Symposium on Legal Education

Electronic Law Students: Repercussions on Legal Education

Richard A. Matasar
Rosemary Shields

Recommended Citation
I put important quotes and my own comments in the [electronic book] and have an excellent outline of the course with almost no effort (I'm assuming that's a good thing! I guess I'll find out when finals come along and I already have an outline). . . . With online databases available from home, my library is everywhere. It's always open. The books are always shelved. I can do my research and ask for help twenty-four hours a day.

Technology will not only revolutionize how legal work is done in the future; it will alter the structure of the law firms themselves.

Law schools rarely change; they like it that way. Professors can use cases they have always taught. Books read by parents when they were students can be handed down to their children. Teachers read the books to students, who in turn will read them to their children, who will read them as well. Stability, continuity, and precedent all comprise the law school system.

The world is changing. Governments that existed for years no longer remain. Blue chip companies are getting “black eyes” from upstarts who lack respect for tradition. Further, those who have done things the same way for years are falling behind innovators and “change-junkies” comfortable with rapid adaptation and adjustment.

---

Rosemary Shiels, Law and Computer Fellow and Director, Center for Law and Computers; J.D. Chicago-Kent College of Law, Illinois Institute of Technology; M.A. University of Colorado; B.A. Mundelein College of Loyola University of Chicago.

We are grateful to our colleague, Ronald W. Staudt, whose vision and guidance in integrating technology into legal education have launched many of the successful electronic initiatives at Chicago-Kent College of Law. He continues to offer us inspiration and encouragement as the law school deepens its commitment to explore the use of technology to enhance our students’ legal education.

1. Interview with Beth Donahue, First-Year Law Student, Chicago-Kent College of Law, Illinois Institute of Technology (Nov. 29, 1994).
Comfort with change is now creeping into the legal profession. A growing number of law firms are reorganizing, trimming, becoming more efficient, and experimenting with new technologies to help them compete with other aggressive firms. Such firms are fueled by a desire to keep up, not with each other, but with their clients, who are pulling them into the world of continuous improvement, flexibility, multi-tasking, and rapid change. Like it or not, the legal profession will never be the same.

But if the practicing world is being pulled by its clients, so must the world of legal education be pulled by practice; law schools exist to train professionals for firms and other professional organizations. Law school graduates will be ill-prepared for their future careers if their schools do not learn to change and adapt, especially to emerging technologies.

In the face of such a rapidly changing employment market, law schools might resist changing their tried-and-true teaching methods. Socratic dialogue, close textual analysis, costly books, pens, and yellow pads have served us well for at least 100 years. Law schools, however, face another challenge as well—not only will their graduates face a changing world, but the students entering law school will demand an education that reflects that world.

Check your nearby grade schools, high schools, and colleges. Change is afoot, radical change. Students no longer learn to write; they learn word processing. The transparency is a tool of the past; it is now replaced by an overhead projector attached to a computer. Books no longer are mere words with the occasional picture or graph; they are interactive with sound and links to other materials. Students brought up with this technology will need technology to learn. Thus, law schools not only will be pulled to change by the emerging technological changes within legal practice, they will be pushed to the same place by their students.

Should legal educators despair? Hardly. Now is the time to embrace the pull and push willingly. Legal education must too change, but in its own way.

No one believes that legal education ought to change without maintaining continuity. Change that bears no connection with what has worked in the past is alien and not likely to become acceptable. Accordingly, it is incumbent to make change, even radical change, inevitable—just the next evolutionary step.

In this Article, we address technological change in the law school. How will information-sharing and technological advances alter our teaching tools and methods? How will faculty members and students connect the new to the old? These questions underlie Chicago-Kent's move to create "electronic law students"—those who use technology to conduct the traditional business of legal
study. First, we set forth our assumptions about technology in the profession, our understanding of legal education methodologies, and our observations of how technology has affected legal education. We next outline experiments in integrating technology into the classroom at Chicago-Kent College of Law. We detail how these new technologies work. Next, we offer some preliminary observations about the value of these new technologies in legal education at Chicago-Kent. Finally, we set forth some questions for the future, special challenges that will pace our resources and support. We conclude that legal education will never be the same. Change is inevitable and must gladly be accepted.

I. LEGAL TECHNOLOGY

A. Law Practice

Law students of the 1990s come to school with sophisticated computer skills; they find sophisticated electronic resources available for their use. American law students receive complimentary 24-hour-a-day access to LEXIS/NEXIS and WESTLAW, with enormous libraries of the full-text of most primary legal source materials. These services are offered on all of the common software platforms: MS-DOS, Windows, and Macintosh. Furthermore, legal material is economically available through other dial-in and electronic channels, as well as on CD-ROM.

Concurrently, law firms and law schools have installed extensive network infrastructures to support their users. Networks deliver an array of applications, such as word processing, accounting spreadsheets, and practice-specific applications. Ever-increasing numbers of practitioners have powerful computers on their desks. The 1993 Chicago-Kent Large Firm Survey shows that seventy-six percent of the lawyers in reporting firms have a computer or terminal on or near their desks (see Figure 1).³


Produced by The Berkeley Electronic Press, 1995
Figure 1

Almost all large law firms and many law schools have installed local area networks that link these desktop machines to one another, as well as to network services like laser printing, file servers, CD-ROM jukeboxes, and Internet gateways (see Figure 2). Lawyers, including practitioners and law faculty, now have access to computers and computer networks throughout the world. Computer hardware and software is available to make these communications smooth and effortless.

Optical storage devices, easy access to electronic communications, and new graphical interfaces to the Internet have prompted governmental bodies at the federal, state, and local level to store official records on computer databases. Major corporations can file their Securities and Exchange disclosures electronically through the EDGAR system. LEXIS/NEXIS provides information on property values and assessor's information in major states.


5. For example, the Illinois Human Rights Commission and Chicago Human Relations Commission orders and decisions are available on the Chicago-Kent Internet server at: gopher@chicagokent.kentlaw.edu.

6. EDGAR is the Electronic Data Gathering Analysis and Retrieval System established by the Securities and Exchange Commission (SEC). EDGAR allows companies to make required filings to the SEC via direct transmission, diskette, or magnetic tape. See EDGAR Development Project, New York University Stern School of Business, at http://www.kentlaw.edu.
Some senior partners recognize the competitive advantage that technology affords the skilled practitioners.\(^7\) Fred Bartlit claims that law firms no longer have the luxury of building a large base of junior associates to bill the high number of hours necessary to support the more senior associates and partners of the firms.\(^8\) Bartlit claims that each practitioner must be able to deliver the work directly to the client. He also reports that clients are no longer willing to pay high fees for associate work that could just as easily be done by the lawyer managing the matter.\(^9\) Bartlit is traveling around the country proselytizing that computers bring the competitive edge back to the practitioner. The challenge for law schools is to find ways to optimize students' legal education by employing the appropriate technological tools. Law school graduates must come to practice with the real-life tools that will help them compete with, or even eclipse, their more traditional colleagues.

B. Education, Technology, and Cooperation with the Practice World, Chicago-Kent Style

Chicago-Kent is one of the nation's premier scholarly law schools. Its

\(^7\). Bartlit, supra note 2.

\(^8\). Id.

\(^9\). Id.
faculty publish regularly in top journals, write casebooks and university press books, and participate widely in public policy debates. Additionally, Chicago-Kent is dedicated to professional education. Thus, the law school has an ambitious program that allows students to concentrate in various substantive areas, to participate widely in moot court and trial advocacy, to obtain clinical training in one of the largest clinics in the country, and to participate in a wide-range of volunteer activities. However, the centerpiece of professional training at Chicago-Kent is its writing program, which is supported by the law school's extensive computer expertise. Chicago-Kent was the first law school in the United States with a three-year writing requirement. Students learn to think of legal research and writing as a process that requires knowledge, strategy, and hard work. Every student sees legal writing both as a means and an end—a means for achieving desired goals for clients and others, and an end, but one that is efficiently obtained at the optimum quality level.

In 1983, to enhance its research and writing mission, Chicago-Kent built one of the first computer labs for law student use. The following year, the law school installed two more labs and began universal computer training for all entering law students. From 1984 through 1986, in a Joint Study with IBM, the law school’s Center for Law and Computers began a more systematic evaluation of the effect of pervasive computer resources on student performance. The Joint Study’s conclusion that student performance was enhanced by the use of computers led to the development of a series of software products that were distributed by the ABA and others to help lawyers use computers more effectively.

Beginning in the fall of 1988, Mead Data Central provided the law school with 500 individual LEXIS passwords for students as part of a three-year study of the effect of pervasive and unlimited LEXIS/NEXIS access on legal education. These passwords allowed students to contact LEXIS and NEXIS.

10. At Chicago-Kent College of Law, each student must take Legal Writing I and II during his or her first-year. In the first semester, students learn to do both on-line and traditional research, write memoranda of law, and have conferences with their teachers. In the second semester, they advance their research skills and learn to advocate, both in briefs and in oral arguments. In their second year, students take a Legal Drafting course in which they must apply techniques learned during their first year to actual legal problems in a variety of substantive contexts. Second-year students also take an Advanced Research course, in which they learn to do research in a complex, heavily regulated area of law. Finally, as third-year students, they must do a serious research paper in a seminar or other course requiring careful research to support a scholarly presentation.

11. Professor Ronald W. Staudt conducted some early experiments to integrate technology into legal education that formed the basis for the Chicago-Kent initiatives in developing electronic course material. See Ronald W. Staudt, Computers at the Core of Legal Education: Experiments at IIT Chicago-Kent College of Law, 35 J. LEGAL EDUC. 514 (1985); David J. Maume, Jr., & Ronald W. Staudt, Computer Use and Success in the First Year of Law School, 37 J. LEGAL EDUC. 388 (1987).
twenty-four hours a day from home, from the college labs, or from any personal
computer properly connected with communication software and a modem.
When the three-year study began in the fall semester of 1989, Chicago-Kent
became one of only two United States law schools to use such extensive
LEXIS/NEXIS resources. During 1989 and 1990, first-year faculty and students
developed teaching and research techniques that included the use of the LEXIS
online database libraries. In 1990, after reviewing the project at Chicago-Kent,
Mead Data Central began to offer every student, in every law school, a twenty-
four-hour password. In the 1990-91 academic year, Mead distributed 110,000
student passwords nationwide.

Since 1985, Chicago-Kent's Center for Law and Computers has conducted
an annual survey of computer use by lawyers in the nation's 500 largest law
firms. The purpose of this survey is to track trends and to identify new
developments within this influential group of lawyers. Chicago-Kent uses the
survey results to ensure that its educational programs remain adaptive and
relevant to developing standards for the practice of law, as well as to guide the
law school in refining its continuing education offerings for practicing lawyers.
Each year, survey results are analyzed by Chicago-Kent and presented to the
TECHSHOW/PC Strategies for Lawyers annual conference, jointly offered by
the American Bar Association and the law school.

In January 1992, Chicago-Kent moved into a state-of-the-art building, with
technological features that are more extensive and concentrated than in most law
schools and graduate schools across the country. The new structure is interlaced
with copper and fiber cabling, allowing the distribution of enormous amounts of
data from the network control center. The new building is served by a 10BaseT
Ethernet Network running Novell 3.11. The building provides computer and
communications links in every classroom and throughout the library, in addition
to four computer concentration areas dedicated to student use and instruction.12
Chicago-Kent uses computers comprehensively in legal education, especially
with legal writing instruction, and makes computer facilities available to students
from the beginning of their legal careers.

Today, with a sophisticated technological platform, a decade of educational

12. The design of the new Chicago-Kent provides: 250 computers for use by teachers,
students, and administrators; 1300 network data ports throughout the library and scattered throughout
the common areas of the school, on which teachers and students can use their own laptops and
notebooks; five classrooms with data nodes and power at each student seat; nearly 100 computers,
based in four dedicated computer labs, each connected to the law school's computer network;
network resources to access research, printing, file exchange, and local and international
communications; and the Judge Abraham Lincoln Marovitz Courtroom that integrates the design
features from the best courtrooms and trial advocacy training facilities in the nation.
experimentation with technology as a teaching tool, years of collaborative efforts with corporate sponsors, and a faculty attentive to information systems, Chicago-Kent has rededicated itself to bringing new educational technology to its students. The law school's next step is a total integration of technological tools into the educational program.

C. Legal Education at Chicago-Kent

Chicago-Kent's educational program is undergoing rapid change on multiple fronts. From the decision to expand its live-client, fee-generating clinic to its program of "majors" for students, to its public service program, the law school is engaged in bringing programs to students that will prepare them for their future careers. Yet these changes may pale in comparison to those necessary to adjust to the demands of new technology.

Chicago-Kent is being pushed and pulled to further integrate technology into teaching. The pull is simple to explain: lawyers use computers— to write, research, bill, compile materials, make practice forms, communicate, replace libraries, and to perform just about any other function within the practice. Today's lawyer is technologically sophisticated, but the firm is still tolerant of arcane practice styles. But as technological advantages grow more powerful, more firms are changing to take advantage of such benefits. Soon, no lawyer will be able to achieve maximum productivity without adequate technological training and a sense of how to integrate technology into practice. Chicago-Kent is pulled into this change to ensure that its graduates remain in the forefront of practice.

Yet, the law school is also being pushed in the same direction by its students. Virtually all of the law school's students own computers before

13. Unlike other law schools which fund clinical education primarily with law school funds and outside grants, the vast majority of funding for Chicago-Kent's clinic is provided by the clinical faculty members themselves, through fees generated by their legal practices. Consequently, while clinical opportunities for most law schools have remained stable or have declined, Chicago-Kent continues to expand its clinical education. As expansion is virtually costless, the law school expands to meet student demands.

14. The law school offers coordinated curricula in the following areas: tax, financial services, energy and environmental law, international law, intellectual property law, and dispute resolution. Within the next two years, it will also add programs in labor law, law and medicine, and law and aging. Such specializations do not claim to give students complete expertise in any area; rather they give the students superior, concentrated, advanced knowledge sufficient to get a good start to a career in each area.

15. The law school recently began its S.O.S. (serving our society) program. The program is a volunteer pro bono program that attempts to match student interests with organizations' needs. Unlike many law school programs, however, the Chicago-Kent pro bono service includes non-legal, as well as legal work.
starting school. Most of them have used computers in high school and college and expect to be taught with up-to-date equipment and current techniques. Such students cannot absorb education passively; they demand interaction with their learning environment—interaction that the computer provides. Hence, they push the law school where it is already being pulled—into the future.

To understand how to prepare students to practice effectively in an increasingly technological environment, one must study how students learn the law, especially through substantive law casebooks and student outlines. In this Article, we assume that traditional legal instruction, the interactive exchange between the professor and students, will remain at the core of law school classes, and that law professors will continue to teach primarily as they have in the past. We also assume that as the practice of law increasingly relies on electronic materials and tools, legal education will evolve similarly, much as the evolution of research tools in practice has been mirrored in education. The vital remaining question, however, is whether core learning material, such as casebooks, can be designed and used to support traditional legal education while advantageously integrating current technology.

For the most part, law students learn substantive law by learning to think like a lawyer—using critical analysis, synthesis, and writing skills to apply legal rules to new fact patterns. In class, students and professors discuss assigned cases; professors draw out rules of law based on the case readings printed in a collection of cases on one substantive area. Professors may or may not provide an overview of the law at the end or beginning of class. At home, preparing for class or reviewing past classes, students read their notes and try to understand how class discussions create a framework within which to understand the law.

Most students prepare for class by writing notes about the cases, called case briefs, either in the margin of the casebook itself or on separate note paper. As they read, many students highlight portions of the text in their books for emphasis or to find appropriate passages easily when called on to participate in class. Later, attempting to synthesize each class and find an overall theme to a course, students review all of their notes, read published summaries of the law, and seek additional perspectives from other students. Ultimately they must try to unravel the puzzle of the legal framework and tease out the legal rules of the course. Whether by design or discovery, first-year law students gather what they believe are the core materials to get them through the arduous first year.

16. Thinking like a lawyer is, of course, much more complicated since it relies both upon judgment and on the application of facts and rules. Nonetheless, the ability to analyze varying substantive areas, statutes, and rules, the sensitivity to factual nuance, and the ability to argue persuasively remain at the core of performing well on law school exams and serving clients effectively in practice.
While these materials always include the substantive course casebooks, a student will typically also use a law dictionary, a word processor, and various commercial study aids.

Most first-year students prepare an outline of an entire course, based on the professor’s syllabus, the structure of the course, or the table of contents of their casebook. The outline will contain the class notes and, frequently, ideas from outside sources and study group discussions. An effective outline will then link related concepts from class discussions and readings into a cohesive whole. By pulling together the various threads of classroom discussions, casebook material, and new ideas generated by studying an entire semester of material, each student customizes an understanding of the course.

The individual synthesizing skill acquired to understand legal issues and rules in preparation for examinations is the same intellectual skill needed in practice to interview clients, analyze and synthesize the law, advise clients, and argue persuasively. Students often synthesize legal issues and relationships by drawing arrows and diagrams between concepts showing how they relate to each other, by preparing flashcards that contain flowcharts of how legal rules build upon one another, or by creating an outline of an outline that provides short conceptual descriptions of the relationship between concepts. Students also use commercial products, including flashcards and fully-developed commercial outlines, to jump start their own notes. Each student’s goal is the same: to read, review, and arrange text to match the student’s evolving understanding of the law. Thus, law students have always had to pull together their own framework of the law; today, however, students using a computer finally have a tool with which to explore and examine ideas and concepts more deeply and thoroughly.

Since its founding, the Center for Law and Computers has made teaching and research its core mission. At first, the Center focused on helping students learn to integrate computer tools into their study techniques by learning to synthesize legal materials, make connections between cases and concepts, and understand legal analysis—in short, to use the technology to write case briefs and electronic, dynamic outlines. More recently, the Center has begun to equip students with powerful electronic learning systems that support and enhance their analysis and synthesis tasks in learning the law. Today, many Chicago-Kent faculty members use the underlying technology infrastructure to expand and enhance their teaching by distributing course outlines in electronic form through the network, allowing students to download the electronic files, and encouraging their use in building personalized course outlines. These steps are but a preview

17. See supra note 12 and accompanying text.
of even more powerful teaching techniques that will be used in the years to come.

When the Center was formed in the mid-1980s, the IBM PC provided a desktop machine that could do word processing, outlining, computer-assisted legal research, and computer-assisted instruction. At the time, many tools needed by lawyers to be productive had just become available at the lawyer's fingertips on one desktop machine. As law firms have increasingly networked their machines, practice tools, including electronic research, writing, and presentation tools, as well as electronic communications, are now being delivered from one central server. Such an arrangement offers multiple lawyers a stable, consistent, and flexible work environment. These tools are now available on small, lightweight portable machines. Today, armed with a small notebook computer, a practitioner or a law student wields computing power that was unthinkable only a few years ago.

Law students of the 1990s own computers, often desktop models, with which they have completed work for undergraduate and graduate school. More students now enter law school with small laptops, in lieu of or in addition to, desktop computers. The use of small portable computers in legal education today demands that law schools support electronic materials beyond simple word processing tools. Quality electronic writing aids, organizing aids, and casebooks must be written. Furthermore, to be fully integrated into learning, the electronic material must be available to the students in the classroom, as the students engage in interactive dialogue with their teachers, and at home, where students do their private study and research.

D. The Electronic Casebook

In 1992, Professor Ronald W. Staudt first experimented with building electronic core course material for students to use in class. He designed the Computer Law on Disk Electronic Course Kit, an electronic casebook built using HyperPAD software, for his upper-level Computer Law class. Each student in his fall 1992 Computer Law course used a notebook computer, provided by the law school, equipped with hypertext software and materials that became the electronic book for the course. Before class, students read and commented on the cases loaded on their notebook computers and subsequently brought the electronic books to class.18 Professor Staudt conducted class in the

traditional question/answer format common in law school. Students were expected to be prepared to discuss the cases assigned, to respond to hypotheticals, and to draw conclusions. The only difference was that the traditional print casebook or photocopied materials were replaced with a notebook computer. The students in this early experiment reported that they learned as much substantive material with the electronic casebooks and learning tools as they did in other substantive law school courses. Students found the built-in notetaking feature very useful for class preparation.

During the summer of 1993, the Center started a series of projects to create electronic course materials using Folio VIEWS 3.0 as the platform. VIEWS is a full-text database software program widely used in practice. A team of student interns converted the electronic course kit to Folio VIEWS 3.0 for use in Professor Staudt’s fall 1993 Computer Law class. They also experimented with building electronic materials for Environmental Law and Torts classes. These early experiments convinced several Chicago-Kent faculty members to develop fully electronic course material and supplements, including material in Energy Law, Environmental Law, and Legal Writing.

These new electronic casebooks include full-text boolean searchability, cut-and-paste capability, and hypertext links that allow users to jump to related text with a click of a mouse button. Hypertext software provides a simple means for the professor building an electronic casebook to embed individual links and paths through the material that best represent the professor’s unique view of the substantive material. The professor can add and delete cases quickly and easily, and rearrange them instantly. In essence, each professor can build a casebook that is unique to his or her teaching style and theory of the law. These electronic books are also designed to match print books and include page numbers, tables of contents, indices, highlighting, and notetaking functions.

The electronic casebook, therefore, makes traditional techniques for learning to read and analyze cases, both simple and more efficient. Electronic casebooks provide a single method to combine the classroom with the capstone outlining exercise that students undertake when they outline their courses. By integrating technology tools into the classroom itself, where students are discussing and thinking about the law, Chicago-Kent is using technology as more than a tool. Technology is merging with the legal method itself. Interactive

19. Professor Staudt also made extensive use of electronic mail and the law school’s network tools to extend class discussion beyond the classroom. See Ronald W. Staudt, Does the Grandmother Come With It?: Teaching and Practicing Law in the 21st Century, 44 CASE W. RES. L. REV. 499 (1994).
20. Folio VIEWS is a trademark of Folio Corporation of Provo, Utah.
electronic lessons have been available to most law students for over ten years. Mere access to electronic lessons as supplemental aids, or the ability to tap into a variety of online databases and word processing tools, alone is insufficient lawyering equipment. When primary course material in an electronic format can be delivered to first-year students effectively and in such a way to enhance their learning and practice skills, we will have succeeded in improving legal education through information technology. That quest for effective materials characterizes Chicago-Kent’s first-year electronic curriculum experiment.

E. First-year Electronic Curriculum Experiment

The success of the 1992 and 1993 experiments using electronic casebooks in substantive courses convinced the faculty that Chicago-Kent should expand the project into the first-year curriculum. During the 1994-95 academic year, the law school has adopted a Legal Writing/Notebook Computer project in which thirty students in one legal writing section are using notebook computers. The electronic material on each computer consists of substantive electronic books for use in legal writing and core substantive first-year law classes. The casebooks also include links to word processors, online databases, and supplemental lessons and tutorials. The students were chosen from a group of 100 volunteers. In the fall 1995 semester, the law school will expand the project to include one entire first-year section of 100 students. Additionally, plans include having the entire first-year curriculum available on laptops.

The electronic materials are contained in “The Law Student’s Desktop,” our way of translating a typical law student’s traditional learning tools into a new, technologically sophisticated, analogue. The typical law student’s desktop contains casebooks for all classes, a legal dictionary, study aids, supplementary materials, and even games. The laptop “desktop” should look the same—an electronic environment powered by hypertext that includes all of these basics. For the fall 1994 semester, the Center delivered electronic versions of three casebooks in this hypertext environment: Criminal Law by David Rudstein, Law and Justice by Dale Nance, and Legal Reasoning and Legal Writing by Richard Neumann. In January 1995, the Center will complete the electronic conversion of two additional casebooks: Property and Law by Herbert Singer and Contract

22. The Center for Computer-Assisted Legal Instruction (CALI), a consortium of 140 law schools, was formed in 1982 by the University of Minnesota Law School and Harvard Law School to coordinate the distribution and use of computerized instructional materials and to establish standards for hardware, software, and courseware. CALI develops and distributes faculty-authored electronic lessons that supplement and enhance substantive core courses. See THE CALI CATALOG, 1994-95 COMPUTER-BASED EXERCISES, THE CALI REPORT FROM THE CENTER FOR COMPUTER-ASSISTED LEGAL INSTRUCTION (Fall 1994).
Law and Theory by Robert E. Scott and Douglas L. Leslie. Each laptop also has a hypertext link connected to both the LEXIS and WESTLAW online databases and to each student's word processor. Additionally, each student has hypertext versions of the Citations infobase developed by Professor Peter Martin and published by the Legal Information Institute at Cornell Law School, as well as guides to grammar and correct citation usages, developed by Chicago-Kent faculty and staff.

Hypertext electronic materials and casebooks can change the way students use core legal education material. Hypertext provides more than fast access to traditional legal materials; it permits students to associate related text tangibly by linking one idea to another across an entire casebook. Students can link material within one substantive course or across multiple substantive courses. This allows students to electronically build their own conceptual models of the law across the entire curriculum and to avoid the current misconception that many students and lawyers have of seeing areas of law as isolated from each other. While it is true that there is uniqueness to each area of law, it is also true that common concepts underlie all aspects of domestic law and other comparative systems as well.

Hypertext allows students to develop more easily a complete picture of how legal concepts apply across many areas than do traditional study methods. More importantly, each student's model of the law can easily be updated, changed, and rearranged after each class. Here, each student's understanding of law is evolutionary and capable of adjustment as he or she learns. By adding thoughts and ideas as they develop, inserting them as notes directly into the text to build an ever-richer text throughout the semester, each student's knowledge improves. In the end, students have the core text of the casebook and an outline of the law with their own annotations of important discussions merged into an easily accessible, reusable, and searchable format.

Hypertext platforms give students control over their learning material, and the capacity to build and follow paths through the material not always identified by the professor. With new ways to study, think about, and see relationships among the legal issues and rules, students can take advantage of their malleable

23. For published (print) copies of the materials, see DAVID RUDSTEIN, CRIMINAL LAW (1994); DALE NANCE, LAW AND JUSTICE (1994); RICHARD NEUMANN, LEGAL REASONING AND LEGAL WRITING (1994); HERBERT SINGER, PROPERTY AND LAW (1993); ROBERT E. SCOTT & DOUGLAS L. LESLIE, CONTRACT LAW AND THEORY (1993).

24. In effect, the Law Student's Desktop brings together core legal education products from print and electronic publishers for students in a single integrated package. The Center converted these course materials into Folio VIEWS 3.01 infobases from word processing and ASCII files delivered to the Center from the print publishers. The infobases provide a full-text hypertext database software environment that runs under Windows 3.1.
learning materials. Accordingly, students are better equipped to take more responsibility for their own legal education.\textsuperscript{25} Using electronic casebooks to read and annotate and to capture pre-class and in-class discussions, students shift from passive reading of materials to mastery over them.

\section*{F. Electronic Casebooks}

To justify the use of electronic materials in class, the materials cannot merely duplicate print materials. Electronic materials must be of higher quality or more economically efficient. Otherwise, there would be little reason to abandon traditional print materials. Thus, unless the hypertext and search features of electronic materials create analysis and synthesis tools for law students that are superior to print materials, electronic classrooms are destined to be seen as no more than high-tech gimmicks.

The core of Chicago-Kent's Law Student's Desktop is a full-text database file called an "infobase." This file, called "DESKTOP.NFO," contains nearly 1,500 paragraphs of text. A cluster of related infobases is linked to the "DESKTOP.NFO" with electronic legal writing and substantive course material. When students open the infobases, they can scroll through the material and move among the various infobases or casebooks quickly. In addition, hypertext connect tools are linked to the LEXIS and WESTLAW online databases and to word processing.

\subsection*{1. Hypertext}

To design electronic casebooks, the Center chose a simple hypertext software environment, VIEWS 3.01 by Folio Corporation, which allows developers and users to make electronic connections or jump links across material in the text and across files with the click of the mouse button. The material includes hypertext (point and click) links from the text of cases to statutory codes and other case references. Links have also been embedded to jump to material omitted from the primary materials. Students who are interested in reading the whole case have instant access to the full-text decisions. Statutes cited within a case can be read in their entirety. Written annotations to other material can be inserted as well. Further, cases within the electronic course kit that refer to other primary reading cases link to each other to create

\textsuperscript{25} Using hypertext learning materials prepares students for practice. Fred Bartlit, a successful litigator, claims that he can master infinitely more detail about his cases by sifting through the details of the transcripts and depositions in an electronic format than he could possibly master by reading predigested synopses prepared by junior associates. He agrees that law school graduates will succeed to a greater degree than traditional practitioners if they learn to use the available technology effectively and personally. Bartlit, \textit{supra} note 2.
an interconnected web of caselaw.

2. Search

Beyond the hypertext features that give professors and students the power to make their own connections across text, VIEWS 3.01 provides a powerful search feature. Students can search throughout the full text of the material for any word or groups of words. When a student performs a search, all words or phrases that match the query are "hits" and are highlighted in the infobase. Accordingly, the students gain more efficient control over the text than in traditional printed materials because this search engine can find and retrieve any word or phrase within the casebook.26

A query link in VIEWS performs a query on the infobase to find records that match the query request. Query links have been created in the infobases connected to the Law Student's Desktop to isolate specific records and present a restricted view of the infobase. These restricted views match the tasks that are common for law students, such as isolating student notes, case facts, key quotes, etc. The course kit allows the students to select information that they need to prepare for class, participate in class, and prepare for final examinations. At the beginning of the Law and Justice infobase,27 for example, a series of query links have been created and identified. By double clicking on any of these query links, the view of the infobase of the book will be restricted to the items that match the query link, such as student notes, thus creating an instant and complete course outline tailored to specific types of information.

3. Highlighters

Generally, law students want to highlight text for special emphasis. The electronic casebook uses the built-in highlighter feature to create two highlighters that reflect the students' primary needs: a highlighter to identify key facts, and one to identify key quotes, each with a specific color, font size and characteristic. The students may create other highlighters with individually-set combinations of colors and fonts, personalizing the material to match their specific needs.

26. The power of this feature should not be underestimated. Each of us has had the experience of reading something, remembering a specific detail, but having no clue where to locate the material. With traditional legal materials, one might search a table of contexts or index and hope to remember the location of the phrases. With the hypertext search feature, however, locating phrases takes seconds. When one is searching through many courses at the same time, the advantages are even greater.

27. See supra note 23 and accompanying text.
4. Student Notes

Personal notes can be added anywhere in the infobase through a special notes feature. With a click of the mouse button, a query link draws up the entire structure of the course as an outline with the students' personal notes inserted at the proper course chapter and section. Students can print their outlines to study for exams or export them to a word processor for further formatting, a feature that is available automatically because of the integration of the reading and notetaking material in electronic hypertext medium. The students have reported that this is the most important feature of the material.

5. Shadow Files

A recurring problem that will grow as students increasingly use technology is the risk that their electronic files may be damaged, deleted, corrupted, or otherwise lost. The electronic course kit approaches this problem in two ways. Each student receives a shadow file of each of the primary electronic course kits. Students can add their own notes, highlights, and jump links without touching the original. In addition, the students are encouraged to copy their shadow files onto floppy disks once a week. In this way, the students can preserve the original electronic material and preserve a second copy of their own value-added material.

6. Format

Students can change the way electronic material looks on-screen. The text in the course kit infobase has been identified as "Normal Text" level, with the attributes for the characters in this level as Times New Roman 12 point. However, students can change the text to a larger format or font styles for easier reading.

7. Electronic Lessons

Some electronic casebooks also incorporate computer-aided lessons developed by faculty for learning substantive concepts; these lessons have been developed in a hypertext authoring software called ToolBook. The lessons, often linked directly from the electronic casebook, are included in the core course materials on each student's notebook computer.

28. A VIEWS shadow file is an overlay file of the original infobase.
29. ToolBook is a trademark of Asymetrix Corporation of Bellevue, Washington.
30. For example, Professor Richard Warner of Chicago-Kent College of Law regularly requires students to complete interactive computer lessons on the Black-letter Contracts law that he has written.
8. Research

Every good lawyer creates a personal system for maintaining, indexing, and filing research. Some practitioners and scholars use index cards with the name of the source and pertinent information about the legal issues and rules. Sometimes lawyers collect photocopies of primary research material that often contain margin notes, highlighting, and "sticky notes" to identify important quotes and issues. The electronic casebook software provides a fully electronic research database with special filters to import text from various formats into an infobase, including a filter for text retrieved from the LEXIS online database. The students can use the full range of features available in infobases they create independently; highlighters, jump links, and popup notes can be used to identify and retrieve text. They can also search the entire file, which may consist of many cases and law review articles, for any word or word combination. Since the program operates in Windows, text can be selected, copied, and then pasted directly into a Windows word processor. The students can maintain their research in this environment as a convenient and efficient way to gather, search, reference, and use material for legal writing assignments.

9. Communication and Access

Besides creating a useful information system for class and home, the Law Student Desktop also connects students to the law school's local area network. Each notebook computer includes a network interface, frequently a small credit card interface called a PCMCIA card. With the proper software, students in the project plug into the school network from any one of 1300 active network nodes scattered throughout the library and common areas of the law school. The students thus gain instant access to electronic mail (e-mail), online database research services such as LEXIS/NEXIS and WESTLAW, and all other network applications, including the Internet, word processing, and network printing. In essence, the students create dynamic computer labs whenever and wherever they connect within the building. Today, equipped with dial-from-home software, students gain twenty-four hour e-mail access; with slight changes in network configuration and phone service, tomorrow they may have full network access from home.

31. At Chicago-Kent College of Law, students are required to bring their notebook computers to the legal writing class. Although the professor has a notebook computer with the core materials, she teaches in the traditional way, with student discussion, paper handouts, and blackboard examples of problems. The students take notes in the electronic course kit, on the paper handouts, and in paper notebooks.

G. Chicago-Kent’s Emerging Plan

Chicago-Kent’s electronic publishing prototypes have demonstrated that quality educational electronic course material can stimulate students and faculty to use technology in creative ways to improve current studying methods. Accordingly, Chicago-Kent has committed itself to a long-term project to provide a full set of electronic course materials for all first-year courses. The initial stage of this plan is on-going during the current academic year:

**Fall 1994:** Volunteers from one Legal Writing section of the incoming class bring their personal notebook computers to legal writing class. Using an electronic legal writing course kit, developed at Chicago-Kent and distributed to this section, students are learning to use hypertext as a writing tool. Materials for three of the other four first-year substantive courses have also been provided in electronic format. Thirty-two students participate in this experimental legal writing project.

**Fall 1995:** During the 1995-96 academic year, the program will expand greatly. Every student in one full section (100 students) of the entering day class will have a notebook computer. Based on the reactions and testing of the material developed during the 1994-95 academic year, materials will have been revised accordingly. All substantive course material for the first-year curriculum—Torts, Contracts, Property, Criminal Law, Civil Procedure and Legal Writing and Research—will be delivered in electronic form.

Additionally, the thirty-two student participants from the first-year experiment will, as with second-year students, have a notebook computer. The law school will prepare and distribute appropriate upper-level course materials in electronic form, including Computer Law and Japanese Law. Students from the 1994-95 first-year project will serve as mentors to new participants in the 1995-96 academic year.

Following the 1995-96 academic year, the law school hopes to offer materials and support to any student interested in using electronic casebooks. Additionally, the law school hopes to have materials for most high-enrollment, upper-level classes.

II. PRELIMINARY OBSERVATIONS

Based on teacher evaluations of the electronic classes, student reports, and e-mail messages, some students use the core electronic materials in class to take
notes and at home to do “book briefing” directly in the margin of the electronic casebook. Additionally, students use the electronic materials at the end of the semester to prepare automatic outlines for exam preparation. Some students report that they capture class notes directly into the electronic casebook during class. Other students report that they take class notes on paper and later key their notes into the electronic casebook to use the automatic outliner built into the material. Many students also create multiple highlighters to match their own theories and rules of the law.

At the outset of the school year, several students reported that they did not like to read material from a computer screen, particularly from a notebook computer screen. Further into the semester, though, several of these students reported that they had learned to read from the screen. These students believed that it was easier to read small sections of dense material on a computer screen than on a book page.

Students who created their own infobase files to gather, organize, and retrieve electronic research material reported that the personal annotation tools, such as the highlighters and “sticky notes,” were invaluable in helping them organize their research. They reported that the search function, in particular, helped them find just the right quotations among the cases and articles they had accumulated.

Despite initial misgivings, the students who did use the notebook computers in class to take class notes felt that they maintained the same interaction with the professor and their colleagues as did those students who took notes on paper. In short, the students did not feel that the computer distracted them from participating fully in class. The professors also reported that these students interacted and participated in class much the same as their counterparts using traditional materials. Some students, whether “cyber connected” or traditional book users, seem to take notes to the exclusion of being engaged.

Even before the 1994-95 experimental project, significant numbers of Chicago-Kent students already brought laptop computers to law classes. Their use of laptops, added to that of students in the project, has underscored several open questions about computer use and distraction. Students reported that the noise of the key clicking eventually faded into the background. Professors also reported that, ultimately, they were not distracted by the keyboard noise; one professor did report being distracted and annoyed whenever a computer made a warning sound indicating a low battery. The law school does have a continuing infrastructure problem. Although it has seven classrooms in which every seat has a power and network connection, it is difficult to schedule every class in one of the “hot” classrooms. Nonetheless, students have found creative ways to string power strips together in classrooms that are not yet wired.
III. ELECTRONIC COMMUNICATIONS

Lawyers now increasingly use electronic tools to increase efficiency and productivity. This trend is matched by an increased use of electronic communications by lawyers who conduct business electronically, research, draft, and share documents over long distances, contact clients, and even market their expertise.

In 1989, Chicago-Kent installed a school-wide local area network to manage and control software applications. At that time, an e-mail program was installed to allow each communicator to send and receive private messages from every other network user—all students, professors, deans, and other administrators. E-mail has changed the institutional culture of the school into a culture of instant accessibility and communications: everyone contacts everyone else in the law school community in an electronic format. Like their counterparts in practice, students now rely on e-mail not only to chat and gossip; more and more students are using e-mail to collaborate and exchange substantive discussions with each other and with their professors.33

In August, 1992, the law school installed its own node on the Internet, accessible through the local e-mail interface. With the integration of Internet into local e-mail, faculty and students now reach libraries and other networks around the world. Furthermore, professors now send electronic drafts of articles to colleagues across the country and the world for review, critique, and collaboration. The Internet provides the faculty with a means to organize conferences, initiate scholarly discussion of substantive topics, and foster collegial communications and substantive interaction with law school faculties world-wide. The students at Chicago-Kent also have access to the Internet to explore a vast collection of information, especially empirical data, relevant to law. They too can form world-wide collegial association.

Internet connectivity allows users to join electronic associations or discussion groups, where members’ comments, suggestions, and discussions are automatically circulated to every individual on the list. Internet communications provide a place where nonlawyers and lawyers, using only their desktop computers, may find each other for advice and consultation.34 The result of


34. A new company, “Counsel Connect,” believes it is starting a revolution of new opportunities for providing value work to be shared among lawyers. The new form of interaction will be by electronic mail. Steven Brill, The New Value, The New Leverage, The Next Revolution,
this interaction creates an electronic global village among individuals across many professions. Students will graduate into this community where it will be as easy to send text and graphic communications across the world as it is to telephone a colleague within the same city.

In September, 1992, the Center first provided dial-in remote access for the faculty and students to the Chicago-Kent network. Since then, the dial-in services have become widely accepted and faculty and students frequently use the service to send and receive electronic mail with attachments. Faculty members even have the capacity to download and upload files to the network. The internal connectivity of e-mail, the ease of access from home to the law school network via the dial-in software, and the e-mail interface with the Internet all combine to create a seamless web of communications paths that students can explore and follow for research as well as communications.

The law school’s commitment to producing and delivering classroom electronic material is now being augmented by using communications tools to bring education to the law school from around the world and share information from Chicago-Kent with others. In the fall of 1994, the law school began an experiment with LEXIS/COUNSEL CONNECT\(^3\) (LCC) to launch an electronic “collaboratory”—bridging the gap between law practice and law schools. In the experiment, Chicago-Kent adjunct faculty members post topics relating to their courses on LCC, in areas such as Corporate Health Care, Construction Law, Commodities Regulation, Business Insolvency, and Taxation.\(^3\) LCC practicing lawyers then respond with examples, teaching

N.J. L.J., Mar. 8, 1993, at 1. According to Brill, e-mail is more than a way to deliver messages and attach documents. With e-mail, lawyers become publishers, “owners” of an electronic newsletter that can be delivered instantly to every lawyer within reach. Corporate general counsel will be able to search the electronic database via Internet and find firms that have submitted commentaries the corporations find useful. Electronic mail can create a whole new marketplace for legal services and products. As Brill says:

> [The] notion of shared expertise and the firepower to be responsive was . . . the original premise of a law firm, a place where lawyers could walk down the hall for the right consultation or pool resources to build a library with the right written work. Beginning with Counsel Connect, the hall is electronic.

Id.

35. LEXIS/COUNSEL CONNECT, formerly COUNSEL CONNECT, organized in 1993, is a private communications and information system for law firms and corporate legal departments. Corporate counsel can shop the system for legal expertise. LCC law firm members can send broadcast e-mail messages to corporate counsel members and can load their firm’s memos into the library. All members can receive and send e-mail, join on-line discussion groups, read and download documents and briefs, review continuing legal education material, and search the databases of American Lawyer Media publications and Court TV.

36. In addition to the LCC experiment, the law school is also experimenting with on-line continuing legal education programming.
suggestions, and caveats, stimulating further discussions among all participants. The faculty members then take these discussions to the classroom where they are further debated. Finally, the classroom discussions are brought back to the bar through LCC. The collaboration itself becomes an educational tool.37

Just as the law school's internal e-mail system has promoted collaboration and cooperation among the faculty and students, the law school believes that this spirit of collaboration will become a significant part of education. One of the most important reasons that lawyers associate together in a partnership is to learn from each other. Bringing such shared knowledge to the academy can only improve education.

V. THE CONSEQUENCES

Moving from hardcopy to electronic delivery of core course material to law students will have a profound impact on law schools. It challenges existing infrastructures of schools. Even if schools merely adapt to the growing number of students who bring small portable computers to the classroom, law schools will face significant support demands from students, faculty, and staff. Power must be drawn to where work is conducted. Network connectors must be expanded. Law school bookstores will be forced to carry a broad array of computer supplies, such as floppy diskettes and computer paper, in addition to traditional materials such as yellow pads and pens. Law schools may have to create entire computing services departments to maintain computer labs, LEXIS/NEXIS and WESTLAW computers, and printing services. The practical issues of maintenance, support, training, and staffing will become as thorny as the initial financial issues of buying hardware, software, and supplies.

These challenges to traditional law school support have been faced for many years at Chicago-Kent. Today, the law school itself is built to support technology. It has a Center devoted to integrating information technology and education. But as this technology becomes more integral, further challenges must be overcome. Thus, the Center now provides extensive training and support for the first-year students in the pilot project, including early classes before the academic year begins, weekly class meetings where students can ask questions and share experiences and strategies, and preparation of materials to help students learn to use VIEWS efficiently. All workshops and meetings are carefully documented to provide complete reports of the progress of the project. The computing services staff installs the interrelated infobases onto each

37. The goal is to extend the relevance of these topics into the classroom by adding the insights and impressions of practicing lawyers. At the same time, the liveliness of the classroom discussion can stimulate and expand the thinking of LCC members on their own understanding of the issues.
student's notebook computer individually, at the beginning of the semester, by connecting each computer to the law school network where the infobases are stored.

As important as equipment is to making new technology available, even more important is adequate staff support. The laptop experiment has utilized Chicago-Kent's staff support to the limit. Throughout the first two months of school, each student met with a Center staff member to have his or her individual network connector configured for use with the law school network. The promise of easy accessibility and connectivity with the PCMCIA cards is belied by the individual configurations needed to make each card and notebook computer connect to the internal network. Sometimes four or five hours are necessary to properly configure a PCMCIA card to connect to the network. In addition, many students meet privately with Center staff to get help with printing material, making backup copies of their infobases, and installing modems.

Throughout the year, the Center staff also conducted periodic faculty information sessions in which the faculty previewed new applications available to them for research, writing, and teaching. The Center has used these sessions to demonstrate and explain the experimental project for the first-year students, and to introduce the faculty to special services, such as the Internet, as a source of legal research.

In addition to the extra support that has been furnished to support students in the experimental program, the law school also expects that the demands of all the other students, who are becoming more computer dependent, will increase demands for additional support. For example, since 1988, the Center, in cooperation with the faculty, has made the computer facilities available to students for essay final examinations. The students are required to use one of the law school's eighty desk top computers. A Center staff person is present in the school during all exams in case of any technical difficulties. When exams are finished, the Registrar prints every test on a laser printer. During the fall of 1993, over 600 students registered to take exams on computers; during the fall of 1994, 875 students registered to take exams on computers. Many students lobbied strongly to take an exam on their own computer, claiming they could only compose at the computer and that they would be unfairly disadvantaged by being required to handwrite an exam. In the end, with last minute coordination among the Center, the Registrar, and the Associate Dean, all students were accommodated. The law school learned, however, that an increasing number of students now think of the computer as a natural part of
their performance in law school, whether in class, at home, or during an exam. Accommodating all of them in the future may not be possible.

IV. CONCLUSION

The use of computers by the nation’s leading law firms is nearly universal. The next ten years will see an explosion of electronic resources for law students and faculty. Legal education must meet the challenge of preparing students for this environment. It is critical that law schools continue to integrate sound educational practices and legal teaching expertise with modern electronic classroom material and global electronic communications tools. With such tools, students will possess more power and individual responsibility for their legal education.

Providing solid technical tools for law students furthers the goals of providing them the skills they need for legal practice. In 1992, the Report of the MacCrate Task Force on Law Schools and the Profession: Narrowing the Gap urged the legal education community to find ways to enhance students’ practice skills so that law school graduates are better able to function in practice. Legal writing and research courses, access to online print and other resources, and new text management systems offer a natural vehicle for merging theory and skills in law school. Lawyers will need to use technology to be more efficient, organized, and productive. Legal education should make this possible—a task we take as central to our mission to produce electronic law students.

38. In addition to the challenge in scheduling exams to accommodate the student requests, the law school must face the difficult problem of open-book exams on computers. In a closed book exam, a student can be given a blank disk for a machine that does not have any of the student’s notes. But, where an open-book examination is given, students who have taken their notes on computer would be at a disadvantage if they were not allowed to use their own machines or disks. The problem arose this year for the experimental project. There were lengthy, sometimes heated, discussions among the professor, the students, the faculty, and the staff of the Center, on whether these students should be allowed to bring their notebook computers to their one open-book exam. In the end, the professor agreed that since the students had used their computers throughout the semester to input notes and to annotate the text, they would be allowed to have their notebook computers with them during the exam. The result: some students took an exam on a student desktop workstation with a laptop computer at their side for their use in finding and reading case and note material. In the future, however, in classes of students where only some have had access to laptops, fairness issues are sure to arise.
