schools (and indeed all of higher education) have witnessed an explosive growth in the use of technology in the classroom. Many law teachers now deploy a wide array of technological bells and whistles, including PowerPoint slides, Web-based course platforms, in-class Internet access, and the like. Students, in turn, increasingly come to class armed with laptop computers\(^1\) to harvest the fruits of the classroom experience.\(^2\) Yet in recent years there has been something of a backlash, with various law teachers arguing that this technology is interfering with, rather than improving, pedagogy in the classroom. According to the critics, the technology increases student passivity and thus interferes with the active learning that should be the hallmark of a law school classroom. In addition, the critics complain that laptops provide too much competition for the students' attention, enticing them to play computer games or DVDs and, with in-class Internet access, to read and send e-mail (or instant messages), shop online, or check out the latest political, financial, or sports news. This article opens a new chapter in the debate, explaining how law teachers can use both old and new technologies to increase student engagement in the classroom.

We first lay out the pedagogical case for creating an active-learning environment in the law school classroom and then examine the critics' charge that technology impedes these goals. We offer a competing vision of how technology can be harnessed to increase active student learning and, in the process,

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1. Or keyboards linked to personal digital assistants.

2. Some students no longer do their own harvesting and instead pay academic sharecroppers for verbatim transcripts of class notes. See, e.g., Marcella Bombardieri, BU Tries to Fail Business Selling Lecture Notes, Boston Globe, Oct. 25, 2003, at B1. In addition, several Web sites offer outlines of specific law school courses posted by students. See, e.g., <http://www.jd2b.com/outlines.html> (last visited June 24, 2004).
empower students to resist their laptop's siren song. In particular, we describe how we combine both old (substituting word-processing text for PowerPoint slides) and new (using handheld wireless transmitters) technologies to inject more active learning into our classes.

I. The Importance of Active Student Learning in the Law School Classroom

During the 1980s education scholars led by Zelda Gamson and Arthur Chickering developed a set of seven principles for good practice in undergraduate education as part of an effort to improve teaching in colleges and universities. The seven principles, which follow, have been at the forefront of a revolution sweeping undergraduate education.

Encourage student-faculty contact.
Encourage cooperation among students.
Encourage active learning.
Give prompt feedback.
Emphasize time on task.
Communicate high expectations.
Respect diverse talents and ways of learning.

These principles have made much headway in legal education in recent years, beginning with the Institute for Law School Teaching's 1998 annual conference and resulting papers published in this journal in 1999, and continuing with the efforts by the Clinical Legal Educators Association to incorporate the seven principles in their report, Best Practices of Law Schools for Preparing Students to Practice Law. This section focuses on the importance of one of these principles—active learning—in teaching. We first describe the basic contours of the active-learning concept and then assess its application to the law school classroom.

A. General Principles of Active Learning

Active learning is based on two premises: learning by its nature is an active process, and different people learn in different ways. Active learning recognizes that, during classroom time, students should be engaged in behavior and activities other than listening. Active learning requires students to undertake higher-order thinking, forcing them to engage in analysis, synthesis, and evaluation. One of us recently wrote: "Cognitive science teaches that such active learning produces more lasting value to students who are better equipped to process new information and solve new problems within the context of

their self-created schemata."6 Because less emphasis is placed on the passive receipt of information transmitted by an instructor, students must engage in other learning activities during class time—talking, writing, reading, reflecting, and evaluating information received.

Such activities facilitate different mental functions. For example, talking forces the speaker to clarify what she has heard, read, observed, or experienced. "The fact is, we often do not know what we think until we try to say it."7 Talking also forces the speaker to organize her thoughts so that they make sense and to evaluate the validity and robustness of her own reasoning. Opportunities for talking can be either formal or informal, involving the whole class or small groups, and can be used either to review and summarize materials already discussed or to set a new direction for class discussion.8

Similarly, writing forces students to clarify their thoughts. As part of the classroom experience, writing can be particularly useful in giving the teacher feedback on how students are internalizing the class discussion. Researchers have identified short writing exercises as particularly effective in achieving both the clarification and feedback functions. For example, teachers can ask students to summarize the most important idea they remember from a particular class discussion, to paraphrase a key element of the material, or to solve a particular problem and then explain how they arrived at their answer.9

Somewhat counterintuitively, both reading and reflecting are critical elements of active learning. Reading forces a student to clarify not only his own thinking, but what others are thinking, or at least the ideas that others are trying to convey. Reading requires the student to engage in "higher-level thinking skills, such as connecting ideas and sources of information, spotting faulty logic in argumentation, recognizing bias or hidden agendas, identifying unsupported ideas, understanding metaphorical levels of meaning, and entertaining other perspectives and points of view on a subject."10 Reflecting allows students the opportunity to "integrate and appropriate new knowledge."11 Presented with information that challenges what they believe to be true, students are forced to evaluate their preconceptions and formulate new processes and conclusions.

Active learning can be facilitated through a number of learning strategies. For example, students involved in small groups during class engage in talking,

8. Id. at 22-23.
9. See, e.g., Thomas A. Angelo, Bridging the Gap Between Education Research and College Teaching, Nat'l Ctr. for Research to Improve Postsecondary Teaching & Learning, Accent Series No. 9, at 1, 2 (Ann Arbor, 1990); William Zinsser, Writing to Learn (New York, 1988).
10. Meyers & Jones, supra note 7, at 27.
11. Id. at 29.
listening, and reflection. By speaking, they clarify their thoughts; by listening, they reflect on alternative views presented by other group members. Similar active-learning activities can be undertaken through other strategies such as case studies and simulations.

B. Active Learning in the Law School Classroom

Compared to the traditional undergraduate classroom, the learning that takes place in law school at first glance appears to be significantly more active. Because of the prevalence of the Socratic method, law students frequently participate in class by orally responding to questions fired at them by their teacher. But in the light of active-learning theory the law school classroom looks considerably more passive than is commonly believed.

As practiced in most law schools today, the Socratic method can be described as follows. A teacher calls on a student (sometimes with advance notice, more commonly without) and begins to probe the student's understanding of one aspect of the day's assignment (typically an appellate court's opinion). The questioning often begins with a discussion of the facts and moves on to identifying the legal rules applied by the court. The student's responses are followed either by a few clarification questions, or ideally (when the student immediately gives the right answer) with a series of hypothetical situations requiring the student to apply the concept just learned to other factually distinguishable scenarios. Some teachers engage the same student for a relatively long period of time before moving on to someone else; others switch to other students quickly and frequently.

On the surface, this Socratic dance appears to jibe nicely with the active-learning ideal. The rationale of the Socratic method is that the teacher's questions will force the student to reason and reflect on the information presented instead of merely regurgitating it. Another central component of the method is the "never-ending" assessment of a concept by testing it against alternative conflicting possibilities. The Socratic method thus theoretically requires the student to constantly engage in reflection, which in turn should help the student clarify her thoughts by testing them against alternatives, leading to higher-order thinking, a critical component of active learning.

A more nuanced view of the Socratic method, however, leads to a very different conclusion. According to Michael Hunter Schwartz, two characteristics best describe law teaching. First, law teaching to a large extent requires students to learn vicariously. Under the Socratic method, the typical classroom interaction is a one-on-one dialog between the teacher and one student. Except for the student who happens to be sitting on the hot seat, no one else actively participates in the dialog. As Schwartz points out, "[p]rofessors expect that the other students in the classes will learn by watching these interac-

12. For detailed discussion of the application of active-learning principles in law schools, see Gerald F. Hess, Principle 3: Good Practice Encourages Active Learning, in Symposium, supra note 4, at 401.

The Socratic method is based on the assumption, or perhaps the hope, that the students not selected to engage in the one-on-one dialog nevertheless will play along by mentally following the dialog, answering the questions to themselves concurrently with the student doing the talking. Understood in this way, the Socratic method becomes primarily a vicarious form of instruction, where the "thinking" that goes on between the teacher and the one student involved in the dialog "rub[s] off on all the students in the class."\(^{15}\)

Second, legal education involves a large dosage of self-teaching. According to Schwartz, "law professors expect students to figure out on their own what the students need to know and what they need to be able to do to succeed in the class."\(^{16}\) Examples of self-teaching abound. For example, there are a number of skills that students develop at some point in most classes: factual understanding, legal analysis (of cases, statutes, rulings, and regulations), legal reasoning, issue spotting, and drafting. But law teachers seldom pause to identify which of these skills are being developed at any given moment. Students left adrift on a Socratic sea must figure out for themselves not only what the substantive discussion is all about (i.e., what are the facts, what is the law, what is the court's reasoning) but also the teacher's instructional goals for that particular class.\(^{17}\) The best example of self-teaching relates to the manner in which most law teachers evaluate student performance: the dreaded final exam. Although most classroom time during the semester is devoted to probing the students' case reading and case evaluation, these two skills seldom are tested. Instead, in the final exam the teacher often introduces a completely new skill not previously discussed or evaluated in class—issue spotting in the context of large, complex factual questions.

Law school teaching thus fares poorly when evaluated against the active-learning principle of effective teaching. This is particularly unfortunate because the Socratic method in theory provides an ideal vehicle for infusing active learning into the law school classroom. In part III we will describe how technology can be used to unlock the active-learning potential of the Socratic method. We first discuss in part II the recent complaint that the use of technology increases student passivity in the law school classroom.

II. The Backlash Against Technology in the Law School Classroom

There has been much commentary on the role of technology in law school teaching.\(^{18}\) During the 1990s the "technology bandwagon" rolled virtually...
unchecked into law schools. Technology-savvy faculty raced to bring the latest high-tech innovations into the classroom. The “early adopters” brought PowerPoint presentations, Web-based course platforms, and in-class Internet access to their students, and many of their colleagues followed soon thereafter. Simultaneously, many students leaped into the technology embrace, as laptops began sprouting up in classrooms. Law schools fueled both trends, adding personnel and infrastructure support for faculty use of technology in the classroom and encouraging (in some cases requiring) students to come to class armed with laptops. By the mid-1990s technology had become de rigueur on both sides of the podium, and only faculty or student Luddites offered token resistance.

Just as the triumph of technology appeared complete, a few voices emerged to urge caution while others noted a wholesale backlash. In a ringing indictment, Douglas L. Leslie argued that teachers’ use of PowerPoint slides and students’ use of laptops destroy classroom interactions and create a passive-learning environment.

According to Leslie, PowerPoint slides lull students into a pedagogical stupor as their attention becomes “glued on the Power[P]oint slide like a first-grader focuses on Barney.” Students fixate on the slides to capture every bit of information to memorize for the examination, becoming “classroom court reporters.” Although some teachers counter by distributing in advance of class copies of the slides, which the students can annotate in hard copy

19. Maria Perez Crist, Technology in the LRW Curriculum—High Tech, Low Tech, or No Tech, 5 Legal Writing 93, 93 (1999).
20. See John L. Lahey & Janice C. Griffith, Recent Trends in Higher Education: Accountability, Efficiency, Technology, and Governance, 52 J. Legal Educ. 528, 535 (2002) (“Most law schools already have moved beyond the early-adopter stage, characterized by the use of technology by only a few faculty members.”).
25. Leslie, supra note 23, at 1304. If Leslie were writing today, we suspect he would make this same point by shifting his cultural reference to Blue’s Clues or SpongeBob SquarePants.
During class, this creates two additional problems. First, students with laptops become frustrated because electronic copies of the slides are not easy to annotate. Second, distributing the slides in advance of class reduces the incentive for students to attend class and to pay attention in class.\textsuperscript{27}

Bemoaning students' use of laptops, Leslie complains that they irresistibly draw students' attention away from what goes on in the classroom. Beleaguered law teachers simply cannot compete with the computer games, DVDs, instant messaging, e-mail, online shopping, and political, financial, and sports news available to students at a click of the mouse.\textsuperscript{28}

A 2001 \textit{New York Times} op-ed article by law professor Ian Ayres fueled the backlash against students' use of laptops in class.\textsuperscript{29} Ayres argues that laptops are uniquely tempting to students and are not simply high-tech versions of daydreaming, doodling, crossword puzzles, and other distractions that have existed since the days of Dean Langdell.\textsuperscript{30} Other media accounts soon picked up on this theme, describing the pernicious effect of laptops in America's classrooms.\textsuperscript{31} Reports surfaced of a University of Texas law teacher who took matters into his own hands, first bringing a ladder to school to disconnect the wireless transmitter in his classroom and then, the following year, prohibiting all laptop use in his classes.\textsuperscript{32} A Georgetown University law teacher roamed his classroom like a latter-day Phil Donahue, making sure laptop users did not stray into forbidden activities.\textsuperscript{33}

\begin{itemize}
\item \textsuperscript{28} Leslie, \textit{supra} note 23, at 1305-06; Oliphant, \textit{supra} note 26, at ¶¶ 27-34.
\item \textsuperscript{29} Lectures vs. Laptops, N.Y. Times, Mar. 20, 2001, at A25.
\item \textsuperscript{30} Other law teachers disagree. For example, Albany Law School Professor Daniel G. Moriarty "thinks the laptop brouhaha is much ado about nothing. 'You don't need technology to waste your time,' says Moriarty, who recalls doing a lot of doodles and crossword puzzles in class during his student days. 'Instant messaging is just a high-tech way of passing notes or throwing paper airplanes.'" Paul Grondahl, Digital Doodling Students Plus Laptops Can Add Up to Some Serious Goofing Off in Classrooms, Alb. Times-Union, Oct. 2, 2001, at D1.
\item \textsuperscript{32} John Schwartz, Professors Vie with Web for Class's Attention, N.Y. Times, Jan. 2, 2003, at A1.
\end{itemize}
These critics rightly note that the unbridled use of PowerPoint slides and laptops has had a negative impact in the law school classroom, with technology easily getting in the way of active learning. If, at any given time, only one student (or at most a very few students) is actively engaged in the class discussion, it is easy to see how technology, improperly used, can lead to the detachment of other students and thus inhibit the active learning that should be the hallmark of law school teaching. In part III we offer an alternative vision for using technology to foster an active-learning environment in the law school classroom.

III. Using Technology to Take Back the Law School Classroom

As teachers of traditional law school subjects—tax law (Caron) and labor law (Gely)—we have struggled in recent years to incorporate in our teaching new technologies that further the active-learning ideal. After much trial and error, we now employ a mix of old and new technologies which we believe combine the best features of PowerPoint slides and student laptops, minimize the risks identified by Leslie and Ayres and other critics, and foster an active-learning environment in our classrooms.34 Our approach also furthers several of the other principles for good practice in law school teaching.

A. Back to the Future35

We began our law teaching careers as inveterate chalkboard scribblers and soon graduated to transparencies and overhead projectors. We handed out in class hard copies of charts and tables, and we and the students filled in the answers together.36 Even at that early stage, we saw the pedagogical benefits of having students participate in the creation of the in-class work product. As PowerPoint took root in law schools, we initially struggled with converting charts, tables, and other material we had created in word-processing formats into PowerPoint slides that we could project from a laptop onto a classroom screen. The effort often was time-consuming and gained no advantage except a nice color background. Students participated by taking notes on a hard copy of the slides but were unable to incorporate this material into their computer-generated class notes and outlines.

We soon abandoned the attempt to make PowerPoint do what it is not designed to do. Instead, we began using a laptop to project word-processing

34. We offer here an amalgam of the approaches we each take in our classes; neither of us employs every technique we discuss here in every class.

35. Universal Studios, 1985. Although one of us already has employed this movie title in a law review article, Caron, see supra note 6, the only other movie that came to mind with characters traveling back in time—Bill and Ted's Excellent Adventure (MGM Studios, 1989) (to be restyled Paul and Rafael's Excellent Adventure?)—appeared too unlikely to pass muster with the editors of the Journal (and in any event we disagreed about which of us looks more like Keanu Reeves).

36. The students wrote on their hard copies while we wrote with markers on the overhead transparencies.
text onto the classroom screen. This retrograde approach has several advantages over PowerPoint slides: we can easily use charts, tables, and other text already in word-processing formats in our class notes; we can manipulate the material in class in response to student comments; and students can incorporate and manipulate the material on their laptops in class and then construct their course outlines outside class from this material.

In our early years using this approach, we succumbed to students' entreaties and made the completed word-processing presentations available to them after class on the course Web site. Later we made the presentations available before class. The result was an increase in student passivity and a decrease in attendance and preparation, as noted by Leslie and other critics. In recent years we have solved these problems by making only a stripped-down portion (typically about half) of the presentations available on the Web before class. We believe this gives our students the best of both worlds. Before class, they get the benefit of our thoughts about organization and structure as they prepare that day's assignment, but they are left to puzzle over the content and details themselves. In class, they are forced to take an active role in filling in the remaining portions of the presentation, whether on the hard copy they have printed or on the electronic copy they have downloaded onto their laptop.

B. Back to the Future II

Just as the principles for good practice first were applied in the undergraduate context before making inroads in law schools, a new teaching technology using handheld wireless transmitters in college and university classrooms is just now appearing in law school classrooms. After first describing this new technology and how we have used it in our classes during the past year, we explain how it contributes to active learning and also furthers several of the other principles for good practice in law school teaching.

37. Of course, we used a font much larger than the standard 12-point.


38. There are higher-tech ways to accomplish the same thing, including the use of SMART Board technology. See Crist, supra note 19, at 113-16; Peter A. Joy & Kevin C. McMunigal, Teaching Ethics in Evidence, 21 Quinnipiac L. Rev. 961, 970 (2003); Carol A. Roehrenbeck, Preparing Lawyers for Practice in the New Millennium, 51 Rutgers L. Rev. 987, 999 (1999).

39. Of course, there are alternative ways of structuring the process of providing students with these materials. For example, to cure students of court-reporter syndrome, see supra note 26 and accompanying text, we have experimented with giving them brief "summary notes" at various points during the semester.

40. Universal Studios, 1989. In the first Back to the Future movie, Marty McFly (Michael J. Fox) travels 30 years back in time to 1955. In BTTF II McFly-Fox travels 26 years forward in time to 2015. We chose BTTF II, rather than the only other movie that came to mind with characters traveling forward in time—Sleeper (Jack Rollins and Charles H. Joffe Productions, 1973)—because Sleeper seemed to be an inappropriate title for a section advancing the active-learning theory (and in any event we again disagreed, for different reasons, about which of us looks more like Woody Allen).

1. Handheld Wireless Transmitters

Two companies offer competing handheld wireless transmitter systems: the Classroom Performance System by eInstruction Corp. and the Personal Response System by EduCue LLC.\(^4\) We became aware of the Classroom Performance System at the January 2003 AALS annual meeting when we attended a demonstration by an eInstruction representative. We subsequently adopted the CPS in one of our spring 2003 classes at the University of Cincinnati College of Law, making Cincinnati one of two law schools at the time to use the CPS.\(^4\) eInstruction cosponsored the summer 2003 CALI Conference on Law School Computing, and over a dozen law schools later used the CPS during the fall 2003 semester.\(^4\) We used the CPS in all of our courses during the 2003–04 academic year.\(^5\)

The CPS is an integrated system consisting of software downloaded onto the teacher's laptop, handheld wireless transmitters supplied to students, and a wireless receiver attached to the teacher's laptop in the classroom.\(^4\) We use the CPS in the classroom in two ways.\(^4\)

First, we prepare in advance of each class a series of multiple-choice questions which we project onto the screen.\(^4\) We intersperse these questions throughout the class hour, typically after we have first gone over a particular case, statute, ruling, or regulation, and then illustrate the applicable rule with a question or problem. Students are required to respond via their handhelds, and we then display the correct answer and the percentage of students who answered the question correctly. One of the benefits of the CPS is that it preserves individual student anonymity in the classroom but gives us instant feedback on students' comprehension of the material covered. The CPS

\(^{42}\) See <http://www.einstruction.com> (last visited Mar. 15, 2004); <http://www.educue.com> (last visited Mar. 15, 2004). Both systems were developed by college professors (eInstruction by Darrell Ward (Texas A&M University) and EduCue by Nelson Cue and Bruce Marsh (State University of New York—Albany and Hong Kong University of Science and Technology (HKUST)), Lilly Cue, Frances Marsh, and C. K. Lee (HKUST)).

\(^{43}\) One of us also used the CPS system in teaching summer courses at Florida State University College of Law (2003) and the University of San Diego School of Law (2004).

\(^{44}\) For a full list of law schools (as well as colleges and universities) using the CPS, see <http://www.einstruction.com> (last visited Mar. 15, 2004). For a list of college and universities using the competing PRS, see <http://www.educue.com/users.htm> (last visited Mar. 15, 2004).

\(^{45}\) Our use of the CPS was featured in Katie Hafner, In Class, the Audience Weighs In, N.Y. Times, Apr. 29, 2004, at G1.

\(^{46}\) eInstruction offers the CPS in two different packages. (1) A law school buys the receiver(s) for faculty and the handhelds for students enrolled in courses using the CPS; the school (or the teacher) registers the students' assigned handhelds for particular courses, and there are no further charges in either the current or future semesters. (2) Or a law school purchases only the receiver(s) for faculty, and students enrolled in the course must each buy a handheld (along with their other course materials) from the bookstore and must register (and pay an additional fee) for the course on the eInstruction Web site.

\(^{47}\) The CPS also provides a number of other helpful functions, including automatically tracking student attendance, creating individualized reports of student performance data, structuring team activities, and organizing and delivering various testing functions.

\(^{48}\) The CPS software provides templates for multiple-choice questions with as many as five different answers, as well as yes/no and true/false questions. Graphics can easily be imported into the questions and answers.
software automatically tracks the individual student's performance throughout the semester, which we access outside of the classroom and take into account in determining final grades.\footnote{We have done this a number of ways, depending in part on a particular school's grading policies. For example, we have taken individual student performance on the CPS into account in deciding whether to raise or lower exam grades in determining final course grades (both letter and numerical). We also have assigned fixed percentages to student performance on both the CPS (e.g., 20 percent) and the exam (e.g., 80 percent) in computing final course grades. Of course, we clearly explain in the syllabus and during the first class the particular method we will be using in a given semester.}

In addition to the multiple-choice feature just described, the CPS provides an option for verbal questions. These need not be scripted ahead of time; the teacher can draft them on the fly as the class discussion proceeds and use them to solicit student reactions. This feature is particularly helpful in responding to two concerns that some teachers have about multiple-choice questions:\footnote{Despite this concern, bar authorities have used multiple-choice questions in the MBE and MPRE for three decades. See Paul T. Hayden, Putting Ethics to the (National Standardized) Test: Tracing the Origins of the MPRE, 71 Fordham L. Rev. 1299 (2003). Moreover, the Center for Computer-Assisted Legal Instruction has produced 300 lessons with multiple-choice questions covering 28 subject areas, \url{http://www.cali.org/} (last visited Mar. 15, 2004). In addition, law school book publishers have developed new book series with multiple-choice questions in a variety of subject areas. See the LexisNexis Questions & Answers Series (13 titles) \url{http://www.lexisnexis.com/lawschool/study/qanda} (last visited Mar. 15, 2004); West Group's Exam Pro Series (5 titles) \url{http://west.thomson.com/store/CompleterlistPublications.aspx} (last visited Mar. 15, 2004).} (1) multiple-choice questions are too constraining to allow for a meaningful description of the relevant facts and alternative courses of action in a particular legal situation;\footnote{See Charles B. Sheppard, The Grading Process: Taking a Multidimensional, "Non-Curved" Approach to the Measurement of a First-Year Law Student's Level of Proficiency, 30 W. St. U. L. Rev. 177 (2003).} and (2) multiple-choice questions may be suitable for certain technical courses (e.g., tax) but not for other courses (e.g., constitutional law). Although no technology ever will sway a teacher who is philosophically opposed to the use of multiple-choice questions, the CPS verbal question feature is likely to satisfy the less extreme skeptics. By allowing the teacher to compose a question during class and have students register their answers through the handheld devices, it maximizes the teacher's flexibility and permits her to construct as complex and sophisticated a fact pattern as she wishes.\footnote{The conventional CPS multiple-choice format also allows for the use of detailed fact patterns.}

2. The CPS and Active Learning

The CPS encourages active learning by the entire class. Unlike the traditional Socratic method, which engages one student at a time, the CPS extends the dialog to the entire class by requiring each student to answer each question. Because students know they will be asked to respond to questions every ten to fifteen minutes, and not just (if at all) on a final exam several months away, their laptop's distractions become easier to ignore. In a very real sense, the Socratic method writ large by means of the CPS transforms the law school classroom into an active-learning environment. Of course, students cannot
actively participate in class if they do not come to class, but we have noticed a
sizeable increase in attendance in our classes since using the CPS, which we
attribute to the incentives students have to attend each class to maximize their
performance on the questions asked each day.  

There are many ways to achieve active learning in law classrooms. We use a
variety of methods—materials as diverse as traditional casebooks, problem-
oriented casebooks, Law Stories books focusing on the leading cases in a
field, and the CaseFile method. In our experience, the CPS is quite compat-
ible with these other teaching techniques. For example, it is easily integrated
into problem-based materials (such as problem-oriented casebooks and the
CaseFile method). One approach we have used is to ask students at the
beginning of class to record their answers to the problem under consideration
(e.g., which party should prevail in the scenario described). During class we
come back sporadically to the CPS to identify specific doctrinal issues, and we
conclude by asking students to vote again on what they think is the correct
outcome. With such technology,

[the classroom] is an active one. Its students are pressing keys on their hand-
held devices in response to the instructor's cues and questions. They're
listening carefully to the instructor for directions and information, asking the
instructor questions, ... and talking and debating .... This active engagement
becomes especially relevant in classes of 30 or more. In larger classes, where
active learning is often very difficult to implement, its benefits become even
more important.  

3. The CPS and the Other Principles for Good Practice

We begin with two caveats. First, as with any teaching method, the CPS
contributes to achieving some principles of good practice more than others.
Teachers considering integrating the CPS into their classes need to evaluate
how it can contribute to achieving the particular principles they have targeted.

53. The CPS does not force faculty to change their policies on class attendance. Some students
occasionally question the fairness of our use of the CPS when they have (in their mind, at
least) a "good" reason for missing class. We simply reply that they are free to miss class but
they lose the opportunity to garner credit for correctly answering that day's questions. For
further discussion of the attendance boost we have enjoyed since adopting the CPS, see
Hafner, supra note 45.

54. See Paul R. McDaniel, James R. Repetti & Paul L. Caron, Federal Wealth Transfer Taxation:
Cases and Materials, 5th ed. (New York, 2003); Paul R. McDaniel, James R. Repetti & Paul L.

55. See Tax Stories: An In-Depth Look at Ten Leading Federal Income Tax Cases, ed. Paul L.
Caron (New York, 2003); Caron, supra note 6; Clermont, supra note 6.

56. See Leslie, supra note 23.

57. Joan Wines & Julius Bianchi, Extending the Personal Response System (PRS) to Further
Enhance Student Learning. Paper Presented at the SSGRR (Scuola Superiore G. Reiss
Romoli) International Conference 2 (July 2002) (on file with the authors). Although this
paper evaluates the effectiveness of EduCue's PRS in undergraduate education in fostering
the Seven Principles for Good Practice, the conclusions are equally applicable to the use of
elnstruction's CPS in legal education. See also Michael Perry, Real-Time Assessment in
Instruction Using Instructional Technology, Pendragon Productions, at <http://
www.pdragons.com/conferences/ Hawaii—elnstruction%20Proceedings.pdf> (last visited
Mar. 15, 2004).
Second, the CPS is no panacea, and other teaching techniques may be equally or even more effective in pursuing these principles in different contexts. But the CPS does further several of these principles. We recount our experiences here in the hope that they will be helpful as other law teachers experiment with the CPS in the classroom.

*Give prompt feedback.* Closely connected to the active-learning principle is the requirement to give students prompt feedback—defined as "any procedure used to inform a learner of the degree of appropriateness or correctness of a response to an instructional stimulus." Feedback allows students to evaluate their existing knowledge and competence and, as new information is introduced, to update their evaluations to assimilate that new knowledge. Feedback can be formative (assists improvement and development) or summative (evaluates performance and compares performance to defined expectations), general (focuses on broad trends in student behavior) or specific (pinpoints how a particular response is wrong). Although most of the scholarly attention on feedback in the classroom focuses on the lack of feedback, excessive feedback also can be a problem. Feedback is excessive when it overwhelms the listener, making it difficult to evaluate or sort out the speaker's message. To the extent that active learning involves processes intended to take students to higher-order thinking, it is impossible to separate active learning from appropriate feedback. Reflecting cannot occur without feedback, whether the feedback comes from the teacher, peers, or oneself.

The Socratic method, in theory, should saturate the law school classroom with feedback opportunities. The constant questioning of a student, with challenge of the student's answer, should provide an immediate opportunity for students to evaluate the validity or strength of their answers. But, as we said earlier, the validity of this assumption is questionable because so much law school learning is vicarious. It is not surprising to hear students complain that they have no way of evaluating their level of understanding of the course material until the final exam, when it is too late to take corrective action.


59. "[Feedback] lets students know not only whether they are on a right track, but why the answer is a good one or what is keeping it from being so.... The right amount [of feedback] is that which allows the learner to grasp the nature of the error and suggests an alteration in response." Id. at 57.


61. An example of general feedback is a comment such as "This seminar cannot work well unless you are better prepared," while an example of specific feedback is "Although you were able to give both rules and apply the two variables, you missed the age distinction." Id. at 422–23. Specific feedback allows the student to identify mistakes, to compare their information with that of their classmates, and to incorporate the information just received in the form of feedback into their next project. See Jon M. Garon, The Seven Principles of Effective Feedback, Law Tchr., Gonzaga Univ./Inst. for Law Sch. Teaching (Spokane, Wash.), Spring 2000, available at <http://law.gonzaga.edu/ilst/Newsletters/Spring00/garon.htm> (last visited Mar. 15, 2004).

62. See Benson et al., supra note 58, at 57.

Although law teachers intuitively recognize the importance of giving feedback that is prompt, specific, and summative, providing that kind of feedback is time-consuming. Giving students frequent feedback during the semester would cut into the time available for scholarship and service obligations (especially given the large size of most law classes, particularly in the first year).

There are several ways to provide feedback to students: midterm (or more frequent) examinations, writing exercises, peer critiques, introspective journals. Although each of these techniques has some value and may be particularly well suited for particular situations, none gives feedback that is at once prompt, specific, and summative. The CPS, in contrast, fulfills all three of these objectives without imposing undue demands on faculty time. Students receive immediate feedback on their level of understanding of each day's materials. The feedback is specific, as it identifies answers to particular questions. And it allows the student to identify areas of weakness and seek assistance. Another positive aspect of feedback is the information it provides to faculty about their students' understanding of the material. In prior years, after going over a complicated rule with several illustrations, we could tell from the blank faces looking back at us that a significant portion of the class did not understand the rule at issue. Yet despite our entreaties—"Are there any questions?"—no student would venture to raise a hand. So we either pressed on to the next subject, leaving it to the students to unravel the mystery on their own, or we called on a single student to probe his understanding. The difficulty with the former tactic is that there is no opportunity until the final exam to discover whether the students get it; the difficulty with the latter is that the one unlucky student is not necessarily representative of the class's collective understanding. The CPS gives us immediate feedback on students' comprehension and helps us decide whether to linger in an area longer than we had planned, with additional explanations and illustrations, or to move on to the next subject:

[Instructors see] not only how each student has answered a question but also how the class as a whole has answered it, [and find] out right away where there are knowledge gaps and misperceptions. The organic nature of this learning environment allows the instructor to "think along" with the students and formulate new questions for them. The instructor can—immediately—get to the bottom of student misperceptions, clear them up with explanation or other means, and retest for comprehension.  

The CPS not only allows a teacher to provide summative feedback (i.e., evaluative feedback), it also allows formative feedback (i.e., feedback intended to help students improve and develop their legal skills and knowl-

64. We initially attributed this reticence to the Midwestern background of most of our students, but after visiting at other schools, we now view it as a universal character trait of students unwilling to be unmasked in front of their peers. The CPS provides a cloak of classroom anonymity that students cherish and teachers can remove outside of the classroom.

65. Wines & Bianchi, supra note 57, at 3; see also Perry, supra note 57.
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edge). We have found this feature of the CPS particularly helpful in dealing with what one could call the only-one-answer syndrome.

All law teachers struggle with the yearning students have to unearth the answer to a particular legal problem. We all strive, in various ways, to help students understand that in law (or at least in law school), there seldom are right answers but only better answers in particular contexts. A potential concern with the CPS is that by forcing questions into multiple-choice or true/false formats, we perpetuate students' fixation with the only-one-answer model.

In our experience, however, the CPS can be used to help students better appreciate the nuances of the law. When discussing doctrinal issues without a single correct answer, we present the students at the outset with a range of possible answers. After the students have selected their single answer (and thus are invested in a particular position), we turn the tables and ask them to defend their choices and to critique the choices of their classmates. The opportunities for active learning are enormous. First, students can visualize the diverse set of views and arguments that can be made for any particular response. This is particularly helpful in getting the students away from the only-one-answer model and making them reassess the strength of their initial responses. Second, by forcing students to commit to an answer by recording their choices through the handheld devices, the CPS gives all students (even those who otherwise would not volunteer in class) the opportunity to register their choices. Third, the range of possible answers serves as a springboard to a dynamic classroom discussion. For example, a teacher could begin the discussion with the weakest of the alternative answers and force the students to identify the defects in that choice. She then could progressively work through the other answers, finishing with the best answer among the available choices.

Respect diverse talents and ways of learning: There are as many styles of learning as there are students:

There are many roads to learning. People bring different talents and styles of learning to college. Brilliant students in the seminar room may be all thumbs in the lab or art studio. Students rich in hands-on experience may not do so well with theory. Students need the opportunity to show their talents and learn in ways that work for them. Then they can be pushed to learning in ways that do not come so easily.66

This principle recognizes that students come into the classroom with multiple forms of intelligence acquired in different ways,67 and that students "maximize their learning and performance when they are aware of how they learn [and] match their learning method to the learning task ...."68 Yet in most law school classrooms there is a tendency to use a single approach in

66. See Susan Rickey Hatfield, The Seven Principles in Action, supra note 58, at 95.
67. The seven types of intelligence are musical, bodily-kinesthetic, logical-mathematical, linguistic, spatial, interpersonal, and intrapersonal. See Howard Gardner, Multiple Intelligences: The Theory in Practice 8–9 (New York, 1993).
68. Paula Lustbader, Principle 7: Good Practice Respects Diverse Talents and Learning, in Symposium, supra note 4, at 448, 454.
conveying information (e.g., Socratic method, problem method, lecture method) and in evaluating student performance (e.g., end-of-semester exam or paper). In particular, most law school courses emphasize the logical-mathematical type of intelligence by relying on a single exam in which students analyze a complex set of facts in a limited amount of time as the primary (if not exclusive) method of evaluating student performance.\footnote{Id. at 455.}

The CPS provides an alternative way both to convey information and to evaluate student performance. The CPS is an effective tool to reach the mix of talents and learning styles in any classroom because it allows the teacher to draft different types of questions to target different types of thinking and thus different types of learners.\footnote{See Wines & Bianchi, supra note 57, at 3 (noting that handheld wireless transmitters implement “Visual, Aural, and Tactile modes of learning”).} Although having the CPS in a teacher’s toolbox helps to respect diverse talents and ways of learning, exclusive use of the CPS would contravene this principle. As it is impossible for a carpenter to build a bookcase with only a hammer, so too a teacher should not rely exclusively on the CPS to teach her class. Although the CPS will hit many students’ learning sweet spot, other students flourish with group discussions or written exercises. Teachers need a variety of teaching methods; our modest claim is that the CPS has a rightful place in a well-stocked toolbox.

\textit{Emphasize time on task.} Students need to realize the importance of spending sufficient time completing their tasks. “Allocating realistic amounts of time means effective learning for students and effective teaching for faculty.”\footnote{Chickering & Gamson, supra note 3, app. A, at 67.} At first glance, law students would appear to need little prompting on this principle. Typically they carry a full course load, and teachers expect them to put in a substantial amount of work outside class in preparation for each class hour. But although students appear to understand the need to spend a great deal of time preparing for class, it is less clear that they understand how to spend that time efficiently. The time-on-task principle stresses the importance of helping students to become more efficient in the use of their class preparation time.\footnote{See R. Lawrence Dessem, Principle 5: Good Practice Emphasizes Time on Task, \textit{in Symposium, supra note 4}, at 430.}

Some law schools have experimented with a number of different ways to help students deal with time on task—e.g., providing time management seminars, coordinating the amount of reading assigned across different classes, imposing limits on other activities that full-time students can engage in (such as limits on paid working hours).\footnote{Id. at 431–32.} Technology can help coordinate class preparation and in-class work and make class time more efficient. For example, giving students access before class to a portion of in-class presentations, which they can annotate during class, can maximize their class preparation time. Similarly, the CPS “spikes student learning” by focusing the stu-
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Communicate high expectations. Closely related to the time-on-task principle is the goal of communicating high expectations to students: “Expect more and you will get more. . . . Expecting students to perform well becomes a self-fulfilling prophecy when teachers and institutions hold high expectations of themselves and make extra efforts.” Students come to law school with high motivations and self-imposed high expectations; they understand the importance of doing well in law school and put a premium on high academic performance. But something happens during their first year: “at some point—and usually it is early in their first semester—they forget about seeking or maintaining high expectations. Instead, they focus on just getting by, not embarrassing themselves in the classroom on a given day, and somehow slogging through all the briefing and reading of cases for classes the next day.”

The high-expectation principle calls on law teachers to remind students in a variety of ways to take their class work seriously. One way of communicating high expectations is through the teaching methods used in the classroom. Designing class work that is tailored to meet specific needs and interests is an excellent way to help students aim high. Students need to know that scanning the reading materials and playing the odds of not been called on that day are not acceptable ways to prepare for class. To reinforce that expectation, the teacher needs to provide appropriate incentive and reward structures. Students need to know that they will participate in class every day, and that their participation will count. The CPS fulfills both missions:

The classroom environment, with its tinge of competition and gaming, encourages students to come to class prepared to respond to the assigned material. The instructor has a fine opportunity to set the standards bar by preparing questions and material that demonstrate the levels of excellence required for the class. By consistently formulating questions and problems that require students to think and respond at these levels of excellence, instructors communicate, reinforce, and habitualize students to high expectations.

Encourage student-faculty contact and cooperation among students. The last two principles relate to the need for facilitating the quality and quantity of students’ interactions with faculty and with peers. Although the two principles expand to a wide variety of activities and behaviors occurring both inside and outside the law school classroom, our interest here is with facilitating more

74. Wines & Bianchi, supra note 57, at 3.
76. Okianer Christian Dark, Principle 6: Good Practice Communicates High Expectations, in Symposium, supra note 4, at 441, 441.
77. Wines & Bianchi, supra note 57, at 3.
and better interaction in the classroom. The two principles encourage classroom behavior that increases these interactions. Interactions are less likely to occur when a student is content to take a passive role in the learning process instead of becoming an active partner.

Although there are many reasons why students may assume a passive role, a principal explanation is that they often are uncomfortable participating in large-group discussions. In addition, it is impossible in many situations for students to participate in class on a daily or even regular basis. The CPS solves both problems by providing reticent students with the cover they seem to need while allowing their voices (or at least their answers) to be heard every day as loudly as the more vocal students in the class.

By giving an opportunity to all students to share their answers with the teacher, albeit electronically, the CPS encourages student-faculty interaction. Ideally, the CPS role should be complementary to other forms of exchanges between students and faculty; it should not close off other avenues for student-faculty interaction.

At first blush, the CPS appears to enlist students in a solitary endeavor with limited opportunities for interaction with their peers. As parents of early teenage boys with superhuman abilities to become absorbed in their Game Boys to the exclusion of everything around them (except their annoying younger sisters), we recoil at the prospect of turning our students into handheld-focused zombies in the classroom. On the one hand, the CPS admittedly involves individual efforts by students in initially selecting a response. But once the individual responses are recorded, opportunities abound to stimulate interactions among the students. As we've said, the CPS forces students to recognize the many possibilities in answering a particular problem and to compare their answers with those of other students. The ensuing dialog furthers the principle of increasing student-to-student interaction.

78. See also Susan B. Apel, Principle 1: Good Practice Encourages Student-Faculty Contact, in Symposium, supra note 4, at 371; David Dominguez, Principle 2: Good Practice Encourages Cooperation Among Students, in Symposium, supra note 4, at 386.

79. We have observed that the questions we ask through the CPS generate further inquiries by students, whether immediately after class, during regular office hours, or through our course Web pages.

80. Even here, however, there are opportunities to change this individual experience to a group one. For example, the teacher can divide the class into teams and assign a single handheld to each team to record team, but not individual, responses.

81. In presenting this paper at other law schools, and in talking about the CPS with colleagues, we invariably are asked about students' reaction to the devices. Our experience (as reflected in formal student evaluations and informal student comments) is that they are wildly popular among the full range of students. (For further discussion of the popularity of the CPS among our students, see Hafnei, supra note 45.) Indeed, perhaps the most gratifying aspect to us of the CPS is the energizing effect it has on the students in the lower half of the class. We anticipated that the law review gunners would embrace yet another vehicle to display their brilliance. But we have been pleasantly surprised that the CPS draws out students who in years past would have lurked in the shadows until exposed on the final exam. In giving them feedback and the confidence that they, too, can master the material, the CPS reaches the whole class in ways that we have not seen with any other approach we have tried through the years.
The Classroom Performance System has infused our classrooms with active-learning vigor. This new technology, combined with the old-school approach of making a stripped-down version of word-processing presentations available to students before class, addresses the serious charges leveled by critics against the in-class use of PowerPoint slides and laptops and furthers several of the other principles for good practice in law school teaching. Ultimately, our purpose in introducing these alternative technologies and methods in our courses is to minimize inappropriate use of laptops in class and to force even the most reluctant student in the classroom to embark on an active-learning journey. We believe we accomplish these modest objectives by minimizing the opportunities for students to get distracted in class and by enlisting technology to engage them in class.

Although we are under no illusion that our methods are infallible, we think we are moving in the right direction. We recognize, of course, that ours is but one approach to combining the best of old and new technologies in an active-learning environment. We look forward to learning in these pages and elsewhere of other approaches our colleagues are using to help their twenty-first-century law students resist the many new high-tech diversions competing for their in-class attention.