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Robert J. Munro

Dennis Noah

PLATO, EDUCOM, AND LEGAL EDUCATION

By Robert J. Munro and Dennis Noah***

INTRODUCTION

This article will provide law faculty, law students and legal librarians a description of the PLATO and EDUCOM systems, with particular emphasis on their potential use in legal education. The PLATO system has been used intensively at the College of Law of the University of Florida and other schools, and the results of those experiences are important enough to be shared with others. The following material begins with a review of the teaching techniques used in PLATO and EDUCOM, such as simulation and gaming, and then analyzes the role of PLATO and EDUCOM in the law school curriculum. The study concludes with a survey of actual law school use of computer-aided instruction systems across the nation, and a critical summary of those systems.

I. COMPUTER-AIDED INSTRUCTION, SIMULATION AND GAMING

Computer-aided (or "assisted") instruction, commonly know as "CAI," permits the law student and computer to interact through highly individualized instruction, and makes it possible for a law student to proceed through the lesson plan at his or her own pace. The two main methods utilized by the PLATO and EDUCOM systems for providing CAI are "simulation" and "gaming."

Simulation is a methodology for testing alternative decisions

* Masters degrees, University of Iowa (1973), Louisiana State University (1974). J.D. 1973, University of Iowa. Mr. Munro is currently the Associate Law Librarian and an Assistant Professor of Law at the University of Florida College of Law, Gainesville, Florida.

** B.A. 1972, University of Central Florida. Mr. Noah is currently a Research Associate and candidate for Juris Doctor degree at the University of Florida College of Law, Gainesville, Florida.

under hypothetical conditions.[1] As a means of legal instruction, simulation emphasizes replication of a system by incorporating a model of that system into the simulation. An effective model is realistic and mimics the real world; a model that fails to relate to real situations is inadequate for legal instructional purposes. Basically, the goal of instructional simulation is to achieve specific objectives in the realm of communications, problem-solving, scientific inquiry, information management and, most importantly, decision-making. Simulation allows the law student to formulate a decision based upon his or her own assessment of the information supplied.

In general terms, simulation can be characterized by four factors. It begins with an analogous situation—a model of reality; it permits low-risk input; it feeds back the consequences in symbolic form; and it is replicable.[2]

A contemporary military example illustrates these four concepts. The proposed task is to analyze and correct the fuel system of a jeep. The learner is given a choice between two procedures and chooses a process that the simulation reveals will cost $270.00. The learner is reminded that the fuel line in jeep vehicles can, indeed, become clogged. The input is low-risk because the consequences are fed back symbolically. A wrong decision may not result in clearing the blocked fuel line, but the learner has to spend neither eight hours nor $270.00 to determine this. Instead, his loss is only symbolic and, if the procedure is exactly repeated, the result will always be the same.

The dual term "simulation gaming", which is commonly used, is perhaps somewhat confusing. Games vary widely in their concepts and processes. Some can be classified as simulation and some not. Games generally are played for entertainment, and the normal result of repeating the game is increased proficiency. In those instances in which the game principles can be transferred to real life situations, simulation gaming occurs. Thus, the simulation game can be valid for legal educational purposes only if it is transferable to realistic situations. Games of chance are illogical forms of simulation because the player rarely encounters a transferable learning principle applicable to an authentic situation. The inherent problem with defining simulation games is that definitions tend to become cloudy when applied to specific games.

Once the integral components of a simulation game have been established, it is necessary to determine whether the game provides

1. Nickens, *Budget Simulation: Computerized Program Cost Analysis and Program Budget Preparation*, 2 J. EDUC. FIN. 430, 430-43 (1977).

2. *Id.*

a teaching method equal to or better than traditional instruction. Simulation gaming, as an instructional tool, has enjoyed rapid growth over the last decade. Whether simulation games are superior to traditional instruction for legal training and educational purposes has not yet been empirically established. Research conducted on simulation gaming in education has not, for the most part, attained positive results, particularly in the area of the effects of gaming on the cognitive aspects of learning. Research has indicated that simulation games rarely have a significant effect on the acquisition of knowledge, and usually have no effect at all on intellectual skills.[3] These results, however, should not create a presumption that simulation games are worthless as instructional devices. The deficiencies of simulation gaming may well lie with the instructor's monolithic approach to research methods.

One difficulty encountered by legal education researchers in evaluating the effects of simulation is dealing with the independent variables that affect outcomes. Often, systematic and consistent research standards are lacking. Researchers tend to evaluate all results by the same criteria, and often do not consider the effects of variable factors such as differing entry levels, pre-instructions, and the environment of the students.

Simulation has the potential of providing a better transfer of skills from the training situation to the real situation than the lecture method. Simulation can also supply a responsive environment, which gives law students a sense of immediacy and involvement. Though this cannot be empirically proven, it is an obvious reaction, which is displayed by the student when a simulation is discussed with him or her.

Other advantages of simulation over direct experience are those of time and cost. The time factor is probably the most beneficial. Simulation provides experience and feedback in a relatively short period of time for long-term processes. A five year project in the real world can be completed in thirty minutes on the computer. Conversely, an instantaneous biochemical reaction can be expanded over, say, a thirty minute period for closer scrutiny.

The cost benefit aspects of gaming simulation are clear when a specific example is considered. A United States military base has saved approximately $21 million over the last five years by implementing a flight simulator to train pilots. The trainees receive between four and six hours of training on actual aircraft and spend a

3. Alpert & Bitzer, *Advances in Computer-Based Education*, 167 SCIENCE 1582, 1582-90 (1970); Bitzer & Skaperdas, *The Design of an Economically Viable Large-Scaled Computer-Based Education System*, CERL REPORT X-5 (Jan. 1972).

minimum of twenty-five hours on the flight simulator. The numerous and costly expenses of aircrafts, *e.g.*, fuel, instruction and maintenance, are replaced by one lesser expenditure—the simulator.

Simulation opens up many areas for law school experimentation as well. There is no limit, and more importantly, no risk, in testing modifications or unusual strategies. There is also no time barrier. For example, trial simulation decisions can be made and evaluated long before actual court appearances. Time can be expanded or condensed, and experiments can be numerous under a simulation process.

The disadvantages of simulation methodology, however, are significant. Simulations can be expensive and difficult to design as compared to other instructional methods. Initiation of a system involves a significant cost, with a variable total expense, depending upon the simulation. Research involves a heavy, initial capital outlay. Often the physical environment requires costly alterations before the simulator can be installed. A final cost includes the necessary field testing and the training of the law faculty and library staff for effective utilization of the simulator.

Currently, simulation is used in three general areas. First, it is used by operational analyzers and legal researchers to analyze and evaluate existing systems. Second, simulations of hypothetical models have been implemented to assist in planning new systems. Using these simulations, researchers can perform various experiments and obtain predictions of the outcome of actual events. A final use, which is of major interest to legal educators, is the creation of a learning environment representative of an authentic system.

The future uses of instructional simulation in education—both general and legal—are purely speculative. Indeed, instructional designers today are not nearly as enthusiastic about the future prospects of simulation as they were ten years ago. More intriguing areas, however, are developing as a result of the major evolution in computer technology. Simulation of the human mind has aroused much more attention; there are many existing models on concept formation and long-term memory.

The simulation activity, where a model is incorporated to produce a product, holds promise for those researchers and legal educators who see the result as a positive learning outcome. Simulation may have the potential to make this a widespread phenomenon.

II. PLATO, EDUCOM, AND INSTRUCTIONAL DESIGN

The PLATO system, marketed by Control Data Corporation, has the potential to favorably affect the future of law school for greater

learning opportunities. The computer can be available twenty-four hours a day, and a lesson can be transmitted nationwide. A student need no longer be denied exposure to particular material because the subject is not offered at his or her university. Neither will students have to forfeit the opportunity to study material simply because they cannot fit that class into their schedule.

Effective instructional design in computer-based education is critical. The positive benefits from PLATO's accessibility are entirely dependent upon the quality of the instruction offered. The entire law school curriculum cannot, and should not, be fed into a computer system. Nor can each aspect be treated in isolation. The instructional system, the educational planning, the development of legal instruction, and the mangement of teaching are equally important factors to be considered when planning a computer-based educational system.

The key to successful, computerized instructional development is not a fixed formula that can be encapsuled and distributed to each law school. There are numerous instructional development models. A majority of these models are strictly theoretical and have never been field tested. However, the systems approach has been implemented at all levels of education and is a thriving factor in the instructional design of the law programs at the law schools of the University of Illinois, University of Florida, Indiana University, Harvard University and others.

The systems approach to instructional design involves looking at the learner in building a lesson.[4] This is less complex than most instructional development models. The initial step in deciding what is to be taught is to assess the entry level of the learner to determine where the instruction should begin and where it should end. Until such an assessment is done, the computer assumes that the learner knows, for example, how to compose a memorandum or the definition of a tort.

If properly used, this assessment will accurately reflect learner performance. Every time an interaction between a law student and the PLATO lesson occurs, the response is recorded and stored. Interaction "spots" in the PLATO lesson provide an opportunity to look at the type of responses elicited from the variety of learners that proceed through the lesson. Once the lesson has been developed, and student interaction built in, evaluation of the learning process can be made, based upon performance assessments.

In the early stages of instructional development, decisions must

4. R. Kimbrough & M. Nunnery, EDUCATIONAL ADMINISTRATION 73 (1976); *See also* Alpert & Bitzer, *supra* note 3, at 1582-90; Bitzer & Skepardas, *supra* note 3.

be made regarding the desired educational objectives of each course: How comprehensive should a course in estate planning be? Should students be instructed in legal counseling and ethics as well as the fundamentals of drafting a will?

After the objectives have been formulated, the critical stage of the instructional development process becomes the sequencing of the materials. Most problems in instructional design develop at this point. Decisions on how legal content will be presented can only be based upon the developer's experience with a topic, knowledge of educational psychology, or pure intuition. The most important goal in developing a sequence is to prove its effectiveness. Law students and faculty should test it; it should be studied, reviewed and reorganized until the objectives and the sequence have a compatible relationship that produces positive results.

Each learning sequence in the PLATO system is a self-contained unit, typically called a module. A module includes audio-visuals and PLATO exercises. A module may have as many as 110 or as few as ten objectives. Each faculty member can decide how many objectives are required to adequately convey a lesson. The advantages of a lesson module lie in its capacity for self-instruction. The law student determines the rate of progress and is able to engage in self-evaluation. Though the major responsibility for learning is transferred to the student, the instructor must remain sensitive throughout the process to his or her interaction with the student. Law students continue to look for the teacher element in these modules, and it is important for them to perceive dedication and effort in the teacher despite, or rather because of, the teacher's remoteness.

Central control of instructional design is essential to computer-based instruction programs, particularly in their formative years. The systems approach can function properly only through central control. Centralization, in creating uniformity, however, is a compromise of academic freedom, since the entire law faculty must agree on the type and sequencing of the curriculum. The learning activities of law students, as well as the instructional goals of the faculty and administration, must be coordinated. Most legal educators have different teaching philosophies and speak different educational languages. The law faculty must develop an understanding of the continuum of educational philosophies if it is to be aware of the problems that might arise from these differences, as well as recognizing common areas that might be beneficial. To be truly communicative, educational language among law faculty must be standardized as well.

Hopefully, computer-based instruction will expose students to increased feedback. While feedback is relatively unimportant to the

student who correctly responds to the stimulus, the faculty must recognize that it is critical to the student who does not know the correct response. Aside from providing needed feedback, the faculty must also recognize that the PLATO lesson should encourage and reward student participation.

The final procedural responsibility of the law instructor is to review and analyze the validity and effectiveness of the lesson. The teacher must establish whether the student responded in concurrence with the lesson's defined objectives. If the student fulfills the objectives stated at the beginning of the lesson, the data accumulated at the end will reveal this correlation. If the data supports student fulfillment, the lesson is a success and the law instructor can be assured that the student's needs, the student-teacher interaction, and the analysis of student responses were adequately developed.

IV. UTILIZATION OF PLATO AND EDUCOM IN LAW SCHOOLS

The two most widely used CAI systems are known by the acronyms "EDUCOM" (or "EDUNET") and "PLATO." These two law school networks have already developed significant amounts of computer-based legal educational materials. For example, during the past few years, the University of Minnesota has developed and supplied computer-based educational services to law schools throughout the nation. If the necessary funding can be obtained, the Minnesota system will be expanded considerably this year under the auspices of EDUCOM, a cooperative computer network linking many universities.[5]

More than eighteen law schools, including Harvard University and American University, are currently using the computer-assisted law programs offered through the University of Minnesota.[6] Overseen by Minnesota's Consulting Group on Instructional Design, the Computer-Aided Exercises in Legal Education provide nineteen modules, ranging in subject matter from "the use of intent in tort law" to "federal rules of evidence."[7] These programs are currently being used by law schools in a discipline-oriented effort to determine the effectiveness of network CAI use.

5. Maggs, *Tube-Watching in Law School*, 12 TRIAL, Dec. 1976, at 34, 34-35.
6. *See* Table 1 *infra*.
7. *See* Table 2 *infra*.

TABLE 1

Summary of On-Line Computer Assisted Instructional

Systems Users:	
EDUCOM:[8] (EDUNET):	American University Harvard University University of Kansas School of Law University of Minnesota Law School University of North Dakota School of Law St. Louis University School of Law University of Southern California Law Center Temple University School of Law University of Virginia School of Law William Mitchell Law School
PLATO:	Antioch University (two terminals) University of Arizona (Main Library) University of Connecticut School of Law Cornell Law School (Main Library) University of Florida University of Illinois College of Law (three terminals) Indiana University School of Law at Indianapolis (two terminals) University of Maryland University of Michigan Law School New York University School of Law Ohio State University School of Law Oregon University School of Law University of Wisconsin Law School (Main Library)
Other:	Case Western Reserve University, F. T. Backus Law School Drake University Law School Emory University School of Law University of Michigan Law School Yale University Law School

The other computer system, PLATO (an acronym for Programmed Logic for Automated Teaching Operations) is an automated system, which employs simulated game strategy to expand the teaching possibilities in traditional law courses, as well as in many other fields. Through the use of a series of questions posed by the computer, a law student can respond with a variety of possible answers, each of which leads to further questions and possible responses. A great number of real-life situations can thus be simulated for the student, and he or she is tested and scored according to the responses given. An elaborate system of record keeping

8. EDUCOM (Nov. 1978) (circular).

and statistical analysis is provided by the software to allow the law professor to improve his or her program in light of actual student performance. Though these modules do not replicate real-life situations exactly, they offer a major step in that direction, and allow the student some practical experience in problem-solving through the application of learning experiences.

The PLATO computer system was developed at the University of Illinois, and is now being distributed commercially by Control Data Corporation. Professors Robert Keeton of Harvard University and Roger Park of the University of Minnesota have prepared programs in the areas of evidence, procedure, trial practice, and torts, which will be available on PLATO in 1979. PLATO will offer many of the Minnesota programs, plus programs prepared by professors at Illinois, Indiana, Michigan and Cornell in the areas of contracts, property, corporations, taxation, regulated industries, legal writing, ethics, interviewing, and counseling.[9] Law students will have access to these programs through terminals at Illinois, Cornell, Indiana, Wisconsin, and eventually, other law schools connected to the PLATO system.[10]

TABLE 2

CAI Systems Libraries

EDUCOM:	Case, The Complaint, Code of Professional Responsibility, the Defense Function, Demurrers and Motions for Judgment on the Pleadings, Evidence, Federal Rules of Evidence, Jurisdiction and Venue, Directed Verdicts — Federal Standards, The Concept of Hearsay, Character Evidence, and Objections to Form, by Roger Park; Decisions Before Trial, The Use of Intent in Tort Law, Tort Law, Computer-Generated Exercise on the Charge to the Jury, by Robert Keeton.
PLATO:	Introduction to PLATO, Law Study, and Briefing Cases; ETS; LSAT Mini-course, by Charles D. Kelso; Case Simulation, An Exercise in Case Analysis, Latin Words and Phrases, Law Study: A Pre-Test on Issues, and Drill on Code of Professional Responsibility, by Roger Park; Offer and Acceptance, Problems of Communication, and the Statute of Frauds, by Peter B. Maggs; Counseling, by M. Jane Kelson; How to Write a Brief (Briefly), by John Johnson; Future Interest, by Thomas D. Morgan; Federal Rule 12, by Prudence C. Abran, Layman E. Allen, and Arthur R.

9. *See* Table 2 *supra*.
10. Maggs, *supra* note 5, at 34-35.

Miller; Utility Regulation, by Peter B. Maggs and Thomas D. Morgan; Evidence Exercises, by Roger Park and Peter B. Maggs; and Trial, by Charles D. Kelson, Peter Maggs, and W. Mahler; How to Do Legal Research by R. J. Munro, K. Edwards, and D. Jones.[11]

V. CONCLUSION

There is not as yet a consensus on whether CAI will provide useful in legal education. At present, most applications are quite rudimentary in operation and scope, and there is considerable room for experimentation and development by legal educators. As noted in the section on simulation and gaming,[12] future uses of instructional simulation and gaming are still quite speculative and, indeed, designers today are not as enthusiastic about simulation prospects as they were ten years ago.

At present, the main barrier to widespread usage of computer-based educational services is the limited number of high quality programs available. It is the classic "chicken and egg" problem, because until enough good programs are available it is difficult to interest law professors in using the system and in writing more programs.

The lessons which have had the best faculty acceptance are those by Professor Park on Legal Ethics, Professor Keeton on Insurance, and Professor Morgan on Future Interests. Dr. Peter Maggs, Professor of Law at the University of Illinois, has stated that he would be glad to provide technical assistance to any interested law faculty or law librarians in the programming tasks.[13]

Computer exercises are quite popular with law students. Though this may be due in part to their novelty, it appears that law students appreciate the individual challenge of the exercises. In fact, students have commented that the computer-based exercises provide welcome reinforcement of the concepts learned in casebook readings. As students often work in pairs on computer exercises, they also find that the exercises stimulate discussions of legal concepts.

The advantage of using computer-based exercises is that each student can be challenged individually. In a large class of students taught by the Socratic method, only a few students can be directly

11. Landis, *Teaching Law With Computers: Workshop Report*, EDUCOM 7, 7-14 (1976).

12. *See* Section I *supra*.

13. They could, for instance, send outlines and flow charts to Professor Maggs, and he could return a working program to them.

questioned during any class meeting. In a class using computer-based exercises, however, all students can be directly challenged, assuring that each student will apply the abstract legal doctrines read in the casebook.