Technology in and Beyond the Classroom: Engagement with Students and in Practice Before the Courts

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The title of this year's conference reminds us how our working lives in the law schools and in the practice of law are being transformed by rapidly accelerating technological change. The ways we teach, learn, and practice law are changing rapidly. As law teachers, clinicians, librarians, technology professionals and practitioners, we must understand these changes and master them for the benefit of our students and clients. To understand where we are going it is essential that we understand from whence we have come. We must understand the consequences of transcending these limitations. What is to be gained and at what cost? We must be able to articulate the essentials of our work and carry forward these core values as our teaching and work environments are transformed.

As we escape the limits of the past, core principles remain fixed, while progress is made on the margin. One learns from experience, possibly after false starts. As we cross boundaries, core principles of effective teaching and courtroom presentation are unchanging, while technology offers much that can enhance faculty engagement with students, both in and out of the classroom. This paper will discuss the infrastructure and teaching techniques appropriate for engaged teaching in a smart classroom and as preparation for the practice of law beyond the classroom.

Technology is not a panacea, and, as suggested in notable discussions (Best Practices for Legal Education, 2007; H. Katz and K. O'Neill, Strategies and Techniques of Law School Teaching, 2009), time-honored best practices remain at the core of engaged teaching. Technology should enhance, not supplant, the best of classroom teaching.

In and Beyond the Classroom: Classroom Capture

Students are expected to attend class at a designated time in a designated place. Should classroom discussions be archived? I am persuaded that classroom

capture (also known as "asynchronous learning") does much to enhance student learning.

Classroom capture has an impact on the dynamics of the discussion being captured. It allows the instructor to focus on the instruction with a lessened necessity to repeat points previously made. This is not to say that classroom capture allows the instructor to be unresponsive. But it does allow the instructor to refer a questioning student to the recorded discussion for clarification when warranted, thus avoiding excessive repetition. Like any form of asynchronous learning, it is flexible and convenient. Students may review the class at any time, on or off campus.

What incentives are appropriate for law students using classroom capture? In fashioning policies of access to any archived classes, two facts loom large, both grounded in human nature. First of all, incentives matter, and, secondly, law students procrastinate. Because incentives matter, you should establish a clear policy at the beginning of the semester. Students will respond to the incentives that you create. Your syllabus should set the guidelines for access to the archive. Law students have a tendency to procrastinate so that if you archive your classes during the semester, many students will delay reviewing classes until the end of the semester. In light of these two assumptions, I grant students access to the archive for two weeks after the class is recorded. I do this to encourage timely review of the class when the material is relatively fresh.

Because students may formulate questions during examination preparation at the end of the semester, I also open the complete archive from the reading days until the examination. Presumably, having reviewed classes and completed notes earlier in the semester, students will have a relatively small number of questions to be answered at the end of the semester.

Sound quality is important for archived classes. Thus an archived video should be linked to the sound system in the classroom being recorded. What microphones are available? Instructors can wear portable microphones, preferably one that wraps around the speaker's ear, ensuring even sound quality. An instructor using a podium microphone, but not a wireless one, should be careful to stay at the podium to avoid fadeout of his or her voice on the archived class. Instructors wearing clip-on microphones should be sensitive to the effect of head movement on voice quality. Anyone who disables the student microphones because of interference should be careful to repeat any student question and also

summarize student responses to ensure that student participation is recorded. One advantage of the small gooseneck student microphone is its ability to record student comments that can be reviewed in archived classes.

The video archive should be searchable by date and by time and should contain simultaneous split screens. In the first screen, the instructor should be visible and audible. In the second screen, Smart Board notations or statutory markups should also be visible as they are made as the discussion progresses. The split screens should move in tandem. Keep in mind that students do not necessarily want to review an entire class. Often they wish to clarify only part of a discussion. Accordingly, in class and in the syllabus, students should be encouraged to note the date and time of any matter needing further clarification in their class notes at the moment it occurs. Then they can later search the archive for the specific discussion that interests them and watch it, even several times, if necessary.

A searchable archive also benefits the instructor. You will be able to review your classes and learn from them. Your mistakes and personal quirks will be visible. How many pauses do you make? Are they too long? Do you say "umm" too frequently? You will become a better teacher as a result. The archive will also be useful for any faculty member being reviewed for promotion, tenure, or post-tenure review.

The archive is also useful for assessment of student reaction to your teaching. You should be able to obtain a record of student searches by date and by time. You will be able to determine the number of student searches and the topics attracting the most student interest. Usage data will give you a concrete guide to the most difficult material or to material that has not been effectively taught. Both student and instructor can benefit from further clarification.

How permanent is the archive? Usually the archive need not be retained beyond the end of the semester. Perhaps in a two-semester sequenced course such as Contracts I and II, it might be useful to retain the prior semester's classes. In some cases, the archive might be retained for a longer time on an as-needed basis.

Classroom Capture and Professional Skills

The preceding discussion has focused on doctrinal teaching in a classroom setting. What has been said regarding doctrinal teaching applies even more powerfully in teaching professional skills in clinical courses. In a clinical setting,

students learn by doing. A video archive provides the student and the instructor with a valuable tool for assessment and improvement. The archive will give the instructor a basis for a thorough and thoughtful assessment of student performance. It can be reviewed with the student, and the comments will be reinforced by the audio and visual record.

Classroom Capture: What Can Go Wrong?

The growth of classroom recording capability increases the instructor's vulnerability to malfunction. Occasionally recordings of classes are not recorded or the recordings are lost and are not retrievable by students. The loss may be partial as where the video image, the audio recording, or the annotations of the screen might be lost leaving the other elements intact. These possibilities require that the instructor monitor his or her archive every day or at least every few days to be certain that the class meetings have been posted. Students who dutifully review their classes will inform you quickly if they are unable to access a complete recording.

Technology in the Classroom: Antecedent Assumptions of Physical Space

From classrooms to clinical courtrooms, law professors and lawyers face the same challenges in the optimal utilization of physical space. Law students and jurors have much in common, and an effective classroom teacher shares many characteristics of an effective courtroom advocate.

A smart classroom or smart courtroom cannot be a half-way undertaking. In order for technology to be used effectively during a class or a trial, it must be unobtrusive. Its use should be seamless and not call attention to itself. To avoid the distraction of improvisation, the entire room must be engaged and that requires complete renovation. Half-way introduction of technology that calls attention to itself runs the risk of distracting students as well as jurors. Instead of focusing on the argument being made in a classroom exchange or by an advocate, they focus on the novelty of how the half-way system was concocted.

Engaged law teaching does not occur in a vacuum. It occurs in a physical space at a designated time. Classrooms vary widely in their sophistication. Prior to the digital revolution, classrooms were spare and simple. Students sat at desks and used books, pens and paper. Students looked with their eyes and listened with their ears. For both senses, recent innovations have been radical indeed.

1. Sight and visual technology. Students learn by listening and by sight. In the past, distant blackboards or whiteboards have been problematic for many students. In large classrooms, students may be disadvantaged if they sit in the back of the room and are unable to see clearly. The Smart Board, which is at the core of any Smart classroom, brings much-needed visual clarity. With a back-up dry white board, the Smart Board is a touch-sensitive board that displays computer output with a digital overlay. The Smart Board is available for both large and small classrooms. For large classrooms, one should use a ceiling projection system with one or two theater-sized screens taking up much of the front wall of the classroom. The screens can either be mounted on the wall or drop down from the ceiling at the touch of a button. For seminar rooms, a smaller rear projection unit can be utilized. Presumably, the instructor will have a lectern adjacent to the screen. The touch screen overlay allows the use of smart pens with digital ink, replacing the traditional chalk on blackboards.

The screen overlay renders classroom discussion of written text immediate and vibrant. Statutory language can be parsed and marked up in real time as the discussion progresses. Statutory language is available from a variety of sources and can be projected directly from the Internet or from a stored file. Classroom files can be stored in the classroom desktop or in a portable flash drive. Ideally, each classroom will have a file for each professor that can be accessed remotely. Flash drives are occasionally unstable, and are a needless complication. The size of the projected statutory language is important for student comprehension. In Windows, to maximize the size of the text, go to "view" and double-click to open. Click on "zoom" and then select "text width." That choice will adjust the statutory language to fit the projected screen with minimum borders. With text projected behind the instructor, the questioning is immediate to the student and difficult to evade. With the screen overlay, specific words can be referred to and underlined as the discussion proceeds. The digital stylus can mark up the statute or make written comments regarding the text. The notations can be in different colors. Presumably, with large screens in large classes and smaller screens in seminar rooms, all students in the class will be able to follow the discussion visually.

The angle of projection from the projector has consequences for the instructor. This angle will determine whether you can walk in front of the screen without casting a shadow. Also, be careful to note the upward angle of vision for students in the first few rows. Students in these rows may have their own visual problem resulting from their angle of vision. For example, a small portable lectern

for the instructor's use might block their view looking up to the screen.

A smaller classroom or seminar room will utilize one screen. The screen could either have overhead or rear projection. As the size of the classroom shrinks, the size of the screen can be reduced because students will be sitting closer to it. In a seminar room, students will be very close to the screen. Indeed, in seminars, students could be using the screen to make presentations. Such use would require that students receive instruction in the appropriate use of technology. Students study rooms should have the same technology and Smart boards as the classrooms. By having many opportunities to practice, students will have the skills necessary to participate in seminar presentations.

Visual technology can occasionally malfunction. The IT staff will be your partner in the management of the overlay, particularly if problems arise. The projector could stop working from, say, a blown fuse. The screen could go dark, or the lens could be out of focus. Occasionally, a malfunction the overlay function with the electronic stylus could interfere with the in-class mark-up. In working with your IT staff on these visual problems, you must decide whether intervention during class is worth the cost in lost time. If the intervention requires more than a minute, it is probably best to revert to traditional teaching with a backup white board, if available. You will still have the microphone, and you can refer to any written materials, such as a casebook or statutory supplement, that the students might have. The IT staff can make the necessary adjustments after class.

2. Auditory technology. Students learn by hearing, and poor sound quality can interfere with understanding. A Smart classroom must contain the necessary audio improvements for faculty and students. The instructor should have a stationary podium microphone and a movable wireless microphone complemented with ceiling and wall speakers. That way, the instructor's words are projected effectively whether she is at the podium or walking in front of the students. A wireless microphone gives the instructor control of even the largest classrooms. No longer will one have to worry about the proverbial disengaged "back row" being unable to hear the discussion. Engagement can be universal, and no student will sit in isolation.

The classroom podium will contain a microphone that is useful if you are standing at the podium. The podium microphone is less useful for an instructor who walks about in the classroom during a discussion. To enhance mobility, the instructor should use a hands-free mobile microphone. The wireless mobile

microphone can present its own difficulties, however. Always have spare batteries available, should the microphone go dead during class. Avoid putting the batteries in your pocket, however, because they can react with coins becoming very hot, very quickly. In the time before class, you can check the microphone clip-on pack for a "low battery" indicator and replace the batteries before discussion begins. Colleagues may leave the microphone on or fail to replace weak batteries, thus creating a problem at the start of the class hour. Your IT staff can help in coping with this uncertainty. They can provide necessary batteries or check the hardware between classes. You can assure a smooth opening of class by a brief "testing 1-2-3" to see if the sound is adequate. Be careful to make your test a quiet one, however, because a loud unexpected noise can startle or annoy students.

Use of a wireless microphone can be potentially embarrassing because of its sensitivity. If you have a cold or an allergy, shut off the microphone if you must blow your nose. Students do not want to hear it. Of course, they will understand if a sneeze catches you by surprise. If you must leave the classroom for any reason, remember to shut off the microphone. If you are using a restroom, the reason is obvious. If you are talking to a colleague, you want to maintain confidentiality.

In a small classroom or seminar room, you will not need a microphone. The acoustics will usually carry your voice with sufficient clarity to reach all of the students.

Faculty microphones vary in quality and utility. The best microphone is one that can be molded toward the mouth as it wraps around the speaker's ear. This model (sometimes referred to as the "earset" model) produces consistent sound quality even when the speaker turns his or her head. A clip-on microphone (sometimes referred to as a "lavalier" model) clipped to a collar, tie, or lapel can produce uneven sound quality. The speaker's voice can fade if his or her head is turned to speak or respond to a question.

Student microphones at the desk level present their own problems. Law students bring many things to class: laptops, casebooks, statutory supplements, and notebooks. These objects take up a lot of space. Student microphones are very sensitive, and this sensitivity can amplify the sound of the movement of students' printed materials. In my experience, I have decided to cut off the student microphones because of the excessive noise they generate. If you disable the student microphones, you should repeat student responses for those who might not hear a student comment, especially students sitting behind the speaker.

The solution for the problem of unduly sensitive student microphones can be found in the small, flexible gooseneck microphone. This microphone ranges in height from four to six inches above the desk, placing it well above the classroom clutter of law students. With its use, student comments can be clearly heard without the interference of competing sounds. It has the added virtue of discouraging private student conversations during class, which the gooseneck microphone makes audible.

3. The Smart Notebook. The smart notebook on the Smart Board is the digital replacement of the blackboard. It has the great advantage of ample sequential pagination and enhanced memory storage capacity. Once the book is opened, the digital stylus can write in varying colors on the projected classroom screen. Any diagram or notation is readily visible to the entire class. Each page can be captured and stored temporarily during class discussion. The "next" function allows you to accumulate successive pages of material, which are successfully portrayed in miniature at the side of the screen. These pages may be retrieved with the touch of a finger, making possible discussion that refers back to earlier notations. No longer will the instructor have to cope with small white chalk marks on a blackboard. You will not have to work with a surface already smeared with erasures or filled to capacity with notations that leave no room for further discussion without erasure. At the end of class, any notations can be captured permanently.

4. Photographs and video. The Smart Board does an excellent job of projecting photographs and playing video recordings. The judicious use of such things can enhance discussion. For example, the discreet use of photographs, while a student briefs a case can be helpful. For example, in contracts, the instructor might project photographs of Lady Duff Gordon, the Peerless, or the mill in the McGowin case. I would use video sparingly, if at all, and only when it is directly applicable to the class. The best-known example is the Pepsi Harrier jet advertisement litigated in *Leonard v. Pepsico*. Another example is a humorous, tongue-in-cheek You Tube video of a self-help repossession of a vehicle that was accomplished without breach of the peace, all to the theme of "Chariots of Fire." Beyond such examples, I do not recommend the use of video, because it can be a distraction and no one wants to supplant discussion with entertainment. An engaged, animated instructor will capture student interest. A poor teacher, using video to entertain, will not make up for the pedagogical shortcoming.

Some problems with IT staff can arise as a result of lack of notice to the instructor. Classroom computer software, for example, might be updated between semesters or during the summer. Classroom desktop files might be purged. Thus at the beginning of any semester, an effective IT-faculty partnership requires a regular system of notice. Each faculty member should be certain to verify that necessary classroom files are loaded before the first class. Do not assume that the files for the first semester of a two-semester course, such as contracts, will be untouched. Your partners in IT should establish a protocol for reminding faculty whenever classroom software is updated or files are purged.

5. Laptops and Internet Access in the Classroom. Laptop computers and wireless Internet access in the classroom have been much debated. Law schools have made varying responses. Many law schools have granted free use and open access. Other law schools have allowed laptops, but without wireless access, while some faculty members bar laptops entirely.

How does one promote engaged teaching in a Smart classroom? I assume that a Smart classroom is defined by wireless Internet access and the use of laptop computers. As long as students do not distract others or visibly detract from classroom discussion, I am inclined to think that they should be left alone to make their own choices. In my view, an engaging, enthusiastic teacher of law should not fear competition from, or the temptations presented by, technology. Indeed, I associate complaints about laptops and Internet access with ineffective teaching, most often lecture. A passive inert lecture has never been competitive against claims to student time or interest. Before the Internet, there was solitaire on Windows. Before laptops, there were doodles or daydreams. If a lecture could not compete against these earlier matters, it won't compete against technology, and I believe that poor teachers know this. They resent being confronted by the emptiness of what they do. We would all prefer to avoid competition if we could. Law professors are not entitled to a student's time during class. A student's attention must be earned. To ban laptops from the classroom is to assert a monopoly without any demonstration that one competes effectively or that the student is being well taught. A monopolist who must coerce students to pay attention is probably not that effective as a teacher to begin with. Faculty members should embrace competition, stand up to the challenge, and be such an engaging teacher that no law student would even dream of not paying attention.

Laptops in the classroom have been criticized for fostering student inclinations toward transcribing classes at the expense of active listening. The

presence of an archive system for recording class discussion weakens this argument for banning laptops. If a class is recorded for later review, the student feels less pressure to transcribe. The student can relax and participate in engaged listening knowing that the discussion can be reviewed. The video archive obviates any need to ban laptops because of the transcription temptation.

The less draconian measure of banning wireless classroom access, but not laptops, while more defensible, does present its own practical difficulties. In particular, to bar wireless Internet access can be difficult because of the "bleeding" of wireless signals from other portions of the building. It may be difficult, although not impossible, to isolate particular classrooms without interfering with wireless laptop use in the rest of the building.

Technology in the Classroom: Preparation and Transition to Class

In sum, practice makes perfect and always get there early. No one likes surprises, so any professor new to teaching in a Smart classroom, should practice before classes begin. An experienced colleague can walk you through a typical class. Relevant web sites can be explored, and technology can be mastered. The start of a class is not the time to begin learning about the technology. Students will not be impressed by your lack of preparation.

An experienced user of technology, like a champion athlete, makes the use of technology seem effortless. The use of technology should be seamless and unobtrusive. Its use should not call attention to itself. The student should be actively engaged and not even be aware of how the engagement is being fostered. The effective use of the classroom hour breaks through into active learning where extraordinary things can happen.

In a Smart classroom, the prior class must end promptly in order to give you sufficient time to begin your class at the scheduled hour. Even a few minutes delay by a colleague can reduce your effective teaching time. You need a minimum of 5-10 minutes to prepare for class depending on your level of experience. If necessary, you must lower the screen, turn on your computer or projector, open the relevant web sites or files, put on your microphone, and check your battery for power. You may open the Smart notebook for sequential pagination of class diagrams during discussion. If you are discussing specific statutes, then you should pull up the relevant sections or statutes and maximize their size on the screen. You should practice your transitions to avoid wasting class time. It may be

necessary to reprimand an indifferent colleague, who does not finish the prior class on time and insist that it must not happen again.

Technology Beyond the Classroom: The Virtual Classroom

The virtual classroom is built on high definition videoconferencing technology. It can accommodate up to 32 students who will attend classes virtually. Students will utilize a computer at the law school or at a remote site with the instructor. The technology for the classroom is similar to Skype. Students may participate by using a webcam and desktop videoconferencing software.

Technology Beyond the Classroom: The Telepresence Classroom

The telepresence classroom builds on the model of the virtual classroom. It uses cameras and high-definition television to link individual students or specially designed classrooms. When classrooms are linked, telepresence can create the impression that everyone is in the same location. Its enhanced auditory and visual capabilities approach that of physical presence. Presumably the instructor will be able to interact with students in real time as if they were physically present.

The Challenges of Virtual Teaching beyond the Classroom

Teaching in a virtual or telepresence classroom presents its own challenges. Perception of body language and eye contact may be diminished by reliance on the virtual images on the screen. Students who attend class by laptop computer may be subject to distractions at home or may choose to attend class in a distracting location such as a commercial establishment with wireless access. Lighting conditions can vary greatly in the student's location. The instructor will thus face a wall of images of the students' faces with varying lighting and backgrounds.

Student demeanor or appearance may be affected by remote locations. Protocols must be adopted in advance when students register for such courses so that they may comply. The protocols must insure that students dress appropriately and that they attend remotely from a suitable location without distractions. Students should dress and behave as if they were in a traditional classroom. Students attending from home may be too informal or may be distracted by matters that would not arise is a classroom. Students may also attend from inappropriate

settings such as a noisy café or public space with wi-fi connections.

The greatest risk to virtual teaching is the failure of the student's communications link. The home wireless system or the commercial link to the classroom may fail. When such a failure occurs, the loss of the class content to the student is permanent unless a capture system has been integrated into the virtual or telepresence classroom.

Clinical Teaching in a Smart Courtroom

Courtrooms are being transformed, and lawyers will need the skills to utilize technology effectively in a trial setting. Much of what has been said about law students as learners applies to jurors as participants in a trial. Trials occur in a physical space, and jurors have the learning styles similar to those of students. They listen to arguments, and acoustics are important for effective persuasion. They look at the evidence admitted and judge the credibility of witnesses visually.

Trial practice courses benefit greatly from being taught in smart courtrooms. Here the student becomes the user of the technology as he or she seeks to persuade the judge or jury members. Students must learn to use appropriate technology as more and more courtrooms are transformed.

A Classical Example: the Mecklenburg County (Va.) Court House

The Mecklenburg County Court House is located in Boydton, Virginia, the county seat of a rural county in Southside Virginia. The court house was built between 1838 and 1842 by master builders William A. Howard and James T. Whitice. It is the only court house in Virginia to be modeled on the state capitol building (1785-89) in Richmond designed by Thomas Jefferson. Jefferson's design for the capitol was based on the Maison Carree in Nimes, France as an example of Roman republican architecture for the new country. The Boydton courthouse features a six-column (hexastyle) portico with Ionic columns. The capitals of the columns feature scroll-like angled volutes, and the court house makes extravagant use of modillion trim.

This classical exterior conceals a remarkable transformation within. The two newly renovated courtrooms are on the cutting edge of technology. Each courtroom has a wired podium before the bench for use by attorneys. Multiple smart boards are available for communication with the judge, opposing counsel,

and jurors. Smart boards are mounted on the wall for public viewing. Each juror has an individual tablet-sized smart board within the jury box. Effective advocacy at trial requires that lawyers master these means of presentation. Law students should be trained in environments where they can be prepared to successfully appear in any smart courtroom.

Spontaneity, Improvisation, and the Art of Teaching

Screens, microphones, and Smart Boards can enhance the art of teaching and encourage spontaneity and improvisation. Screens enhance visual perception, while microphones enhance hearing. Students are linked to the instructor, and all students, even in the largest classrooms, become participants in an engaged discussion. The Smart Board encourages unlimited written expression by the instructor that is visible to all students. With full access to sight and sound, a discussion can be playful yet probing, challenging yet engaging.

A Skeptic Looks at PowerPoint and Clickers

A recent discussion ("Lost Arts of Teaching," www.insidehighered.com/news/2010/06/02/nisod), asked whether the costs of classroom technology exceed the benefits. In particular, PowerPoint slides were criticized for allegedly leading to an atrophy of traditional teaching skills. A reliance on previously prepared slides can lead to a lack of spontaneity, flexibility, and improvisation. Do PowerPoint slides liberate or become a straitjacket? My view inclines toward the latter, and I have never been enthusiastic about their use. As a teacher of statutes, especially the Uniform Commercial Code, I prefer to work in real-time with the actual statutory text. Like any practicing lawyer who keeps a statute on his desk, I prefer to work with the actual words in a Word file and not in a PowerPoint slide. A slide can be enhanced with relevant images with contrasting colors, supposedly to capture student interest. But one must remember that to entertain students carries a risk that the very act of entertainment can become a distraction. If the PowerPoint slide is too dissimilar to the actual statutory text with which a lawyer works, students become less familiar with the actual work of lawyers.

Another possible false start in classroom technology is the student response system, also known as "clickers." The supposed virtue of clickers is their encouragement of anonymous student responses to classroom questions, providing

immediate evaluation of student understanding with a minimum of embarrassment for wrong answers. This benefit is undeniable, but it comes at a relatively high cost in terms of faculty preparation and an associated learning curve. Given the difficulty of becoming an effective user of clickers, faculty should be very careful to avoid wasting class time in setting up and trying to make the system work. If you can devote sufficient time and practice to become an accomplished user of the system, then go ahead. But apparently only the most experienced and accomplished users can obtain benefits that exceed the costs. Perhaps it is too soon to say that clickers are a passing fad in the law schools, but my admittedly anecdotal evidence so far is not encouraging.

What to do if the Technology Malfunctions

The use of classroom technology carries risk as well as reward. You are as vulnerable as the software and hardware you use. If the technology fails, you must make an instantaneous decision: should you attempt to fix the problem or continue with class? You must recognize the problem and assess the costs and benefits of solving it. The most important consideration is speed. How quickly can you solve the problem? If it can be solved very quickly and seamlessly, with a minimal impact on the teaching rhythm, then proceed. Some problems, such as one involving Windows, have simple solutions. Your students may be able to solve it for you. On the other hand, if the remedy requires more time, then you should defer its solution until after class. In such a case, if you have a ceiling screen, simply raise the screen and use the white board on the wall. Presumably, your microphone will continue to function. Then teach in the traditional way, without the electronic tools.

Some smart classrooms have telephone connections for IT staff. I would not use a telephone to call in staff during class, because the cost of intervention exceeds the benefit to be gained. The sight of the professor and staff members huddled together solving a problem will be a complete distraction. The rhythm and momentum of an engaged class discussion will be lost. Staff members can come in after class to remedy the problem, assuming, of course, that there is sufficient time before the next class begins. Occasionally a problem will be so severe that it will require outsourcing to the support company maintaining the classroom infrastructure. At best, such a consultation will take several hours to accomplish and should be done outside of regular class hours.

Reciprocal partnerships: Who takes the Lead?

Every law school must cultivate a vision for the uses of technology and its place in the teaching mission. Who is to develop and articulate such a vision? How are responsibilities apportioned among faculty and staff? As a law school develops its smart classrooms, its faculty will need training and collaborative support. Do faculty members lead or follow? Should the IT staff establish best practices or should they wait to respond to faculty inquiries or requests? While there is no simple answer, they should do both, taking advantage of any insights from either staff or faculty. Often IT staff will have the necessary expertise regarding innovation in classroom technology. They will be aware of the evolving possibilities in a competitive marketplace. On the other hand, faculty members may learn of new developments and may be eager to pursue them. Faculty members should never be afraid to ask questions or receive advice on new developments. There may be false starts, such as the use of "clickers" (a student response system), when, based on experience, faculty members decide against their use. Even so, over time, the quality of instruction should be enhanced, and a vision of law school teaching should emerge as part of an articulated law school culture.

Partnerships and Collaboration

The biggest obstacle to the successful use of classroom technology is faculty aloofness, an inordinate attachment to hierarchy that prevents an appreciation of the contributions of IT professionals. In a worst-case example, faculty members view themselves as an elite, separate and apart from staff. In their view, IT professionals have little, if anything, to contribute to the enterprise of teaching law. Some professors may not wish to appear vulnerable or uninformed in front of students. They may also wish to avoid appearing dependent on staff professionals of assumed lesser academic accomplishment.

On the other hand, in the most successful law school culture, faculty members would see themselves as students of technology who can learn from staff professionals who are their valued colleagues in a joint enterprise. Faculty should be willing to state what they wish to accomplish in the classroom. Collegial pursuit of these shared goals and teamwork can lead to extraordinary results.

Technology Partnerships and Advising Students

Technology can play an important role in advising students. Of course,

such a discussion presupposes an active program of faculty advising. So let us discuss assumptions. Some law schools are indifferent to student contact, so student conferences would be rare to nonexistent. On the contrary, I assume that a law school would want to encourage active faculty advising. Student conferences held each semester serve many purposes. Student progress can be monitored, and students encouraged to make informed choices. Students can be advised regarding course selection, course sequencing, and career choices. Clinical, graduation, and any relevant certification requirements can be reviewed. An electronic template could distributed to faculty for a non-paper record of the progress of each student.

A well constructed and easily navigable law school web page is a vital resource for effective advising. It would contain relevant course descriptions, as well as clinical, certification, and graduation requirements. As the operation of any law school becomes more complex, the web page becomes indispensable so that faculty members do not have to rely upon memory in giving advice. Web pages are not perfect, however. Information can become obsolete or contain other errors. Faculty members should directly communicate their concerns with the webmaster. That way, needed information can be provided and corrections made expeditiously. The webmaster is a vital resource to students, faculty, staff, and administrators. Direct and effective working relationships with faculty provide the most effective means for the dissemination of accurate information.

Effective Teaching: Engagement with Students

Effective teaching requires engagement with students. Active learning is participatory, not passive. Technology can enhance engagement by drawing the student into a conversation both visually and with sound. Engagement teaches, especially in the first year, the essential skills of characterization of issues and the prediction of results.

Engagement with students does not require the abusive form of Socratic questioning. Certain fundamentals are essential, however. The briefing of cases is an important skill for first-year students. Specific statutory text should be parsed, and any ambiguities explored. Dialogue about the law and its meaning is an important source of intellectual growth. This dialogue can be accomplished in a variety of ways. It can be accomplished by the use of problems, posted on the Internet or from a casebook, or other types of questioning. This questioning should be done in a collegial and professional manner. With first-year students in particular, who might be apprehensive about questioning, it can be preceded by a

transitional statement or encouraging preamble. Effective teaching, requires more than voluntary responses to generally posed questions and the absence of case briefing or the parsing of statutes. We do our students a disservice if they remain passive, especially in the first year. Through engagement and active learning, a student is prepared to be self-sufficient in a challenging world. With technological tools, one can achieve such enhanced active learning, learning that is done with balance, empathy, encouragement, and a due regard for the student.

Technology will not save an ineffective teacher from his or her own shortcomings. For example, consider the use of PowerPoint slides, a technique that I do not employ. One might possibly want to prepare PowerPoint slides to summarize doctrinal points. However, their use must be strictly scrutinized. The slide should be revealed only after the student has struggled with the material and given the desired answer. To post a PowerPoint slide prior to the asking of a question or prior to the briefing of a case, defeats the purpose of engagement. A student might read from a prepared case brief or give the desired answer from a prematurely posted slide before the question is ever asked. A student might read from scrolled materials that flags the direction of the discussion in advance. In such cases, the slides become a monument to a failed class. If technology is used to make the teacher's job less challenging and the students more passive, then a strong case can be made that it should be banned from the classroom.

Regular and Prompt Feedback and High Expectations

Students should receive regular and prompt feedback during the semester. In first-year courses particularly, mandatory, graded midterm examinations are the best form of interim evaluation of student understanding. So-called practice midterm examinations are a poor substitute, because students have weak incentives for active engagement with the material prior to the graded final examination. In my first-year contracts courses, I place the prior midterm and final examinations from the previous two years on TWEN. Students are encouraged to practice the short answer and multiple-choice questions. I do not post the correct answers. I will, however, critique written student responses. Students are invited to practice these questions, making a choice and giving a brief written explanation for that choice. I also make clear that some of these questions from the prior examinations will be recycled in the midterm and final examinations for the current academic year. This creates a strong incentive for students to attempt practice questions. Their written analyses provide early indications of any lack of understanding of the material. Most of this interaction can be accomplished by e-

mail in the form of an online tutorial. In upper-level courses, which typically do not have graded midterm examinations, feedback can be provided by the use of prior final examinations from the previous two years.

Interim feedback from practice questions requires a great deal of work and is very time-consuming. Students also procrastinate. I usually set a deadline of two weeks before the final examination for any guaranteed response regarding student submission of practice questions. Many students will do what you allow them to do and in their own self interest will submit complete practice examinations an hour before the deadline expires. If the instructor chooses to provide this form of feedback, he or she should set the parameters and incentives that he or she can live with.

High expectations (see the discussion in Best Practices for Legal Education, 2007) are essential for engaged teaching. By utilizing the best in technology, working very hard, and giving prompt feedback, the professor earns the prerogative for setting meaningful high expectations. Engagement with the professor gives the students an understanding that their own efforts will be successful in meeting those high expectations. The professor should ask no more of the student than that which the professor is willing to do. Do as I do should be the watchword, not do as I say. Thus the meeting of high expectations can become a self-fulfilling prophecy.

Where Do We Go from Here?

Change is constant, and the pace of change is accelerating. A new frontier of legal education is synchronous learning, where students and the professor are engaged in real-time discussion from separate locations. We are transforming several rooms (including two traditional computer labs) into synchronous learning or telepresence spaces. The possibilities for their use are many: classroom instruction, continuing education, and interviews to name a few. Computer labs are fading away as the laptop and other mobile broadband devices become ubiquitous.

Does Teaching (With or Without Technology) Really Matter?

The central insight of law and economics is simple: incentives matter. Legal rules generate incentives, and a discussion of these incentives offers a fertile basis for class discussion. One should not forget, however, that law teachers

operate within institutions having their own set of incentives. Law teachers pursue their own self-interest in their particular market for ideas, just as other persons do in the market for goods and services. As law teachers, our market for ideas is an active one.

What incentive do law teachers have for teaching excellence and engagement with students? Sadly, it appears that the incentives are weak at best. Professional advancement hinges primarily on scholarly writing. This is not to say that teaching is irrelevant. However, it is probably true that while terrible teaching might prevent you from getting a job, excellent teaching will not get you one.

The national market for law teachers has led to a lessening of institutional loyalty and to a lack of interest in local law reform. Among some scholars, engagement with students is something to be avoided. The reasons may vary. Student contact or familiarity with students can be seen as a mark of lower status for a faculty member. In addition, the opportunity costs of time with students can be very high. Income from consulting can be lost, and scholarly productivity can be lessened. Incentives may vary with age. Senior faculty members may have little incentive to master new technology when their time horizons to retirement are short. On the other hand, anecdotal evidence suggests that some senior faculty may have a lively interest in the uses of technology. Tenure decisions may loom large in the calculus. Faculty members close to the receipt of tenure may be particularly pre-occupied with publication. Their incentives may steer them away from excessive engagement with students.

Technology and the Student Debt Crisis in a Static or Declining Market

Are the law schools and the law firms in crisis, and are faculty members in denial of this new reality? Technology is transforming the way that law is practiced and legal services are delivered. At the same time, law school enrollment and tuition have increased to their highest recorded levels.

How has technology changed the delivery of legal services? At the high end, large firms are being pressured by their clients who refuse to pay high rates for the training of first-year associates. As a result, the law firms are pressuring the law schools to graduate students who are more practice-ready. In addition, there is a greater incentive for lateral hiring of candidates with experience rather than new graduates. At the lower end of the practice, simple legal tasks may become commodities deliverable through technology, thus decreasing the demand for the

services of a lawyer. The present litigation over Legal Zoom in North Carolina is indicative of this trend.

The law schools must face an inevitable decline in the number of applicants. This decline stems from a rational calculation of the costs and benefits of a legal education. How much does law school cost and what job prospects result? Technology is giving prospective students the means to retrieve meaningful data on placement success with which to make comparisons in deciding where to apply. Law School Transparency at Vanderbilt is only one such example. Within the past few years, the blogosphere has become a source of much information and discussion in marked contrast with what is available from the law schools. Given that there are more law school graduates than jobs requiring a law degree, expensive law school programs with less successful placement results will increasingly be at risk. Prospective law students now have technology available to help them make more informed decisions. Law schools ignore this fact at their peril.

The availability of student loans is one factor not within the control of the law schools. If these loans are made without regard for the ability of students to repay them, then we may be facing our own bubble in legal education.

Obedience to the Unenforceable

Perhaps devotion to teaching excellence is a matter of conscience. Perhaps it means an attachment to engagement with students notwithstanding its costs in terms of status, professional regard, and time. When incentives for professional advancement are so strong, one could even inquire as to the extent to which ideas matter. In addition, one must begin to inquire about whether faculty members have an ethical obligation to discuss candidly with students the prospects that they face.

Fostering Student Engagement and Candor

In law teaching, while changes in technology have become a constant, foundation principles remain steadfast. Two Greek words for time nicely capture this duality: chronos, or ordinary time, refers to time that is within time, time by the clock. Kairos, or sacred time, refers to time that is beyond time where extraordinary things happen. Success is found both within time and beyond time, in the management of the finite classroom hour and in the accomplishment of larger, transcendent goals.

As faculty, we see that goal to be accomplished, and we have the enhanced technological means to attain it. This goal of student engagement takes us to our two senses of time. In class time, we engage the fifty-minute classroom hour, a finite amount of time to be managed. Minutes must be accounted for, and no time is to be wasted. Pages must be covered, cases discussed, and rules mastered. But our collaborative goal also takes one beyond doctrine and the articulation of rules. Students move toward the mastery of law and its meaning and the encouragement of citizenship, toward things larger than oneself. At the same time that we have the technological means for achieving these best practices and goals in teaching, technology is putting our familiar institutions under unprecedented pressure. Faculty, students, and their IT colleagues face difficult choices in embracing the better uses of technology. One would hope that these choices will be guided by wisdom.