1. Introduction

In the United States, the core of the law school curriculum in American law schools teaches substantive law in particular subject areas and, simultaneously, attempts to help students to acquire intellectual skills that are relevant for their coming professional lives. The predominant law classroom instruction method in the United States is a question and answer exchange between professor and students examining court opinions and analyzing the relationships of these cases to one another and to the legal system in general. Typically, professors rely on printed casebooks: collections of court opinions edited and sequenced by professors interspersed with comments, questions and cross-references.

Students' study patterns vary from one to another and change as students progress through the three years of law school. There are some dominant patterns that we have observed in the techniques that students use to prepare for classes and for their final examinations. In the first year, most students write reading notes in advance of class, often in the form of case briefs. Class often focuses on close case analysis. As they read, many students color or highlight the texts in their books for emphasis or easy location if called upon to recite in class. In later years, separate written notes before class often give way to short marginalia in the casebook marking the decision points, questions, inconsistencies, or linking passages to prior readings. Most students prepare for the examinations given at the end of each course by reviewing their notes, reading parts of the text and published summaries of the law, and seeking additional perspectives from other students. Frequently, students will distill these various sources into their own written course outlines.

Since 1983, we have experimented at Chicago-Kent College of Law with the use of computers in law school. While we have supported the activities of the Center for Computer Assisted Legal Instruction (CALI) and others to use computers as instructional aids, our primary interest has been
the potential of personal computers to help students synthesize legal materials, see connections between cases and concepts, and understand legal analysis. We sought productivity and synthesis tools to equip students with powerful electronic learning systems to study for class and examinations. For example, in 1984 we taught students to use outlining software to organize their reading notes and to see the connections among various legal concepts. By describing cases and categorizing them in richly labeled outlines as they studied for class, we suggested that students could create a concentrated synthesis of the substantive law based on their own reading notes and class notes. New cases and notes should force students to revise their categories and reorder the relationships among prior cases. We argued that this outlining process mirrors the common law legal system that students were studying.

In the 1980's, we used Framework, a strong outlining tool that provided dynamic expansion, collapse and reordering of titles with associated text paragraphs. Framework contained an integrated word processor. The students could use this tool to write case briefs for class preparation and build, detailed, comprehensive outlines for exam preparation by incorporating the briefs and the class notes within the same software environment. As law firms and professors adopted WordPerfect as their standard word processor, students resisted the Framework approach. Outlining tools like Framework and Grandview were separated from the dominant word processor that was the students' thought capture tool. Most students handled outlining or post-course synthesis as a word processing job using the conceptually weaker outlining tools in WordPerfect.

By 1990, the development of microcomputer hypertext tools offered new ways to represent and link information. Because hypertext is so open-ended and flexible, it may be a better computer model of legal concepts than hierarchical outlines. Hypertext offered new tools to build electronic casebooks with linking features that were significantly more versatile than print casebooks.

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1 For a more extensive description of Professor Staudt's early experiments and attempts to integrate the use of software with computer-assisted instruction, see Ronald W. Staudt, Computers at the Core of Legal Education: Experiments at IIT Chicago-Kent College of Law, 35 J.L. Educ. 514 (1985); and David J. Maume, Jr., and Ronald W. Staudt, Computer Use and Success in the First Year of Law School, 37 J. L. Educ. 388 (1987).


Beginning in 1992, we experimented with building electronic course kits to substitute for printed casebooks. We intended students to use the hypertext course kit to read cases, prepare pre-class notes, participate in class, and synthesize the course, thus supporting the full range of law student tasks in one set of computer tools. Professor Staudt and his research assistant, David Kiefer, designed an electronic casebook for use by students in the Computer Law class in the Fall, 1992, using a DOS-based hypertext environment called «HyperPAD». The description of that course kit and its use by students has been reported earlier4. In 1993, we transported the Computer Law electronic book to Folio VIEWS 3.05.

The remainder of this paper describes the setting within which we built and tested our VIEWS 3.0 electronic course kit, Computer Law on Disk 2.0. We also identify five key objectives we seek to achieve and comment on the suitability of VIEWS 3.0 as a platform for electronic course kits that meet these objectives.

1.1. Computer Law Course

In the Fall, 1992 and 1993, Professor Staudt distributed the entire book for his Computer Law course to every student on the hard disks of notebook computers that the law school loaned to the students for the semester. The computers were the size of a ream of paper and weighed about five pounds6. They had serial ports and modems for telephone connection to the law school network from home, as well as pocket network connectors to attach to the law school local area network7. Classes were held in a classroom in which each student has access to power and network connectors.

5 Folio Views 3.0 is a product of Folio Corporation in Provo, Utah.
6 The notebook computers were Compaq Conturas, using 25 MHz Intel 80386 with 4 MB of RAM, 1.44M floppy disk drive, and 62M hard drive.
7 In January, 1992, Chicago-Kent College of Law moved into a new building in Chicago’s west loop. The design of the new Chicago-Kent incorporates the latest in today’s technology and provides the opportunity to integrate future advances including: 250 computers for use by teachers, students and administrators; 1,300 network data ports throughout the library and scattered throughout the common area of the school so teachers and students can use their own laptops and notebooks everywhere; five classrooms with data nodes and power at each student seat; four dedicated computer labs with more than 80 computers, each lab connected to the computer network that provides access to 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.
The Chicago-Kent course in Computer Law, developed by Professor Staudt, studies the changes in five core substantive law domains triggered by the dramatic increase in the use of computers and information technology. The course explores computer related problems in torts (liabilities for injury caused by user failure to use computers), criminal law, civil procedure (the use of computers by trial lawyers), evidence and privacy. By its nature, the material in this course is rapidly changing. Frequently, relevant new cases will be decided during the semester. The cases in different fields are related to one another because of the computer focus and because law is naturally interrelated. For example, cases in criminal law discuss privacy issues, or injury caused by computers.

We prepared Computer Law on Disk 2.0 during the summer of 1993 and distributed it to all students at the beginning of the fall semester on our small computers. Each of the five sections of the «course kit» (Torts, Criminal Law, Civil Procedure, Evidence, and Privacy) contained court opinions and short readings, that, in all, constituted approximately 7,000 paragraphs of text and headings. When indexed within views 3.0, the readings used approximately two megabytes of disk storage.

The views 3.0 platform offers full text Boolean queries to search and browse the readings as well as any added notes or imported text. In addition, a variety of hypertext link tools are available. Small text segments can be stored in popup fields associated with words or symbols in the readings. Any word or phrase can be linked to any other using jump links. Links can also contain pre-formed queries (query links) or instructions to run other software for multimedia objects like audio or video.

Each record in a views 3.0 infobase can be assigned a «level» with its own color and font and size. Levels are hierarchically nested so that chapters and section headings form expanding and contracting tables of contents if each heading is given the right level designation. This automatic table of contents, or a reference window with a small portion of the table of contents, can be displayed by clicking standard views 3.0 buttons. The software also contains a rich array of navigational tools: «bookmarks», «backtrack», «show trail», «next», and «previous», all of which function as their names would indicate.

1.2. Objectives of the electronic casebook

As we designed our electronic materials, we hoped to improve the traditional classroom education by empowering students and professors to
use new electronic tools. To that end, we sought the following benefits from the electronic system:

- Flexible contents: tools for faculty to create the exact readings in the precise order desired on a very short schedule;
- Easy notetaking: seamless notetaking before, during and after class within the course materials;
- Highlighting: the ability to mark text for emphasis using color or shading;
- Synthesis: automatic or semi-automatic tools for linking and summarizing the course;
- Collaboration: communication and groupware tools.

2. FLEXIBLE CONTENTS: TOOLS FOR FACULTY TO CREATE THE EXACT READINGS IN THE PRECISE ORDER DESIRED ON A VERY SHORT SCHEDULE

The intellectual contribution of authors of American casebooks is the selection, sequence, and editing of cases that form the primary source of reading and class discussion. Electronic course kits should offer a professor an easy, flexible way to add new cases, remove cases, and rearrange cases and notes. By their nature, most electronic tools make this moving, adding and removing easy. Professors and students can modify Computer Law on Disk 2.0 through insertions, deletions or hypertext links to external sources. A new feature, shadow files, permit students to modify and annotate the material while maintaining the integrity of the author's original.

Our electronic course kit allows authors to hide parts of the cases and readings not essential to the focus of the course. This hidden text can be toggled into view at the discretion of the reader. Alternatively, we handled most elisions by moving text to a remote part of the file, and made it available to the curious student with a click of the mouse button.

Throughout the Computer Law material, we inserted jump links to the full text of statutes and other material that were mentioned in the primary text. With the touch of a button, students could jump to the case or law cited in an opinion. For example, when one case would cite another case or the Federal Rules of Civil Procedure, we embedded a jump link from that reference to the actual cited case or rule. In this version, jump links were inserted for the major cited cases and statutes but many references were omitted to conserve space and time. In our next version, we plan to jump to the full-text databases of LEXIS as a backup hypertext stack of
cases, statutes and secondary sources so that the interested student can follow every reference in the materials.

The flexibility of a hypertext environment can be two-sided. While subsequent users (professors or students) can make structural and content changes, the original author may not want the casebook to be changed or adapted from its original design. VIEWS’ Shadow File feature creates an overlay file of the original infobase and allows each user to store personal notes, highlighters, bookmarks, links and structural changes in a file that is separate from the original infobase. By creating a shadow file of the underlying infobase, the original infobase remains untouched; changes by other professors or students are made in the overlay file that appear to the user to be seamlessly combined with the original. VIEWS shadow files allow the original author to insure the integrity of the path and presentation of materials no matter what other users do.

To access the Computer Law on Disk 2.0 course kit, students clicked on an icon that opened a shadow file. A copy of the underlying original infobase was installed on each hard drive. Students could be comfortable that they could risk anything in the shadow file knowing that the original assigned material would not be corrupted by experimentation. Also, it was easy to backup the shadow file because the size of the notes and student alterations was much smaller than the infobase and could easily fit on diskettes.

3. EASY NOTETAKING: SEAMLESS NOTETAKING BEFORE, DURING AND AFTER CLASS WITHIN THE COURSE MATERIALS

When the students used the course kit to read their assignments, we suggested that they type their own notes within the assigned text itself. We thought that these notes would be similar to notes entered in book margins. We made the student notes appear distinctive by creating a separate level for student notes differentiated by font, indentation and a box border.

We found the VIEWS Popup notes and links features, which create a separate, smaller window on screen for text or graphics, unsuitable for student notetaking. Material outside of the box popup window cannot be scrolled while the window is open and few of the VIEWS’ features can be applied within popup windows. Popup notes are printed as endnotes and printing is tied to the specific records that are chosen. Popup notes cannot be linked to a query link to create a student outline. These popup windows
were reserved for footnotes, headnotes, case histories, and other relevant but secondary material furnished by the authors.

4. HIGHLIGHTING: THE ABILITY TO MARK TEXT FOR EMPHASIS USING COLOR OR SHADING

Our course kit uses the Highlighter feature of VIEWS 3.0 so that students could mark any text in the infobase as they would mark text in a printed book. Highlighters may be any color, font or size and are independently searchable. We defined two highlighter styles in Computer Law on Disk 2.0: «facts» highlighter and «key quotes» highlighter. By predefining the highlighter styles we were able to prepare query links in advance that would retrieve only those records with highlighted text and the table of contents. Students could define other highlighters and set the colors and styles of each to suit their own study habits and could define each highlighter to classify material according to their own study methods.

5. SYNTHESIS: AUTOMATIC OR SEMI-AUTOMATIC TOOLS FOR LINKING AND SUMMARIZING THE COURSE

Earlier we described our use of jump links to navigate to internal text references and text elisions. This could be the key design feature of a hypertext casebook. When law material contains hot links to various references, it forms a kind of seamless web which can be a powerful learning and research environment. A VIEWS 3.0 «seamless web» is even more powerful because of its full text search and browse tools.

A VIEWS query link performs a search on the infobase to find records that match the query request, and isolates those records to present a restricted view of the infobase. In designing the electronic course kit we used query links to select information that a law student would probably need to prepare for class, participate in class, and prepare for the final examination.

We used query links to prepare restricted views of the infobase limited to the course structure and all student notes and highlighted text. The results of these queries resembled a course outline that assisted students in reviewing the material that they added to the infobase. Students could add notes anywhere in the infobase, and by applying the «Notes» level to the added text, the text will be printed automatically in their outline or study guide.
6. Collaboration: Communication and Groupware Tools

In the Computer Law class, Professor Staudt assigned students, in pairs, to prepare projects that focused on an important issue or problem in the area of Computer Law. The student projects delved into facts and circumstances of the cases, and focused on the real world ramifications of recent decisions in the area. After the student projects were prepared and submitted for review, we gathered them into a VIEWS 3.0 infobase, added the appropriate levels and distributed the infobase to the entire class. At the beginning of the course, we had placed links in the Computer Law on Disk infobase that pointed to each project. As a result, the material prepared by the professor linked to the material prepared by the class and vice versa.

6.1. Effectiveness

The Fall, 1993, classes in Computer Law were lively and students were well-prepared and able to discuss the cases from the computer screens. Overall, the students used the computer as their reading source of course material to the exclusion of paper. Based on classroom observations, there were few bootleg paper versions of the materials and no student brought complete printed versions of the casebook materials to class. Notetaking in class was also done primarily on the computers.

Based on surveys, the students reported that they learned as much, substantively, in this course with the «electronic casebook» and learning tool, as they did in other substantive law school courses. Students found the built-in notetaking feature very useful to prepare for class. During class, the course kit was an effective environment for notetaking and a useful tool to make quick reference to prior notes, students reported. The students found the highlighter feature useful to prepare for class and emphasize text in class. Overall, the students rated the built-in table of

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8 Our use of electronic mail and network tools to extend class and foster communications and cooperation in the Computer Law class have been reported elsewhere. See Ronald W. Staudt, Does the Grandmother Come With It? Teaching and Practicing Law in the 21st Century, 44 Case Western Res. Univ. L. Rev. 479 (1993).

The final examination forced students to find places in the casebook that should be conceptually linked. Each student, working alone, identified contents, the highlighters and the predefined notes level to be the most useful features in Computer Law on Disk 2.0.

The students stated that they were at ease in using this tool and in preparing for class and for the examination. After an initial learning curve in using the software, the students said that they liked using the computer as a tool for a substantive course and stated that they would recommend this course or a similar electronically-based course to other students.

7. Conclusion

We view this experiment to be a great success. Student evaluations of the course were excellent. The students were comfortable and effective with a computer in place of a traditional book. The course kit allowed students to collaborate in a group effort to build materials for the entire class. The synthesis and cross-fertilization sought were achieved with projects that gathered texts and interviews and research from a variety of fields.
ten links and wrote short essays justifying the connections. Students reported on their surveys that this final performance forced them to reread all the materials in the entire course. Students used the links, queries and outline tools to see relationships and explain those connections. This final performance helped to establish the effectiveness of hypertext electronic course kits, and Computer Law on Disk 2.0 in particular, by providing a learning environment for substantive law that also helps students to acquire intellectual skills that are relevant for their coming professional lives.