

## DIGITAL NATIVES GO TO LAW SCHOOL

John Palfrey\*

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*In this essay, I argue that data from studies of how young people relate to information, technology, and one another in our increasingly digital age ought to inform our policy-making. Too often, we as a society make poor policy decisions (for instance, about safety, privacy, and intellectual property) when we fail to consult the data about these shifting practices of young people. These patterns and practices, uncovered through social science research methods, also describe the manner in which a growing number of our own students at Harvard Law School act before and during law school. Just as these data are important to good lawmaking with respect to the safety and privacy of our children, these data can also help inform our own policies with respect to information and technology at HLS. I argue, based on these data and other factors, that we should not ban laptops nor banish wireless access across the board at HLS, but that we should use technology only where it helps to serve our explicit pedagogical purposes. We should use the technology to help our students prepare for a life in practice or in legal scholarship where access to information through new means is more complex and is taking on greater importance. We ought to experiment more with where the technology can help in the classroom, in research, and in clinical practice. At the same time, we should not be afraid to keep laptops out of particular classes where access to the technology is an impediment to learning and to seek to re-introduce contemplative spaces for our students where they log off and just think. We should also find ways to use new technologies to enable us to fulfill other institutional goals, such as connecting more effectively to international communities, other disciplines within the academy, and those in the legal profession at large. These are investments that can pay substantial dividends over the long-term for our students and HLS as an institution.*

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## I. Introduction.

In the late 1990s, we at the Harvard Law School invested millions of dollars to modernize some beautiful old classrooms. Among other things, those in charge of the renovations decided to install new chairs. The old ones were uncomfortable, harkening back to an earlier era of education. One gets the idea that students were expected to sit still and ram-rod straight, responding to hard questions and taking notes as the professor enlightened them in the ways of the laws of evidence and how to think like a lawyer. These new chairs, decidedly low-tech, were non-controversial. The high-tech aspects of the renovation, though, presented a hard problem.

Along with new chairs, we decided it would make sense to install an Ethernet jack at each student's seat, along with an electric outlet for laptops, to enable students to go online during class. This renovation coincided with the dot-com era, in which students were jumping ship to start their own Internet companies. Even law firm associates and partners were leaving to join dot-coms. We decided that a modern classroom at HLS ought to have Internet access at every seat. But we hadn't focused on what the effect of access to the Internet during class would be. Earlier attempts at building technology into the learning experience at HLS – like Project PERICLES and the Bridge Project – had involved experimentation in specific, limited contexts. In contrast, these Ethernet jacks at every seat represented a sea change in terms of how our students would relate to information masked as a room renovation.

Shortly after they were installed, we decided that the Ethernet jacks – the on-ramps to the Internet – should be turned off. Students could plug their laptops into the electrical sockets and take notes during class, if they must, but the notion of a classroom full of students surfing the web during a

Socratic teaching session on the hearsay rule seemed implausible. Other proposals included an intricate compromise plan whereby professors would be given access to a Frankenstein switch at the front of the room to make their own decisions on any given day as to whether or not the Ethernet jacks would be live. Most recently, we considered a proposal whereby a student's schedule would be automatically tracked, such that Internet access would be unavailable whenever the schedule said the student would be in class.

A decade later, no one uses the Ethernet jacks in our renovated classrooms. But the students consistently use the Internet during Evidence class – pretty much all of them, actually, when we permit them to bring laptops into class. Students access the net through the wireless networks that blanket the Harvard campus (and much of the city of Cambridge, for that matter). During class, our students are online.

Their online activities during class vary. Some are doing their email, reading the news on CNN, or sending instant messages in an elaborate network of back-channel communication with their peers; others are accessing Wikipedia to learn (maybe) what happened in that case they didn't read for class or, in fact, taking notes. There's no effective technological way to stop them from doing so, short of banning laptops in the classroom – a topic which comes up, more or less annually, in our IT committee (and the IT committees of our peer schools, for that matter). Other kinds of regulation could plausibly work: tactics such as the installation of mirrors and situating teaching fellows at the back of the room to keep an eye on every screen might adjust student behavior, to a certain extent – but such measures miss the fundamental issues at work. Across legal academia, some faculty members seek to keep the technology out of the classroom; others seek to harness the web for pedagogical purposes;

and others are still scratching their heads about it all, wondering what happened, so quickly and with so little deliberation, to legal education.

## II. Digital Natives as Learners.

Schools at every level of education have done the same thing that we did when we invested in the technological infrastructure before working out exactly what we want to do with that technology in the classroom. Some schools have distributed a laptop or a tablet PC to every student, often the result of a specific directed subsidy, and then wondered what to have them do with the computers (or regretted what the students *did* do with them).<sup>i</sup> Others have spent tens of thousands of dollars to equip every classroom with a SmartBoard, (a computerized chalk-board that sits at the front of the room), only to wonder, after the substantial checks were cashed, whether the SmartBoards belong there. Now that wireless Internet access (both commercial and academically-provided) blankets many campuses and urban areas, schools are wondering whether to boost the signals or to find ways to try block them from bleeding into the classrooms (almost certainly a futile task). Teachers and administrators at large are utterly confused about what to do about the impact of technology on learning.

Forward-looking schools know that technology infrastructure is likely to be a worthy investment over time. Information technology can enhance productivity; burnish the image of a school for the purpose of attracting new faculty and the strongest student applicants; and facilitate access to information in libraries and elsewhere. But very few schools have any idea how to use these technologies to support their pedagogical missions – and, just as important, when *not* to use them. And very few

schools have figured out the connection between how young people are learning in general in a digital age, in both formal and informal settings, and their own missions.

The way to approach this problem is not to start with the technology. We should begin instead with a broad conceptual frame about the shifting nature of information, knowledge, and learning. We need to understand better the changing ways that young people relate to information, to one another, and to institutions. We need to examine how learning and information processing behaviors – for better *and* for worse – are changing over time for the students who are entering Harvard Law School. We need to seek to understand the manner in which information in general, and new media in particular, are increasingly constitutive elements of what it means for young people to function as productive, well-adjusted, social beings.<sup>ii</sup> We need to understand the cognitive processes and constraints associated with these youth practices that we observe. And then in turn, we need to apply this understanding to the project of legal education and scholarship. We need to be clear about our theories of teaching and learning and how technology can help us to accomplish our pedagogical goals.

In the following table, I propose a five-step process for translating data about youth practice into academic policy and related decisions:

<b>Process of Translating Findings about Youth Media Practice into Academic Policy</b>
1. <b>Determine observable behavior of our students</b> (for instance: multi-tasking/switch-tasking; browsing habits; communication patterns; tendency to transcribe class proceedings verbatim; love of gaming; and so forth)
2. <b>Determine implications of these findings in terms of mental processes of learners</b> (for instance: particular abilities and constraints based upon observable behaviors, such as creative uses of new media; ability to collaborate effectively in teams using online tools; and failure to use sophisticated databases well)
3. <b>Articulate general theories of teaching and learning to prepare students for the practice of law</b> (for instance: the role of the case method, whether in its traditional format in legal education or as altered in the Problem Solving Workshop, or both; the role of the Socratic method; theories of multiple intelligences and the variations in how students learn and think best)
4. <b>Articulate pedagogical goals based on the practice of law and the psychology of learning, as both change over time</b> (for instance: ensure that our graduates can “think like lawyers”; ensure that our students know the substantive law in certain agreed-upon areas as well as other areas of their choosing; ensure that our students become creative problem-solvers who can work well in teams)
5. <b>Assess institutional implications, including academic policies and spending decisions in library and information technology</b> (for instance: policies with respect to the use of laptops in classrooms; best practices with respect to teaching students how to relate to information; support for experimentation with technologies inside and outside the classroom; processes for assessment and training)

This process can lead us to stronger academic policies with respect to information, which can inform teaching practices as well as how we spend our time and money in the library and information technology department.

Many adults, including law professors, are worried about how kids are learning. We worry, with reason, that kids not reading books cover-to-cover the way they used to. Librarians worry that kids are only looking at a narrow range of sources, to which they’ve been referred by a single monolithic corporation (today, Google, or some other search engine, should it eventually be displaced); or, conversely, that they are looking at an infinite number of sources, making no distinction in credibility among them. Senior faculty members in the humanities worry that their graduate students are failing to find highly relevant Lionel Trilling articles because some online databases don’t go far enough

back to include his work. Slogans, in headline format, they fear, dominate the information seeping into young people's brains, with kids developing too few analytical skills along the way. Kids, the worry goes, are channel-surfing through their education. Some neuroscientists argue that their brains are being rewired in the process; at a minimum, they are forming habits of interacting with information that may be hard to break over time. Some, though not all, of the concerns of we have about how students are learning in a digital age have merit.

We know that students entering law school spend a growing amount of time engaged in activities mediated by digital technologies.<sup>iii</sup> For the young people we have studied, their own research is vastly more likely to mean a Google search than a trip to the library or use of sophisticated databases.<sup>iv</sup> They are more likely to check Wikipedia, or to turn to another online friend, than they are to ask a Reference Librarian for help, unless we tell them they have to show up, physically, in the library. They rarely, if ever, buy the newspaper in hard copy; instead, they graze through copious amounts of news and other information online. They multi-task during class (to the detriment of what they are learning) and during dinner (to the detriment of family harmony). On the positive side of the ledger, our most talented students can be extremely creative and innovative using these new tools when given the opportunity to do so. The attributes of these students' information seeking behavior are relevant to our teaching and policy-making.

The Internet is changing the way that young people gather and process information in all aspects of their lives. Our challenge, as teachers and researchers, is to pry apart the challenges from the opportunities and find ways to use these insights to inform our academic practices and policies.

### III. Methodology.

We know that the mode of learning for many young people is changing rapidly, but it is a major challenge to understand its precise dynamics.<sup>v</sup> This high rate of change is one of the hallmarks of today's learning environment with respect to information and technology. Too often, though, we make policy – public and academic policy – without the benefit of any data about how young people are relating to information and to one another through digitally-mediated technologies. The costs of doing so are most easily seen in the chaotic public policy related to child safety and privacy online, as well as the futile and ill-advised attempt solely to strengthen intellectual property protections along nearly every dimension over time.<sup>vi</sup> The methods chosen for this analysis are used to assemble sets of data – admittedly just a snapshot – that can inform good policy-making for teachers and lawmakers.

This essay draws upon multiple data sources, derived through a variety of methods. First, I rely upon large-scale quantitative and ethnographic studies of youth in the United States conducted by other researchers.<sup>vii</sup> Second, along with colleagues in the library, I have surveyed our current Harvard Law School students in the past year, through a short online survey (n=606) and a series of focus groups about their research interests and information use. Third, along with colleagues at the Berkman Center, I have conducted a series of focus groups and interviews with young people, between the ages of 12 and 22, during which we explored issues of how young people relate to information and to one another. In this essay, I focus on those data we collected from youth in the Northeast of the United States (though our research project more broadly also involved youth in Europe, the Middle East, and East Asia). These focus groups cover the cohort of students who now may be entering, or soon be entering, legal education.

We define the subset of young people whose practices we examine and learn from as “Digital Natives.” We embrace this awkward term because of its cultural resonance.<sup>viii</sup> We define Digital Natives as a specific population within a generation of young people found around the world. These are young people born after 1980, who have grown up in a networked world, and have the skills to use digital technologies. These students are connected to each other by common practices with respect to how they relate to information, how they relate to new technologies, and how they relate to one another. When they chat with each other online, broadcast their latest videos, post messages on their social network profiles (or, less frequently, blogs), or share music over peer-to-peer networks, they do so across states, national boundaries, and continents. These digitally-mediated habits are grounded in real-world customs, habits, and values that vary by region, race, age, socio-economic status, and other factors.

My analysis here draws most heavily on our original research conducted in the Northeast of the United States in the 2007-2008 academic year and which we are repeating in 2010-2011.<sup>ix</sup> Our goal was not to undertake a comprehensive study, but rather to take an in-depth look at the way some young people are relating to information and one another, as well as to gain insight into the discourse taking place among students on issues such as research processes, peer-to-peer communications, privacy, and copyright.<sup>x</sup> We conducted research with a diverse group of young people in terms of age, socio-economic standing, and technological ability. All respondents in this study are defined as Digital Natives as a result of their immersion in the use of networked and digital technologies on a daily basis.

We conducted three focus groups with students for each of the following three age groups: 12-13; 14-18; 19-22. Focus groups suited our investigation, since we sought to gain access to youth dis-

course regarding their digital practices. This method of investigation enabled us to explore issues surrounding learning practices and information-seeking behaviors, as students seemed to be at ease in discussing their behaviors of varying styles when in a group of their peers.

Each participant was administered a survey to obtain background information about what technologies they owned and had access to, an overview of their usage patterns and practices, and some questions to understand broadly what sorts of issues they were aware of with regard to digital technologies. Survey administration was followed by a 90-minute semi-structured conversation with students about a range of issues surrounding technology use. We contacted some students for 60-minute one-on-one follow up interviews. Facts about the sample we explored provide a sense of the group included in the study (n=69):

- Ages 12- 22: middle school, high school and college students;
- 52%-48% female-male ratio, respectively;
- 48% white, 19% Asian, 14% black, 10% Hispanic, 2% other;
- Range of socio-economic standing: 79% father college graduate, 77% mother college graduate;
- 41% first used the Internet at ages 7-9, 32% at ages 10-12, 14% at ages 3-6, 14% at ages 13-15;
- 32% first was shown how to use the Internet by a teacher, 26% by a parent, 8% by a friend;
- 94% own a mobile phone;
- 71% own a digital camera, 95% had access to one (including on a mobile device);
- 61% own a digital video camera, 70% had access to one (including on a mobile device);
- 74% had their own computer, 98% had one in their home;
- 83% had a social network profile, 58% logged in at least once a day;

- 3% post photos online at least once a day, 24% post at least once a week;
- 3% post video online at least once a day, 11% post at least once a week;
- 2% blog every day, 21% blog at least once a week;
- 28% download music at least once a day, 62% at least once a week;
- 15% download video at least once a day, 38% at least once a week.

The focus group sessions were structured using a protocol under which we asked students about their experiences with digital media: their behaviors, their opinions, the role information and technologies play in their lives, and how they negotiate specific issues and situations. While the protocol provided the basic structure of the sessions, the moderator encouraged respondent-led explorations of the topics discussed, including how young people conduct research; how they seek for information in their daily lives; and the role that technology plays in their learning.

#### IV. Findings.

##### A. Part 1: Youth Practices with respect to Information and Technology.

First, we know that our students multi-task. They do so in class and while doing their homework, as well as at other times (what we call “interstitial moments”) throughout the day. HLS faculty do not need focus group or survey data to prove this point. We see this dynamic with regularity in our classrooms: in courses where laptops are permitted, most students have a computer in front of them, connected to the Internet, at all times. As teachers at the front of the room, we can tell that students are using the Internet during a seminar to Instant Message (IM) one another, read news online, and otherwise amuse themselves. They smirk, trying in vain to suppress a smile, when they receive a

funny IM from a classmate while others in the class are working through a complex and utterly serious appellate opinion. We have legitimate concerns about students not paying enough attention to the task at hand – learning about legal doctrine, how to think like lawyers, and so forth. With a world of information and connections to friends at their fingertips at all times, the temptation to stray from the course is great – often, too great.

Multi-tasking is almost always bad when a student is trying to learn new things or is doing something that requires a lot of attention.<sup>xi</sup> One of the reasons that we didn't want access to the Internet in the classroom is to avoid students being distracted by playing solitaire (or, as Jonathan Zittrain likes to note, thanks to Internet connectivity, hearts) on their computers during Evidence class. With good reason, we might sometimes wish to return to the day when the students were still sitting up ramrod straight in those uncomfortable chairs and (maybe) paying more attention during class.

Second, there is reason to worry about shorter attention spans of Digital Natives. There are real issues brewing here. Many kids do demonstrate a preference for reading shorter works rather than longer formats. They are migrating from things like extended format magazines and books to the web. On the web, shorter formats ordinarily work better than long formats, whether in text, audio, or video. Ditto for text messaging, instant messaging, and even emailing. In ways both of their own making and of mass media generally, our students are living in a sound-bite culture.

Some of the young people we interviewed stressed their preference for instant messaging and texting, for instance, as a mode of communication with others, as compared to voice communications (by phone or face-to-face). This is true of many of us, not just of our youth. All news seekers are re-

warded for flitting about with tighter and tighter sound-bites from more and more sources. For Digital Natives, the phenomenon is the same, only amplified.<sup>xii</sup>

A third concern is that the innovative use of technology leads to a "copy-and-paste"-culture, a practice in tension with certain traditional educational ethics. Students report consistently that technology-enabled cheating is on the rise on college campuses, especially in technical disciplines, where students increasingly work together on assignments while they are required to submit their "own" answers.<sup>xiii</sup>

Fourth, students seek information in new ways. Students expect to access information on public search engines, and sometimes via mobile devices, as part of their daily life. Most law students feel very comfortable in digital information environments. The same is true for the junior associates in law firms. This familiarity with technology, however, can lead to overconfidence in their ability to perform research. Despite high comfort levels with searching for information in the digital realm, students require more research instruction, not less, as they need to unlearn certain behaviors – like trying to adapt simple keyword searches learned through Google searching to the more complex research engines we rely on in legal scholarship and practice, including Westlaw, Lexis, and the new Bloomberg Law service.

These phenomena are obvious to anyone who teaches or manages Digital Natives in a workplace. These fears are realistic. Many adults who have migrated to the web do just the same things.

## B. Part 2: Gathering News and Information.

One of the great benefits of the Internet is our growing ability to access ever more vast amounts of information with every passing year from a broad range of devices. A Digital Native often accesses much more information about a topic in which she is interested than she ever could before. A recent study of young people and their news-gathering habits confirm this turn by Digital Natives away from the mode of previous generations. As the study found, young Americans don't tend to read the daily newspaper.<sup>xiv</sup> Digital Natives pick up bits and pieces of news and information as they go about their day, not in a single sitting at the breakfast table in the morning or in front of the television in the evening. And in some cases, they in fact engages *more* with the material they are reading about than before, by virtue of writing a post about the idea on a blog or sharing it with a friend on Facebook or over IM.

Just because Digital Natives don't learn things in the same way that their grandparents did does not mean that the way that they are learning is worse. The evidence that we have so far doesn't indicate that they learn things less effectively than their grandparents did, or even more superficially. In fact, Digital Natives are quite sophisticated in the way they gather information. The people to be worried about are those who are growing up in a digital age but who are not learning these sophisticated information gathering, processing, and creation skills. A key part of our job as teachers of future lawyers is to ensure that all of our students gain the best skills they can to navigate this increasingly complex information environment.

Digital Natives gather information through a multi-step process that involves grazing, a deep-dive, and a feedback loop. Digital Natives are learning to graze through the huge amount of information

that comes their way on a daily basis.<sup>xv</sup> Consider the news-gathering practices of a college student interested in the Middle East. Her boyfriend comes from an Arabic-speaking family and she is hoping to travel to Egypt next summer. When she opens her browser, Google is her homepage, which features headlines from sources and on topics that she has pre-selected. She might even have plugged keywords into Google, which in turn send her alerts when relevant stories appear. She grazes all day through the newsfeeds that she sees on her Facebook social network profile, posted by friends or others. She might also see headlines about the region by grazing through news from major news outlets online (CNN, MSNBC, the *New York Times*, *Al-Jazeera*, and so forth). She'll also probably have a few favorite specialized websites or discussion board – for instance, MideastYouth.com – which she'll glance at in the course of the day. Chat rooms and email listservs might serve a similar function.

Her computer isn't the only medium through which she will learn about the news in the Middle East in a given day. Mobile devices have taken on a sharply rising level of importance in terms of how young people access and use information. Her smart-phone might serve up headlines that come through like text messages to her handset, bleeping at her as they arrive (if she's a sports fan, this is how she gets changes in a game score, too). She will hear news on the radio or watch it on the television in a gym or a student center at her university. She also watches television news programs that star comedians, such as Jon Stewart or Steven Colbert.

While grazing, the Digital Native will absorb a headline or a bit more – perhaps a paragraph's worth – about any given story. The most important features of information in this context are speed, accessibility, and how well it has been sorted. The information is valuable insofar as it is timely, relevant, and easy to process. The fact that it can be accessed from anywhere – that Facebook newsfeed is channeled through a cellphone that is constantly attached to a Digital Native's body – is equally

important. And the interface through which the Digital Native gets this information is more useful and attractive to her the more that it can enable her to sort through the vast rivers of information flowing around her all the time.

With some of those stories she sees, she decides she wants to go beyond the headline, to learn more about a topic or event – to take what we call a “deep dive.” In this way, she is searching for what’s behind the headline, what the facts are, what it might mean for her, what the people involved looked like, and so forth. It might mean clicking on a hypertext link, loading up a video, or downloading a podcast to listen to on the train. The deep dive helps her to make sense of the news, to put it into a frame or better context, to offer an analysis of it, to introduce relevant other voices.

The deep-dive stage in the news-gathering process for a Digital Native is where they interact with traditional media, especially the most powerful and wealthy institutions — those firms and other organizations able to afford bureaus and extensive online presences in addition to local newsrooms. The key factors for salience of information online, beyond timeliness, are accuracy, trustworthiness, insight, analysis, new angles, and relationships. Some of our young people, too, are becoming producers of news and information as well as consumers, an important change in the relationship of our youth to the information around them.<sup>xvi</sup>

Some students will go further, meaning that they actively engage with the information, sometimes in new ways. The eighteen-year-old college student may be enraged by what she reads and will want to “talk back” to the news. The logical next step is to jump into the debate somehow. This last stage – the feedback loop – is not for every student. Some Digital Natives take this next step to engage more meaningfully with the fact and the context.

The form of a Digital Native's feedback loops varies. She might write a post to her blog to critique a story she saw on CNN. She might comment on someone else's blog, or on a wiki or bulletin board. Or perhaps she'll send an e-mail to a listserv or to a network news program. If she's especially creative she might create her own podcast or video-blog (some call it, unfortunately, a "vlog"). The idea is that she may react publicly to the story or to remake and retell it in some fashion. Digital tools enable her to have an impact on the way the story is told. This feedback loop can be a powerful aspect of learning; it is one that is largely untapped in the context of formal education.

The feedback loop might also involve passing the information around to friends and family. Digital information has a social life in the hands of Digital Natives. They share it with one another, post stories to their profiles in social network sites, and talk about it on instant messaging or on blogs. It's not every young person who engages with information in this interactive way, but it's more than most parents and teachers think. The same instinct that leads a new web user to circulate so many email jokes (and scams) animates the news- and information-sharing behavior of Digital Natives. The difference between a Digital Native and one's aunt with the new email account in this regard is that the Digital Native is likely more sophisticated about what she shares and how.

Generally speaking, this increased level of engagement with information and the world around her is good for her own learning process. If we can encourage it, this feedback loop can become an important part of the learning process at a systemic level. This process, too, will redound to the benefit of society at large over time. We ought to establish a feedback loop, in the process, whereby Digital Natives are rewarded for leading a life more engaged in the civic sphere, whether as law students or in life more broadly. It will not happen unless we pay attention to fostering the positive behavior that it involves.<sup>xvii</sup>

In our focus groups, we also asked students about their process for learning about a new topic when they've been assigned to write a research paper. The research process has been the subject of a recent national study that involved Harvard students as part of the cohort.<sup>xviii</sup> Students tell us that they first turn to course materials and to their teacher, if either proves to be helpful to the task. Where the question is not answered in this manner, they turn next to their computer (and never to a librarian or the digital equivalent of a card-catalog as a next step). They open up a browser and go to Google. They type in the search term ("Spanish-American War" or "Lou Gehrig's Disease," as examples from our focus groups). They scroll down the page of search results until they find the Wikipedia entry on their topic. They then begin their research from the Wikipedia page, ordinarily scrolling to the bottom of the page to find the sources to which the Wikipedia editors send them. Their research process from there varies greatly from student to student. They only find their way to the library when they are required to cite to printed materials. In teaching our students in the Legal Research and Writing course in their first year, we find that they repeat this process, more or less, in Westlaw and Lexis when they are seeking information for their legal research assignments.

## VI. Five Principles for Information, Technology and Learning at Harvard Law School.

Learning will always have certain enduring qualities that have little or nothing to do with technology. We should not overhaul legal education in an attempt merely to conform to the ways that our students are using digital media. But we should explore the ways to unlock new ways to teach our students to thrive as lawyers in the information-rich environment in which they will be practicing.

Given what we know about how students are learning in a digital age, there are many ways we can harness what is great about how Digital Natives relate to and use information. At the same time, we

need to address the legitimate problems that are cropping up in their learning processes. I submit the following five principles as proposals to guide our own academic policy-making in matters related to the use of technology in teaching and learning.

1) **We should use technology in our teaching and learning *only* where it serves an express, stated pedagogical purpose.** We should not use advanced technologies for their own sake. We should ask hard questions to ensure that our use of technology isn't doing more harm than good. We ought to experiment with ways in which technology can become part of the law school curriculum – but only where it belongs and where it can help to meet an articulated purpose as determined by the teacher. Programs where students are doing applied or collaborative work, research and writing, and problem-solving are obvious places to experiment with new technologies in learning.<sup>xix</sup>

We need to determine what our goals are, as teachers of law students entering practice and scholarship in the early twenty-first century, and then figure out how technology can help us, and our students, to reach those goals.<sup>xx</sup> The things that schools and teachers do best should not be scrapped in the rush to use technologies in the classroom. In every field, there are aspects of the curriculum that should be taught with screens and net-connections nowhere in site. In our field of law, for instance, the computer has no place in the classroom where a wonderful teacher is firing questions at a first-year student in Contracts class (even techno-superstar Jonathan Zittrain, for instance, bans laptop in his first-year class on Torts). This approach yields positive externalities: when students are not on their laptops, class gets better (and more worth paying attention to, in a virtuous cycle) for everyone. Some of our students, actually, will agree with our doing so. Surveys of young people consistently indicate that students have a preference for a moderate use of technology in the classroom.<sup>xxi</sup>

We should not, though, ban laptops or Internet access in classrooms across the board. The decision should be up to the teacher as to whether to permit or to ban laptop use in any given class. But we should encourage teachers to limit the use of laptops connected to the Internet during much of our core teaching. We should encourage the use of computers in the classroom only in those courses where the technology can support explicit pedagogical goals.

**2) We should promote innovative uses of information and technology where they can best support the preparation of our students for the practice of law.** Lawyers in practice are increasingly dependent on the use of advanced technology tools for information retrieval and processing to do their work. As we've seen from Mitt Regan's paper on outsourcing and much of the research by David Wilkins, John Coates, Ashish Nanda, and their colleagues at the Program on the Legal Profession, the use of information is having profound effects on the way the law is practiced and the way the marketplace for legal practice is changing.<sup>xxiii</sup> Our efforts to apply the use of technology in teaching should be coordinated not just with our research on how our students' information-related behaviors are changing, but also how the profession in which we work is changing and the role of information in driving some of these trends. Obvious candidates for integration of new technologies in the learning process include the new Problem Solving Workshop; legal research courses, including both the first-year Legal Research and Writing and advanced courses; many, if not most, of our clinical offerings; courses in Evidence, where the discovery process has already been transformed by information technology; and courses where the substantive topic involves the technology, such as Internet law and certain intellectual property courses.

Consider the means by which we might use technology to help students work more effectively in teams, a pedagogical goal employed in certain courses and tied to the way that lawyers work in prac-

tice. In our winter term of 2010, seven of us taught the new Problem Solving Workshop to the current first-year class. In that course, we assigned students to teams of four or five for the purposes of completing more or less daily assignments together. We know that our students will be working in teams, by and large, when they enter the practice of law, whether in large firms or in a non-profit or government setting. Digitally-supported environments can help students working in teams perform their tasks more effectively and improve their output by enabling them to give feedback to one another. Teams used collaborative software – such as Google Docs, EtherPad, and MindManager – to work together in and out of class. These tools also can easily enable group note-taking, such that students are not passively transcribing what is going on in class each day. Simple technologies such as wikis, blogs, and podcasts – all of which are supported by our course-management platform – can help team-based learning in other contexts.

The work-world for which we are preparing most of our students will require them to collaborate in order to succeed. Research indicates that interaction and a strong sense of community are the key requests of those born digital when it comes to online learning.<sup>xxiii</sup> As students research, write, and create collaboratively through online environments, they will be learning skills that will serve them well over time, even as digital economies evolve. Another simple idea, for any class that involves writing, is to put digital technologies to work as a feedback loop for students to comment on the material they are studying or on the ideas of their peers.<sup>xxiv</sup>

Technology can also play an important role in how we teach legal research. We hear from hiring partners in law firms that our students are not entering practice with the skills that they ought to have when it comes to using technology.<sup>xxv</sup> We can use information technologies as a means of improving the way we teach research, both through sophisticated databases like Westlaw and Lexis but also

through empirical datasets and other non-law sources of information that are increasingly relevant to legal practice and scholarship. One area where technology will play a role of this sort is through a new initiative of the Harvard Law School Library, in partnership with the Program on the Legal Profession, OCS, and OPIA, called “Prepare to Practice,” a bootcamp for students in the spring semester before they enter their summer employment. The premise of this training, in large part, will be to ensure that our students who opt in to this short experience have unlearned some of the research assumptions they brought with them to law school and replaced them with the legal research skills that that will need to succeed in their first forays into practice.

3) **We should promote targeted, creative uses of technology by students and experimentation by faculty; establish mechanisms to assess outcomes of these experiments; and disseminate best practices for information and technology-related projects.** We have not set out to promote innovation in the use of information and technology at Harvard Law School as an institutional priority in the past. We have not yet established means of engaging students through active learning in classrooms or in our library in ways that build upon emerging youth media practices.<sup>xxvi</sup>

This third principle is plainly in tension with the first principle. I have argued that we should only use technology in our teaching where it can serve a pedagogical purpose; here, I argue that we should experiment, take risks, and even fail periodically. These two principles can be reconciled in two ways. First, there is no chance that every member of our faculty would agree to any single mode of teaching as being the only way of instructing our students. As a result, what may sound like a crazy idea to one faculty member may be serving an articulated pedagogical goal for another faculty member. And given that we know that students have different learning styles, this diversity is (much of

the time) itself a good thing. Second, in some classes, experimentation with the technology *per se* – tinkering, coding, remixing material – may itself be a pedagogical goal.

Creative teachers and their students will come up with exciting ideas if we provide the support and the structure institutionally to experiment, to fail, and to build on successes. Creative faculty members and students might look to important aspects of youth practice, such as digital creativity and gaming, and find ways to leverage them in the teaching enterprise. Both of these practices hold promise in terms of engaging students in active forms of learning. But both are puzzling in terms of how we might integrate them into our law school curriculum. We know that our students engage well with information, and often learn more than through traditional lecture formats, using interactive technologies. Schools that can find ways to tap into the love of gaming of young people have an opportunity to capture an area of substantial creativity and engagement, most easily seen in younger learners for whom games help to teach mathematics, science, or languages.<sup>xxvii</sup> Likewise, we know from research that students are extremely creative when it comes to making videos, for instance, that can convey a great deal of information through graphical and audio representation and which are rhetorically powerful modes of expression. We should find ways to encourage our students' talents for creativity using digital tools, such as video-production programs and software development. The best application of these ideas in legal education is not obvious. But the payoff could be substantial, for student and teacher alike, potentially even in law schools.<sup>xxviii</sup>

We ought to support, incentivize, and reward experimentation by faculty who wish to use technology in new ways in their teaching. We should strive to make it easy for faculty to experiment – especially those who do not have the ability to write code themselves. Teachers know best what problems they need to solve and what opportunities they want to seize. We need to provide enough support for

experimentation such that we can try out new approaches; assess critically their effectiveness; and enable the most successful forms of creativity to take hold and to flourish, in step with, and in support of, curricular reform.<sup>xxx</sup> We should invest in a series of experiments designed to accomplish specific pedagogical goals and then offer support to others who wish to adopt the successful innovations.<sup>xxx</sup>

In addition to promoting innovation, we will need also to invest in modes of sharing successes with one another to enable their easy adoption in additional classes. Where Bob Bordone, for instance, has successfully developed and integrated technology tools that support his negotiation courses, we should find ways to transfer those practices with teachers whose classes might benefit from his successful experimentation. From a collection of successful experiments, we should build a system of teaching one another to adopt best practices for the integration of technology in teaching where it can help.

**4) We should look to librarians as partners in teaching our students in a digital-plus era in ways that build on our respective strengths.** This essay has focused primarily on the way we as classroom teachers ought to adjust to the changing relationship between our students and information. Law librarians have a major role to play in this work. Librarians can play a central role in supporting law teachers when it comes to integrating technology into the teaching and learning process. To the extent that we frame the issue as about “information” and how we interact with it, rather than about “technology” as such, the connection between the institution of the library – especially the library of the future – and the teaching of law students become clearer.<sup>xxx</sup> Librarians can, and should, serve as key partners to faculty and academic administrators in accomplishing the school’s

mission, especially during this period of transition with respect to information and how our students interact with it.<sup>xxxii</sup>

There's never been a greater need for librarians than there is today, given the new skills that our students need and the depth and breadth of materials available to them.<sup>xxxiii</sup> Libraries will be staffed increasingly by those who can serve as guides to our students, who need to navigate an increasingly complicated information environment – and who do not all “natively” have the skills to do so. This is a teaching role that must complement the teaching that is going on in the classroom and in our clinics. The services provided by the library need to adjust to the way that our students are accessing information. The point is not to give in to every whim of every user; after all, much of the Google-search practice of Digital Natives translates poorly into searching in Westlaw and Lexis most of the time. The point is that we have to figure out which information-seeking practices to reinforce and which to correct during a period of rapid change in user behavior. The job of the librarian of the future should in part be to help to create a self-service information environment that allows students to navigate the increasingly complex array of choices for getting the information that the student or faculty member needs.

There are many specific examples of how librarians can partner with faculty to help improve our teaching through technology. One is that librarians can develop forms databases, akin to what students will encounter in legal practice, and teach students to use them as they learn legal research and writing. A second example: in addition to traditional pools of knowledge (such as books, journals, and case studies), librarians should help our students figure out how to manage the rivers of digital information that they encounter every day (RSS feeds of current information that is useful for a short window, but less so with the passage of time). Right now, libraries are focused on the pools. Li-

brarians are profitably focusing on helping patrons to have greater, and more effective, to the rivers and not just the pools of information. A third way in which librarians can help is to co-develop specialized course materials using software such as MindMaps, as one librarian has done with Terry Fisher for advanced courses on Intellectual Property.

To stay relevant to our students and faculty, law libraries have to stay in close touch with our users as we adapt in our relationship to information, partner with faculty especially in the service of curricular reform, and adapt our services in turn.<sup>xxxiv</sup> Over the past year, we have implemented a large-scale re-organization of the Harvard Law School Library. The goals of this re-organization were primarily two-fold: first, to align the library's day-to-day work and strategic investments better with the goals of the law school at large, including curricular reforms and changing forms of scholarship, including empirical work; and second, to position ourselves to take advantage of the changes in the information environment on behalf of our students and faculty. In this new configuration, our librarians are well-positioned to support teaching and learning at HLS in new and creative ways, while maintaining the traditional excellence of our library and the services it offers.

**5) We should use technology to help break down the barriers between the Harvard Law School and those communities with whom we seek greater interaction in the service of our core mission, such as scholars in other disciplines and legal practitioners.** Technology can help us to engage practicing lawyers in the teaching of specialized classes where their expertise can enrich the learning experience of our students. This engagement might take the form of an appearance by video-conference in a course; a recorded video session shared with students as a supplement to course materials; or interactive sessions using digital media that enable students to connect to ex-

perts who are not physically present in the classroom. These approaches might well complement our outreach to international communities as well as those in other, related academic disciplines.

We should consider also the role that we might play in developing new teaching materials, including cases of the sort prepared for the Problem Solving Workshop and our Executive Education program, and in disseminating them. In a straightforward way, we might disseminate our learning and teaching innovations by becoming a publisher of such cases in large numbers. The stronger form of this argument might call for us to gravitate toward a combination of broad, centralized delivery of core information (such as case materials) and distributed discussion and reflection. The reach of our work beyond the Harvard Law School classroom, facilitated by new technologies, could serve not just the broader legal community but our own students and faculty in the long-run.

### VIII. Conclusion.

Youth practices with respect to information are in flux. So, too, is the practice and study of law with respect to information. Given the rate of change in these multiple respects, it is not the time to place large bets in terms of radically overhauling how we use technology in teaching or how we collect materials in our library. We should instead establish a series of core principles and use them to guide our academic policy-making as we stay close to the changes underway. And we should seek to lead in terms of using new technologies to improve the way our students learn and perform legal research as they prepare for legal practice where we have evidence to suggest that it will work.

In addition to our own research and academic policy-making, we should incorporate the learning from other academic disciplines into our work at Harvard Law School. From a research perspective,

many hard questions remain to be asked and answered about how our students are learning in a digital-plus environment as compared to a predominantly analog world. How does extensive reading of websites, instead of books and broadsheet-style newspapers, change the way people process information, in the short- and long-terms? Do students end up remembering the information that they gather online more or less effectively than material they read on a printed page? Is the way that students read these days a cause or an effect of diminishing attention spans (or both)? Are kids learning anything of value while playing all those video games that consume so much of their free time – or, put another way, could they be learning something? How will these changes in learning and thinking patterns affect performance of our students in law school and in the practice of law? Psychologists, neuroscientists, and educational theorists, among others, are working on these and many other questions about how new technologies are affecting the ways that Digital Natives absorb and retain information. Their findings can help us to translate observable behavior in our students into better teaching and learning practices, using technology and otherwise. We should commit to finding ways to draw upon the work of the best of these researchers to inform our own academic practice and policy-making.

At Harvard Law School, we are in the midst of implementing the most radical reform of our law school curriculum in a century. We also seek to expand our international and interdisciplinary reach, as well as to connect more effectively to those in the legal profession. The use of technology in learning and research – grounded in research about how our students relate to information – can play a key supporting role in this curricular reform. During this transition, we need to focus on discerning what we want to preserve about traditional legal education and information-related practices and what to replace with new, digitally mediated processes. Sometimes, this will mean teaching our students how to use technologies better; sometimes computers will have no place in the room. We

need to get much better at telling the two apart. We need to avoid the trap of fetishizing youth technology practice on the one side and the trap of fearing youth media practice and learning styles on the other. We should devote ourselves to setting academic policies and experimenting with new teaching and research practices that exploit what we know about how students are learning in this increasingly digital era to prepare them for careers in the law. In the process, we will be supporting our own curricular reform efforts while continuing to strengthen our connection to our students and to the legal profession.

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- \* This essay is based in part by research conducted through the Digital Natives Project at the Berkman Center for Internet & Society at Harvard University. This essay incorporates material from a chapter in *BORN DIGITAL: UNDERSTANDING THE FIRST GENERATION OF DIGITAL NATIVES* (Basic Books, 2008), and an article which appeared in the *NEW ENGLAND JOURNAL OF HIGHER EDUCATION*, which I co-authored with Urs Gasser, the Berkman Center's executive director and a lecturer on law.
- <sup>i</sup> For instance, the former governor of the State of Maine, Angus King, initiated a laptop program statewide, in which all public school-children are provided laptops. The program is still rolling out, several years later, and the conversations about what to do with the technology in the schools continue to be fierce. Private schools are frequently described as "lap-top schools" or "tablet schools." See, e.g., Dwight-Englewood School in Englewood, NJ, at <http://www.d-e.org>.
- <sup>ii</sup> See Mizuko Ito, et al., *HANGING OUT, MESSING AROUND, AND GEEKING OUT: KIDS LIVING AND LEARNING WITH NEW MEDIA* (MIT Press, 2010), p. 18.
- <sup>iii</sup> This fact is sufficiently well-established as to be something of which one could take judicial notice. One study that shows change of this sort over time in a peer-reviewed journal is Jones, Steve, Johnson-Yale, Camille, Millermaier, Sarah, and Seoane Perez, Francisco, *Everyday life, online: U.S. college students' use of the Internet*, *First Monday* [Online], Volume 14 Number 10 (25 September 2009).
- <sup>iv</sup> This concept has been established in a series of national studies of United States college students, as well as in our smaller studies, in the form of focus groups and interviews, of students in the Northeast of the United States. See Alison J. Head and Michael H. Eisenberg, *Lessons Learned: How College Students Seek Information in a Digital Age*, Project Information Literacy Final Report, December 2009, at [http://projectinfolit.org/pdfs/PIL\\_Fall2009\\_Year1Report\\_12\\_2009.pdf](http://projectinfolit.org/pdfs/PIL_Fall2009_Year1Report_12_2009.pdf) See also Head and Eisenberg, *Finding Context: What Today's College Students Say about Conducting Research in the Digital Age*, PIL Progress Report, 2009, at [http://projectinfolit.org/pdfs/PIL\\_ProgressReport\\_2\\_2009.pdf](http://projectinfolit.org/pdfs/PIL_ProgressReport_2_2009.pdf) (last accessed February 2010).
- <sup>v</sup> It is not the case that all young people are Digital Natives. Nor is it the case that young people are the only ones who happen to relate to information in the ways that I describe in this essay. One of the most important public policy issues to emerge from this research is the participation gap between those students who have great facility with digital technologies and those who do not.
- <sup>vi</sup> See, e.g., John Palfrey, Urs Gasser, Miriam Simun, and Rosalie Fay Barnes, *Youth, Creativity, and Copyright in the Digital Age*, *International Journal of Learning and Media*, Vol. 1, No. 2, 79 (2009) (for discussion of ways to address intellectual property concerns raised by youth media practices).
- <sup>vii</sup> Many of the best large-scale quantitative research studies have been conducted by the Pew Internet & American Life project, led by Amanda Lenhart and her colleagues. Eszter Hargittai of Northwestern University has conducted excellent studies of college-age learners. The Kaiser Family Foundation has performed important work in this respect. Qualitative studies and ethnographies by researchers such as Mizuko Ito and danah boyd are equally important sources of understanding youth practices with respect to information and technology. As one example of a source on which I rely heavily for background as to the practices of today's youth, see Ito, et al., *HANGING OUT, MESSING*

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AROUND, AND GEEKING OUT: KIDS LIVING AND LEARNING WITH NEW MEDIA, *supra* note ii, (which describes the findings of a multi-year, multi-method ethnographic study of youth media practices, supported by a \$3.3 million grant from the MacArthur Foundation).

<sup>viii</sup> See, e.g., Marc Prensky, *Digital Natives, Digital Immigrants*, *On the Horizon* 9(5), (2001).

<sup>ix</sup> We recruited respondents via educators and administrators at the middle-school, high-school, after-school and university level. We expended particular effort to obtain a diverse group of respondents with regards to socio-economic status, as well as inclination towards participating in creative activity online.

<sup>x</sup> It is important to address up front the limitations of our study: we explored youth discourse surrounding their use of digital technologies within a particular and limited population, one not representative of any larger group. We do not aim to make generalizable statements about youth perceptions of those issues at a larger scale.

<sup>xi</sup> The topic of multitasking and whether it is good or bad is much more complex than I've let on in these few paragraphs. There's a great deal of work being done by neuroscientists to try to understand this phenomenon. One question is whether "multitasking" is in fact possible. Most research suggests that it is not: that the proper term is "switchtasking," whereby people (young or older) are not holding two thoughts in their heads but rather switching quickly from one idea to another. There are instances in which switchtasking may be beneficial for productivity; and it may be that young learners are becoming effective at switching quickly between tasks in ways that will make them more productive learners. But, as a matter of short-hand, we know with certainty that doing email during class time does not enhance the learning experience. See Gasser, Urs & John Palfrey, *Mastering Multitasking*, *Educational Leadership*, March 2009, at 15.

<sup>xii</sup> William Zinsser, in his book on writing, described his reader as someone "assailed on every side by forces competing for his time: by newspapers and magazines, by television and radio, by his stereo and videocassettes, by his wife and children and pets, by his house and his yard and all the gadgets that he has bought to keep them spruce, and by that most potent of competitors, sleep." William Zinsser, *ON WRITING WELL*, p. 9 (New York: Harper, 1998).

<sup>xiii</sup> See Ben McNeely, *Using Technology as a Learning Tool, Not Just the Cool New Thing*, in Diana G. Oblinger and James L. Oblinger (eds.), *Educating the Net Generation* (Educause, 2005), p. 4.6 et seq.

<sup>xiv</sup> See "Young People and News," at [http://www.ksg.harvard.edu/presspol/carnegie\\_knight/young\\_news\\_web.pdf](http://www.ksg.harvard.edu/presspol/carnegie_knight/young_news_web.pdf) Also, see anecdotal reports, such as <http://www.newyorker.com/online/blogs/hendrikhertzberg/2007/08/omen.html> (not just Digital Natives, but others too, are turning away from printed newspapers in favor of online news sources).

<sup>xv</sup> Another way of describing the grazing practice is "fortuitous searching." See Ito et al., *HANGING OUT, MESSING AROUND, AND GEEKING OUT*, *supra* note ii, pp. 54 -7.

<sup>xvi</sup> This dynamic – whereby young people have gone from consumers to creators of information – lies at the heart of some of the most exciting developments in the digital era. This transition is chronicled and theorized by Yochai Benkler in his seminal work, the *WEALTH OF NETWORKS* (2006); Lawrence Lessig, in multiple works including *CODE AND OTHER LAWS OF CYBERSPACE, VERSION 2.0* (2006), *FREE CULTURE* (2004) and *REMIX* (2008); and William W. Fisher III in *PROMISES TO KEEP* (2004). See also the community of news producers at Global Voices, online at <http://www.globalvoicesonline.org/>.

<sup>xvii</sup> While the effects of this mode of learning – both in gathering and recreating information – poses real problems for print and other content-owning industries, those with strong brands should be able to thrive. There's no evidence that Digital Natives have less interest in news and information than those who are older. But studies do show clearly that Digital Natives are not engaging with news and information in the same way as it has historically been offered by these industries. Studies of the user-generated content environment show that the news items that spur the most conversation on blogs and similar sites are often first published by mainstream news providers such as the New York Times. The Times is an example of a company that has invested heavily in an accessible, effective online format for its world-class news. Their senior leadership has a strong vision for how the news will be provided and engaged with in the future. Good things in new formats will enable strong brands to lead in a digital era. The work of many researchers shows graphically the importance of strong brands and mainstream voices in setting the agenda for the user-generated content world in many instances. John Kelly, chief scientist at Morningside Analytics and an affiliate of the Berkman Center, has shown this effect in the United States blogosphere, as well as in others around the world. The findings of Clay Shirky, in his famous works on the power law distribution, similarly suggest that strong brands set agendas and drive discourse. See [http://www.shirky.com/writings/powerlaw\\_weblog.html](http://www.shirky.com/writings/powerlaw_weblog.html).

<sup>xviii</sup> See Head et al., *supra* note iv.

<sup>xix</sup> See, e.g., Alma R. Clayton-Pedersen with Nancy O'Neill, *Curricula Designed to Meet 21<sup>st</sup>-Century Expectations*, in: in: Diana G. Oblinger and James L. Oblinger (eds.), *Educating the Net Generation* (Educause, 2005), pp. 9.1-9.16.

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<sup>xx</sup> Howard Gardner, professor at the Harvard Graduate School of Education, has given a lot of thought to how technology can play a part in teaching. He and his research team have, for decades, been paying close attention to how children learn and what role ethics play in their lives, online and in real-space. Through a project called Good Play (a derivative of his long-running Good Work project), he and his team are interviewing educators and young people about how they use technologies in learning and development. In a short essay he wrote about teaching and technology, Gardner starts by stating two educational goals, and then asks how the technologies can help us to get there with our students.

“First,” Gardner writes, “we should help students become certain kinds of adults.” This goal makes particular sense in the context of our broader frame for learning. We should think both in terms of what we as educators should strive to accomplish and in terms of how we need to think about our role vis-à-vis Digital Natives. We want to encourage Digital Natives to become responsible citizens. Here we are faced with a particular challenge. Digital Natives often (though not always) think that they are more anonymous than they really are when they act online. That challenge can also be an opportunity: to turn the experiences where this anonymity proves to be a falsehood into ways to teach about accountability, about taking responsibility and acting ethically, whether online or off.

Second, Gardner says, we should use technology to help students understand how thinking within certain disciplines work. The goal of these applications of new technologies would be to help them to improve their own analytical skills by, say, experiencing how scientists think about conducting an experiment or how a composer goes about writing a sonata. This, too, seems just right. This approach allows teachers to tap into two of the great promises that new technologies hold out. One is offering greater access to more people to more primary information at little or no cost. Think of the data sets that can be made available to young scientists or the copies of original documents to young historians. Another great promise is the ability to experiment with those primary materials oneself, to create in a nearly costless way in the manner that professionals do. *See* Howard Gardner, “Can Technology Exploit Our Many Ways of Knowing?,” 2000.

<sup>xxi</sup> According to one survey, roughly 30 percent of students preferred taking courses that use extensive levels of technology, while about 25 percent preferred limited or not use of technology in the classroom. Not surprisingly, engineering students were the ones with highest preference for the use of technology in the classroom. *See* Robert B. Kvikvik, *Convenience, Communications, and Control: How Students Use Technology*, in: Diana G. Oblinger and James L. Oblinger (eds.), *Educating the Net Generation* (Educause, 2005), pp. 7.8-7.10.

<sup>xxii</sup> Milton C. Regan, Jr. and Palmer T. Heenan, *Supply Chains and Porous Boundaries: The Disaggregation of Legal Services*, *Forthcoming in 78 Fordham L. Rev.* \_\_\_\_ (2010) (Symposium on The Economic Downturn and the Legal Profession).

<sup>xxiii</sup> Joel Hartman, Patsy Moskal, and Chuck Dziuban, *Preparing the Academy of Today for the Learner of Tomorrow*, in: Diana G. Oblinger and James L. Oblinger (eds.), *Educating the Net Generation* (Educause, 2005), pp. 6.7-6.10.

<sup>xxiv</sup> Jonathan Zittrain and his team at the Berkman Center have developed custom software, called the H20 Rotisserie, to facilitate this process. It can be accessed on the web and used for free at <http://h20.law.harvard.edu>.

<sup>xxv</sup> *See* Gene Koo, *New Skills, New Learning: Legal Education and the Promise of New Technology*, Berkman Center Publication Series, No. 2007-04, March 26, 2007, at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=976646](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=976646).

<sup>xxvi</sup> *See* Paul Caron and Rafael Gely, *Taking Back the Law School Classroom: Using Technology to Foster Active Student Learning*, *Journal of Legal Education*, Vol. 54 (2004).

<sup>xxvii</sup> Experimentation by faculty might include creative use of gaming in the classroom, for instance. Many parents and teachers complain about the short attention spans of their kids; those same kids seem to have plenty long attention spans for gaming. The technologies themselves can be used to address the problems to which their use contributes, such as short attention spans. *See, e.g.*, Marc Prensky, “Engage Me or Enrage Me,” *Educause*, September/October 2005, at <http://www.educause.edu/ir/library/pdf/erm0553.pdf>

<sup>xxviii</sup> Zephyr Teachout, one of our most creative colleagues (an associate professor of law at Fordham Law School), wrote about an idea of this sort in an op-ed in the *New York Times*. She said we should use the changing nature of presidential debates in the United States to make available on line much more primary material of presidential candidates speaking to one another. The idea would be to make the results of mini-debates be available for anyone, Digital Native or not, to remake these files themselves and to repost them. A high school world history class might splicing together the most revealing interactions on foreign policy with one another, perhaps with added commentary built in by the re-maker of the film. Zephyr Teachout, “Time of Their Lives,” *Op-Ed page (A23)*, *New York Times*, August 17, 2007.

<sup>xxix</sup> A group of pioneers in the field of education have developed great curricular materials that are a great place for schools to start. Experimental curricula for many subject areas, at many levels of teacher, are under development across the world. Many of these tools are available for free reuse. The BBC launched a multi-year effort, BBC Jam, to develop interactive teaching materials for school-age children over several years. Howard Gardner is developing

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curricula along with Henry Jenkins and the New Media Literacies program at MIT. The MIT OpenCourseWare project offers free access to the teaching materials related to nearly all MIT courses. More and more free teaching materials are posted to the web each year. See also <http://teachdigital.pbwiki.com/curriculum>

<sup>xxx</sup> A great example of a faculty development program is the Virginia Tech's Faculty Development Institute, which helps faculty members to use teaching strategies that leverage instructional technologies to improve learning (<http://www.fdi.vt.edu/>). See Anne H. Moore, John F. Moore, and Shelli B. Fowler, *Faculty Development for the Net Generation*, in: Diana G. Oblinger and James L. Oblinger (eds.), *Educating the Net Generation* (Educause, 2005), pp. 11.1-11.16.

<sup>xxxi</sup> We are headed into an era that is neither purely analog nor purely digital, but rather “digital-plus.” Legal information is born digital, as in the case of a Word document that becomes a book or law review article; but we may choose to render it in both digital (i.e., the Kindle edition) and analog (i.e., the paperback) formats. Digitization has meant that books and printed journals – in their classic, bound format – aren't the only way to convey information. Patrons have more options than they used to. Just as iTunes offered customers an à la carte approach to obtaining music which transformed the recording industry's revenue model, publishers are signing on to allow people to buy one chapter at a time. Google lets customers sample books before buying them and offers full-text search access to scholarly material in Google Scholar and the Google Books project. More profound, we can access materials from around the world, in law and in related disciplines, at no cost for our patrons and deliver them electronically to their desks. Legal information itself is much more accessible. Librarians have a key role to play in working with faculty members to redefine access to legal information and to rethink the legal casebook to take advantage of digital technologies and different modes of learning.

For all the wonder and excitement of the digital era, it's important to stress that books are not dead. Far from it, in fact. Books for many people remain a very good technology. Hard-copies of books are important on many levels. Many people, including young people we've studied, prefer to read hard-copies of books to digital forms of books. (Kids often describe their preference for books roughly in the same terms as adults: they prefer books for the “three Bs”: the bed, the bath, and the beach. Annotation in the margins of books is another important factor for users who prefer books in hard-copy formats.) Despite massive investments in technologies like the eInk at the MIT Media Lab and other user-interface improvements, the experience of reading books on a screen cannot yet compete with the experience of reading a book printed on rich paper. Books don't run out of batteries on airplanes, as an Amazon Kindle does all too quickly in the middle of a gripping novel. Some people, including our students, still collect books on bookshelves as signals of knowledge (or for easy access).

Books represent a stable format, unlikely the constantly-changing digital formats that imperil digital record-keeping processes over the long-term. Books are the cornerstone, for now at least, of the large and important publishing industry, whose leaders play an important role in democracies and cultures around the world. Books have the advantage, under United States and European law at least, of being covered by the first sale doctrine and the principle of exhaustion, respectively (you can give them away, or lend them, or sell them in a secondary market). But books have downsides, too – the slow fire phenomenon (whereby books of a certain vintage are deteriorating quickly), the high cost of production (compared to their digital counterparts), and the high cost of storage and distribution (though that cost may in fact prove lower, over long periods of time, than virtual materials, counter-intuitively). We continue to acquire monographs primarily in hard-copy format. In contrast, we are now acquiring many serials in electronic format through online databases.

<sup>xxxii</sup> There is an important tangent that starts here – about the future of libraries broadly – but which falls outside the scope of this paper. Changes for libraries are, in the near-term, more radical than the changes in the classroom. Libraries are the facet of education that are today changing the most substantially as a result of changes in digital technology and usage patterns. Librarians at every level, and certainly in law schools, are asking hard questions about every aspect of their role. As our students situate themselves differently with respect to information, so too must librarians. In nearly every aspect of their job, librarians face harder and more important tasks than ever before.

The conversation about the future of libraries ordinarily centers initially on the question of collections. Librarians face hard questions in terms of selecting materials to acquire, especially given the increasing importance of digital resources, as well as those in hard-copy, to the library's core users. The problem is that both digital works and traditional print materials cost more money than they used to, and far more in the way of material is published every year around the world in fields such as law. The ideal scenario – in which a collection includes a hard-copy of every book or serial and a digital copy as well, for searching, cataloging, borrowing, and citation – is implausible. The cost of acquiring an increasing number of works in two formats and maintaining dual systems (analog and digital) is prohibitive. For the first time, we at the Harvard Law School have written and published a collection development policy to de-

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scribe our mode of maintaining and growing our collection of materials, including books but also datasets and digital materials of many sorts.

Librarians face a perfect storm of changes, including major transformations (and threats) in the publishing world. The combination of print-on-demand and digitization of new works is the largest growth story in publishing and in libraries. Law school libraries are devoting less and less room on campus to books and printed serials; nearly half of our library's materials are now more than twenty-five miles away, in remote storage in Southborough. Concurrently, libraries are teaming up with one another to acquire books that can be delivered just-in-time to patrons, but not collected at each physical library. And librarians can also serve as partners with faculty members in developing new course materials, such as helping to develop MindMaps for, say, courses on intellectual property.

<sup>xxxiii</sup> Libraries will play many different roles in the future. For instance, libraries in law schools and elsewhere have a role to play in preserving knowledge over time as well as providing access to our patrons of today. The correspondence of our current faculty members (not to mention Digital Natives), and of everyone living in the digital age, may well be less likely to be preserved than the writings of 9<sup>th</sup> century monks on sturdy parchment. Libraries should also think in terms of collections that will amount to the digital heritage of the Digital Natives and their peers. The collection of digital resources by every library, historical society, museum, and other collecting institution will become an essential part of what it means to gather resources for the public. In a world where our children are born digital, these collections can be freely online and available to anyone, anywhere in the world – not just those within walking or driving distance of each library. This heritage needs to be preserved. It should take the form of a digital commons without the constraints of physical (as in, via atoms) distribution, from the start, as Digital Natives create many of the artifacts that successive generations will wish to study. Consider, for instance, the Canadian digital heritage initiative:

<http://www.alouettecanada.ca/home-e.php>.

<sup>xxxiv</sup> See Sarah Glassmeyer, <http://sarahglassmeyer.com/?p=241>.