

Investigating the Impact of Advanced Technology on Trials: The Courtroom as a Classroom

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Abstract

*Advanced technology has made a dramatic entry into courtrooms across the United States. Lawyers and judges who are experienced in the use of technology believe it lends credibility to the presenter and otherwise makes for a more effective presentation and a greater likelihood of success in a trial. However, the support for these views is largely anecdotal. We believe that courtrooms are classrooms where judges and jurors learn the facts of a case under the guidance of attorneys and that the learning process may be enhanced through the use of advanced technology. This paper reports a study that begins the difficult task of systematically investigating the uses of technology as a means of influencing a courtroom learning experience.**

Introduction

The central assumption underlying our study is that the courtroom is at root a learning environment. A lawyer's role is to assist jurors and judges to learn the facts of a case so as to enable them to apply the law. There is ample evidence that multimedia and hypermedia very positively impact learning in a classroom (Boyd [1]; Williams [2]). The same should be true in litigation.

When designing research methodologies, an important goal usually is to control as many variables as possible so as to be able to explore possible causal relationships. As is acknowledged below, accounting for all the factors that may impact the learning process in a trial would be difficult even in a more comprehensive controlled experiment. In the study reported here, we had the special advantage that in litigation there is a standardized structure to the proceedings. The rigor associated with the judicial process means that courtrooms naturally provide a controlled environment that would be difficult to achieve elsewhere.

Advanced technology has made a dramatic entry into courtrooms across the United States. The O.J. Simpson

is but the most notorious of a growing number of cases in which litigants have relied upon computer technology to embellish the presentation of their positions (Court Proceedings [3]). There have been several cases where the uses of advanced technology have coincided with previously unequalled jury verdicts, some in the billions of dollars (Woods [4]).

Lawyers and judges who are experienced in the use of technology in the courtroom have accepted its effectiveness as an article of faith. These lawyers and judges believe presentation technology lends credibility to the presenter. They suggest that jurors, who increasingly are members of the so-called "MTV generation," are more comfortable with and more readily persuaded by a technology-based presentation (Courtroom Proceedings [3]).

However, the use of advanced technology in courtrooms is a relatively recent phenomenon and the issues it raises are only now beginning to emerge (Court Proceedings [3]; Bermant & Woods [5]; Boyd & Woods [6]). Consequently, most of the support for the view that technology can affect the outcome in a case is anecdotal. Systematic studies of these issues, including the impact of technology on jurors and judges, remain to be done.

There are, of course, important differences between a classroom learning experience and a trial. Classroom teachers, by and large, undertake to present materials in a balanced and objective fashion, or at least to present both sides of a controversy. Attorneys, on the other hand, are advocates for clients and are obliged to present facts in a manner that best serves the clients' interests (Luban [7]). However, this difference in perspective does not fundamentally change the learning dynamics. The need for structured exposition (Briggs

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[8]), the benefits of appealing to visual and auditory senses, the imperative of getting and holding a "learner's" attention, and the positive effects of carefully orchestrated rehearsal and repetition (Boyd [1]), all should apply with equal force in the courtroom learning experience as much as they do in a classroom.

In short, in the courtroom, as in the classroom, a learner develops a cognitive mental model of the information presented. The role of the "teacher" is to guide the formation of that mental model (Brant & Briggs [9]). To this extent, the quality of the learning experience impacts directly on the process by which a fact-finder, be it a judge or a jury, draws factual conclusions to which principles of law must later be applied.

The impact of emerging technologies on the learning process that takes place in a courtroom may be explored from still another angle. The "students" of both the lawyer and the classroom instructor have certain expectations regarding the educational process. Expectations of how the learning process should progress have been nurtured through experiences with the educational system in America.

Expectancy theories regarding media have focused on media choice and consumption of mass media (Van Leuven [10]; Galloway & Meek [11], Palmgreen & Rayburn [12]). Research on expectancies indicates expectations influence individual behaviors and perceptions in a variety of contexts. Learners expect instructors to present information in an organized manner using auditory and visual channels. Traditionally, the communication channels have been limited to face-to-face verbal interaction occasionally aided by static devices such as flip charts, overhead projectors, slides, and paper handouts.

The courtroom and classroom of the future offer dynamic presentation aids that may conflict with learners' expectations regarding the learning process and which, consequently, could alter individual behavior and perceptions. Attorneys, in particular, could be affected by jurors' expectations because most people who serve as jurors have had relatively limited direct contact with lawyers (Henglsler [13]).

It has been argued that the public's perception of attorneys has largely developed from depictions of attorneys in television programs (Phauf, Mullen, Diedrich, & Garrow [14]). Hence, members of the public who end up on juries initially may perceive attorneys as having enhanced traits of physical attractiveness, composure, presence, and power because they expect attorneys to have these traits. These perceptions may be altered, however, by the direct contact that would occur in a courtroom (Henglsler [13]).

There are likely to be a number of mediating variables

linked to perceptions of attorneys but the point is that expectations may influence jurors' perceptions and behaviors and, hence, their courtroom learning experience. The investigation of the impact of technology on learning must, therefore, take account of the public's expectations about lawyers and how these expectations may impact positively or negatively on an attorney's ability to educate and persuade.

Study Overview

American courts operate on the "adversarial" model, where lawyers seek to establish factual scenarios that benefit their clients. In a courtroom a lawyer seeks to assist fact finders, judges or jurors, to build cognitive models that represent events critical to the outcome of a case. As with classroom teachers, courtroom lawyers seek to inform and persuade by maximizing recall of information and through argumentation.

In this study, simple presentation technology was used to assist lawyers in presenting a case to multiple juries. The technology was designed to provide visual support and emphasis for the factual scenario. A Group Support System (GSS) was used to gather data and impressions of jurors and observers as to the impact of the technology. Because of the controls imposed by the judicial process, courtrooms provides an unusually stable learning environment for testing the effects of a technologically-supported structured presentation. A GSS facilitates open interaction which should reveal the impact of the technology on the learning experience.

The combination of the technological courtroom and the GSS offers a unique method for inquiring into the question of how technology affects the perception of fact finders and their decision making. As will be discussed, because of the small samples dictated by the limited nature of this initial effort, the emphasis was more on method than on results.

The Courtroom of the Future

The study was undertaken at the University of Arizona College of Law using the *Courtroom of the Future* (Woods [4]). The *Courtroom of the Future* is a traditional trial courtroom that has been equipped to permit the use of computer technology in the trial of lawsuits. In 1994, the courtroom was outfitted with a range of technology, including state-of-the-art multimedia presentation equipment. The courtroom is utilized to train law students, lawyers, and judges in the use of technology and to demonstrate how advanced technology can support courtroom activity. Consequently, the *Courtroom of the Future* provides an ideal classroom and laboratory for exploring how technology can impact the trial process.

Group Support Systems

In addition to the *Courtroom of the Future*, this study used a Group Support System (GSS) and GroupSystems software developed at The Center for the Management of Information at The University of Arizona. A GSS is a collection of different software tools, each of which focuses and structures group thinking, and affects group dynamics in a unique manner (Nunamaker, Briggs, & Mittleman [15]). GroupSystems consists of a dozen collaborative group process tools to support, among other things, electronic brainstorming, group outlining, group list generation, group issue exploration, group writing and polling.

Among the many tasks GroupSystems has been used for during its ten years of development and evolution have been strategic planning, team building, process engineering, systems analysis & design, marketing focus group, technical writing, and architectural planning (Nunamaker, Briggs & Mittleman [15]). In this study, GroupSystems was used to assess the impact of technology on the jurors and other subjects viewing the courtroom presentations.

The Litigation

In the Fall of 1994 students in a law class on using information technology in the courtroom were asked to find a case of interest to them, focus on an evidentiary aspect of the case and apply advanced technology in the presentation of that evidence. One project involved a suit by a teen-aged member of an amateur hockey team who was struck by a puck, fracturing the player's skull and causing serious brain injury. The hockey player plaintiff was wearing a three-piece hockey helmet. At the time of the incident, one-piece hockey helmets which provide better protection than the three piece helmet were available at an additional cost. The plaintiff successfully argued a one-piece helmet would have prevented the injury.

The students' presentation employed a range of visual tools that graphically depicted how the injury resulted and how a one-piece helmet could have prevented that injury. The case on which the student project was based was a products liability case raising complex liability issues stemming from the possibility that three-piece helmets might have been inherently dangerous.

The facts were changed to pose a relatively straight-forward negligence question. Negligence liability arises when a person acts or fails to act in a way that a reasonable person in similar circumstances would act (Keeton [16]). The basic question for the jury was whether the defendant was negligent in choosing the three-piece helmet when a one-piece helmet that could have prevented the injury was available.

To help assure the question of whether or not the defendant was negligent would not be too readily answered in favor of the plaintiff, the following additional facts were posited: 1) the use of three-piece helmets was permitted by the association that sanctioned such athletic activity, 2) three-piece helmets were widely (although decreasingly) used by many teams, and 3) one-piece helmets cost one and one-half times more than three-piece helmets.

The facts also were changed to make the defendant both the coach of team and its sponsor. This was done to introduce the possibility that the defendant had an economic interest to balance against player safety. Finally, to avoid a variety of damages-related issues that would arise if the player suffered a permanent brain injury, the facts were change to have the player die.

Technology-supported closing argument

Each side in a litigated case is permitted to make a closing argument to the jury after all the evidence has been admitted. A multimedia presentation of the salient facts in the hockey injury case was prepared to assist the plaintiff's attorney in making his closing argument.

Professional media technicians used Macromedia Authorware™ to develop an animation showing the hockey puck striking a skull covered with a three-piece helmet. Images graphically illustrating that the dimensions of the hockey puck and the impact area on the skull were identical were added to further embellish the plaintiff's case. The animation and images created in Authorware were exported to Microsoft PowerPoint™ for Windows and combined with a textual presentation of the important facts in the case.

Two screens from the presentation are in Appendix B.

Method

Subjects

The subjects (n=16) were first-year law students enrolled in the College of Law at the University of Arizona, second and third-year law students (n=9), and practicing lawyers (n=5). All the subjects volunteered for the project. The presentations were done at the end of the first week of the fall semester to assure the first-year law students were neither attorneys nor students having any real familiarity with lawyering.

Procedures

Two mock trials were held in the *Courtroom of the*

Future, one in the morning and the other in the afternoon. Subjects could choose to attend either session based on their schedules. First-year law students were used as jurors in both the morning (n=9) and afternoon (n=7) trial. At the start of the trial, jurors were asked to be seated in the jury box and observers (n=12 for the morning session; n=2 for the afternoon session) were seated in the observation area.

A brief overview of the case was given and the jurors were told they would be listening to closing arguments of a case involving a death caused by a flying hockey puck during a hockey game. Jurors were asked to assume the facts presented in the closing arguments were proven earlier in the trial.

In the morning session, the plaintiff's attorney presented the closing arguments using a laptop as a prompt and the defendant's attorney presented the closing argument without technology. The afternoon session had the plaintiff's attorney presenting the closing with the aid of the PowerPoint™ slide show described above and the defendant's attorney again used no technology. The attorneys for the plaintiff and defendant were the same in both the morning and afternoon sessions. After the closing arguments in both the morning and afternoon sessions the judge read the jury instructions (Appendix A).

The jurors were asked not to discuss the case with anyone as they walked to the GSS rooms. Jurors went to a GSS room with 14 work stations and the observers went to a GSS room with 29 work stations. Both the jury and the observers were asked to complete a persuasion scale (Newton [18]; Newton & Burgoon [19]) using paper and pencil. Next, the jury and the observers were asked to type all the facts of the case into GroupSystems. To do this they used the Topic Commenter tool which had been set to keep participants' comments private. The jury was then asked to verbally deliberate and decide the case. Two researchers unobtrusively watched the jury deliberations. The law students and attorney observers were asked to interactively comment on how they would have decided the case if they had been on the jury, what impact they think technology has or is likely to have on court cases, how technology is influencing the O.J. Simpson case, and how GroupSystems might be used in the courtroom. When the jurors reached a verdict they were asked to interactively comment on the same questions as the observers.

Dependent Measures

Persuasiveness scale. Before each jury deliberation, the degree to which subjects were

influenced by the plaintiff and defendant's attorneys was indexed with ten five-interval, Likert-type items related to persuasiveness (Newton [18]). The internal consistency of this scale using Cronbach Alpha (Cronbach [25]) was 0.86 and 0.95.

Fact coding. There were thirty four facts presented in the case. See Table 1.1. Independent coders compared the facts presented in the case with the facts the jurors and observers recalled after the closing arguments.

Results

Not surprisingly, given the sample sizes, no significant difference between the jurors' perceptions of the plaintiff and defendant's attorney were detected on persuasiveness in either the technology or no technology condition. Since we are viewing a trial as a learning experience, it is important to identify with some care what facts jurors generally tended to "learn" and which they did not. Table 1.1 shows the facts of the case and the types of facts recalled by jurors.

Table 1.1

Facts Recalled from Closing	Technology Support		No Technology Support	
	Coder 1	Coder 2	Coder 1	Coder 2
Female	85.71%	85.71%	100.00%	88.89%
Cindy Levy	28.57%	14.29%	11.11%	0.00%
14 years old	14.29%	14.29%	44.44%	44.44%
Cindy played hockey	42.86%	14.29%	33.33%	44.44%
Played for the Perth-Amboy Flyers	14.29%	0.00%	0.00%	0.00%
Team was composed of 14-16 year old players	0.00%	0.00%	0.00%	0.00%
The team played in a league sanctioned by the Southern New Jersey Hockey Association	0.00%	0.00%	0.00%	0.00%
Cindy was struck by a hockey puck	57.14%	42.86%	77.78%	77.78%
Cindy suffered a serious brain injury	14.29%	0.00%	44.44%	22.22%
Cindy dies from the brain injury	71.43%	57.14%	88.89%	55.56%

At the time of the injury, Cindy was wearing a three-piece helmet	57.14%	42.86%	33.33%	66.67%
All the players on the team wore three-piece helmets	0.00%	0.00%	11.11%	11.11%
The plaintiff alleges that had Cindy worn a one-piece helmet, the flying puck would not have caused the fatal injury	57.14%	14.29%	33.33%	11.11%
It is disputed whether wearing a one-piece helmet would have prevented Cindy's injury	0.00%	0.00%	0.00%	0.00%
The defendant is Ellison Edwards	0.00%	0.00%	0.00%	0.00%
The defendant owns a sporting goods store	0.00%	0.00%	0.00%	0.00%
The defendant is the coach	28.57%	42.86%	44.44%	55.56%
The defendant is the sponsor of the hockey team	42.86%	42.86%	44.44%	33.33%
Edwards knew about the availability of one-piece helmets	14.29%	28.57%	44.44%	66.67%
Edwards chose to buy three-piece helmets	42.86%	42.86%	55.56%	66.67%
One-piece helmets cost \$50 a piece	57.14%	14.29%	66.67%	33.33%
Three-piece helmets cost only \$20	57.14%	14.29%	66.67%	33.33%
There was evidence establishing that in 1994, 87% of the helmets purchased by such teams as the Flyers were three-piece	0.00%	0.00%	0.00%	0.00%

87% of the helmets purchased by such teams as the Flyers were three-piece	0.00%	0.00%	0.00%	11.11%
There also was evidence that in 1995, 47% of the helmets being purchased were three-piece	0.00%	0.00%	0.00%	11.11%
47% of the helmets being purchased were three-piece	0.00%	0.00%	11.11%	0.00%
Parents petitioned league to require the use of one-piece helmets	28.57%	14.29%	44.44%	44.44%
Edwards bought three-piece helmets	28.57%	42.86%	11.11%	66.67%
The day after the request to buy one-piece helmets, Edwards bought the team uniforms which cost \$150 each	14.29%	0.00%	0.00%	11.11%
Edwards bought the team uniforms which cost \$150 each	14.29%	14.29%	11.11%	11.11%
Edwards testified that he bought the uniforms because he was in business	0.00%	0.00%	0.00%	0.00%
Edwards testified that he bought the uniforms because they were good advertising	28.57%	0.00%	0.00%	0.00%
Edwards testified that hockey is a rough sport	0.00%	0.00%	11.11%	0.00%
Edwards testified that only "sissies" needed one-piece helmets	0.00%	0.00%	0.00%	0.00%
Total Number of Facts Counted	56.00	38.00	80	70.00

Discussion

This study reveals that mock trials in a courtroom where advanced technology is available to support an attorney's presentation provide a useful way of creating courtroom learning experiences sought to be studied and that GroupSystems software is an effective means of analyzing those experiences. By combining such mock trials with the analytical tools in GroupSystems, we have framed a methodology for future more extensive controlled research on the question of whether computer-assisted presentations can assist attorneys in persuading jurors and judges to accept a particular view of the facts and, hence, to "see things their client's way."

The absence of any significant difference between the perceived persuasiveness of the plaintiff's and defendant's attorneys on the technology condition is interesting. As noted, this outcome may have been the result of the small sample size. It may also be attributed to the effect of the jury instructions on the jurors' perceptions. The facilitators of the GSS sessions observed that the jurors referred back to the judge's instructions when deliberating and several commented that "the death was terrible but the coach was not negligent." This reaction may indicate that the jurors' perceptions of the persuasiveness of the attorneys was impacted by their understanding of the burdens of proof expressed in the jury instructions.

Should a significant difference between jurors' perceptions of plaintiff's and defendant's attorney's persuasiveness in the technology condition emerge in a later study it would be important to consider whether that difference was attributable to the effect of the technology to promote central as opposed to peripheral processing (Cacioppo & Petty [26]). Processing centrally could lead a jury to focus on and think more about the issues thereby promoting a belief that the attorney using technology was more persuasive. Learning literature outside the litigation context certainly points to the importance of deep processing as a significant factor in perception (Boyd [1]).

An investigation also should be conducted to evaluate the link between perceptions of persuasiveness and human behavior. Strong claims have been made about the effects perceptions have on human behavior but it has been argued that little empirical research exists to support the claims (Morrill, Adkins & Burgoon [17]). Working in the courtroom offers an ideal opportunity to investigate the relationship between perceived persuasiveness and behavior because the goal of an attorney's presentation is to persuade the jury to find for their client and propose a monetary award.

In undertaking this study, we have been cognizant of the complexity of the process to be scrutinized. The variables affecting the fact-finding process are many. They include everything from a particular attorney's style to what the judge or jurors had for breakfast on the day a particularly important evidentiary matter was presented. (Frank [20]; Horowitz [21]).

We believe that drawing on research outside the litigation context (Brandt & Briggs [9]) we can develop a sound research design. Doing a comprehensive experiment is our long term goal. The study reported here has reinforced our belief that such a project is both justified and needed.

In a future experiments, we would manipulate technology format between low technology (e.g., no presentation aids), middling technology (e.g., flip charts) and high technology (e.g., computer-assisted). We would also manipulate strong and weak applications of "high" technology. In this study the plaintiff's attorney used a slide show presentation. In a more comprehensive investigation other, potentially more powerful, technology, such as full motion video, more sophisticated animations, and video depositions of the defendant making damaging statements, such as that he was in a tough business and only "sissies" needed one-piece helmets, could be employed. We would be especially attentive to the concerns expressed by some of the jurors and observers in the study that displaying screens of text can serve both to reinforce a point being made by a speaker and distract from what the speaker is saying. We might also "even things up" by allowing the defendant's attorney to use the technology, or we might give the defendant's attorney the support of less sophisticated "technology" such as overheads, flip charts, photographs, and x-ray films.

We would use GroupSystems to attempt to penetrate deeper into the jurors' decision making behavior by more precisely factoring out of their actions what facets of a presentation influenced a particular inclination and why.

Some of the "debriefing" discussion suggested that the use of computer technology in the courtroom could have different impacts on differently constituted juries. Thus, it is conceivable that the presence of youthful jurors who are more receptive to, and even demanding of, the use of technology, could affect a jury's response. The literature suggests the use of technology has a greater impact on learning when the learners actively participate (Leidner & Jarvenpaa [22]). So, it would be important to investigate whether technology in the courtroom has a stronger effect on proactive "expert juries" than it has on reactive "citizen juries." An emerging trend to

allow jurors a more active role in a trial (Dann [23]; Feldman [24]), makes this line of inquiry all the more appropriate. Obviously, the same kind of questions arise where the judge is the fact-finder.

The jurors and observers in this study speculated about the use of GroupSystems in jury deliberations. GroupSystems allows for anonymity and provides a medium for parallel communication which allows

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“everyone to talk at once” and “neutralize” group members who would otherwise dominate a discussion (Nunamaker, Briggs, Mittleman [15]). Using GroupSystems could change the dynamics of jury deliberations and their outcomes. Certainly, that possibility presents another important area of research.

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APPENDIX A JURY INSTRUCTIONS

Ladies and gentlemen of the jury, we have now come to the part of the trial where it is my job to instruct you on the law and tell you what you need to decide. As you know from the plaintiff's opening statement, she has alleged that the defendant was negligent in selecting the type of hockey helmet that she was provided while playing for the team that defendant was sponsoring and that his negligence caused her to be physically harmed.

Therefore, I am instructing you that if you find from a preponderance of the evidence that the defendant was negligent in the manner alleged and if you further find that such negligence, if any, was a proximate cause of the plaintiff's injuries, then you shall return a verdict for the plaintiff. Otherwise, you must return a verdict for the defendant.

When I use the terms "negligent" or "negligence," I mean the failure to do that which an ordinarily prudent person would do or the doing of that which an ordinarily prudent person would refrain from doing, under the same or similar circumstances of this case. By the term "proximate cause," I mean that you have to find that the plaintiff's injuries were a foreseeable and a natural and probable consequence of the defendant's conduct. By the term "preponderance of the evidence," I mean the greater weight and degree of the credible testimony.

In reaching your decision, you are the sole judge of the credibility of the witnesses and the weight to be given to their testimony. If you find for the plaintiff in accordance with the foregoing instructions, then you must answer the following question: What amount of money, if paid now in cash, would fairly and reasonably compensate the plaintiff for the injuries caused by the defendant?

**APPENDIX B
SCREENS FROM CLOSING ARGUMENT**

FLYING PUCK



APPENDIX B (cont.)

INJURY MEASUREMENTS

