Computer-Supported Collaborative Argumentation: Supporting Problem-based Learning in Legal Education

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Abstract

According to the American Bar Association (ABA), legal reasoning (also referred to as legal argument) is one of the 'fundamental lawyering skills'; listed among those skills the ABA task force deems most important (Blasi, 1995). However, there is much debate over how best to teach legal argumentation. This study examines the effectiveness of using a computer-supported collaborative argumentation (CSCA) tool, Questmap™, to support the development of argumentation skills in second-year law students. 76 second-year law students were divided into two groups: the treatment group received access to Questmap™ to help construct arguments throughout the semester while the control group did not receive access. Results provide preliminary indication that CSCA may not support the development of argumentation skills in second-year law students. Using Questmap™, students would begin constructing an argument, see another counter-argument appear, and then begin discussing the counter-argument with its creator outside the software. Since not all of the argumentative dialogue is captured within the software, Questmap™ then becomes a support for the process of argumentation, rather than a representation of it.

Keywords: Computer-Supported Collaborative Argumentation (CSCA), Mediated Discourse, Collaborative Learning, Legal Education

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"I choose the word "argument" thoughtfully, for scientific demonstrations, even mathematical proofs, are fundamentally acts of persuasion. Scientific statements can never be certain: they can only be more or less credible". - Joseph Weizenbaum in Computer Power and Human Reason. 1976

Introduction

According to the MacCrate Report (Blasi, 1995, p. 314), legal problem-solving is the "fundamental lawyering skill," listed first among those skills the American Bar Association task force deems important. The ability to construct and organize an *argument* in support of some position is the central intellective ability in solving [legal] problems (Cerbin, 1988). As a result, law schools are beginning to introduce courses on general 'lawyering skills', which include the responsibility of teaching legal argument (Blasi, 1995). But how can we support the building of legal arguments?

Teaching Legal Argumentation

Practicing student-to-student interaction and argumentative dialogue have been found to be positively linked with argumentation and critical thinking skills (Hart, 1990; Marttunen, 1992; Smith, 1977). Further, Buckingham Shum et.al. (1997) argue that exposing an argument's structure facilitates its subsequent communication since important relationships can be more easily perceived and analyzed by others (Buckingham Shum, et. al 1997). In support of this paper, a study examines Computer-Supported Collaborative Argumentation (CSCA) as a tool to help teach legal argumentation. CSCA supports argumentation through student-to-students interaction and by exposing an argument's structure as a means to focus argumentative dialogue.

Argumentation is a process of making assertions (claims) and providing support and justification for these claims using data, facts, and evidence (Toulmin, 1958). The goal of legal argumentation is to *persuade* or *convince* others that one's reasoning is more valid or appropriate. Toulmin's model of argument provides the language symbols that support the argumentation process (see Figure 1.1).

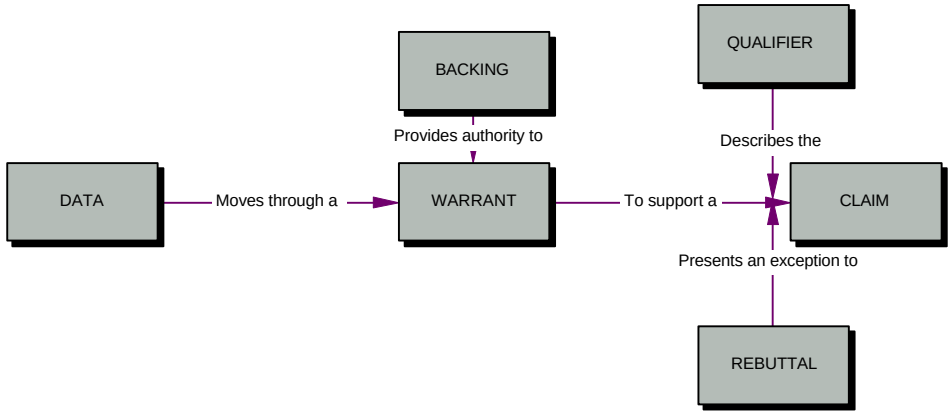

Figure 1 Toulmin's Model of Argument

Toulmin's model is procedural, not static or spatial (Toulmin, Rieke, & Janik, 1984). Based on legal reasoning, the layout of his argument model focuses on the movement of accepted data through a warrant, to a claim. Toulmin recognizes three secondary
elements that may be present (and sometimes implicit) in an argument: backing, qualifier, and rebuttal. Backing is the authority for a warrant; it provides credibility for the warrant and may be introduced when the audience is unwilling to accept the warrant at face value. A qualifier indicates the degree of force or certainty that a claim possesses; it converts the terms of the argument from absolute to probable. Finally, rebuttal represents certain conditions or exceptions under which the claim will fail; it anticipates objections that might be advanced against the argument to refute the claim (Toulmin, 1958).

In the following example, an argument with regard to a specific legal case is represented using Toulmin's model of argument (see Figure 2).

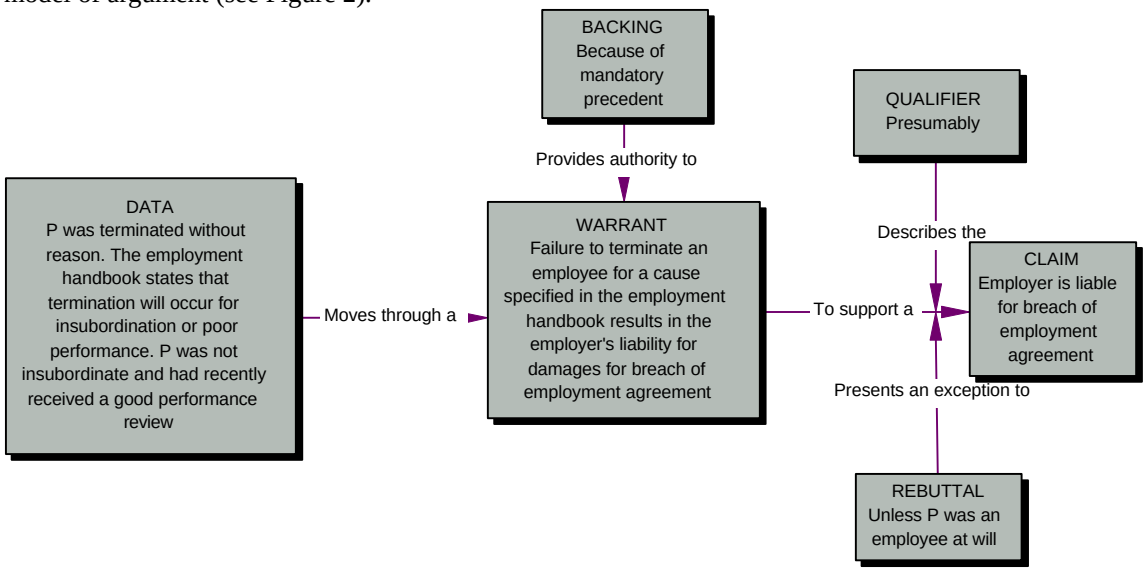

Figure 2: Example of legal argument using Toulmin's model

A woman has been dismissed from her position and met with a lawyer to discuss a possible lawsuit. The lawyer suggests a cause of action for breach of employment agreement that links the relief sought with the facts of the woman's case. The lawyer will support the cause of action with mandatory precedent, and will recognize that the employer may assert a defense based on the employment-at-will doctrine that may deny recovery (adapted from Saunders, 1994).

As such, Toulmin's model of argument becomes a mechanism for structuring argumentation between law students. It aims to clarify reasoning by encouraging parties to make explicit important assumptions, distinctions, and relationships as they construct and rationalize ideas (Buckingham Shum et al., 1997).

CSCA to support Legal Argumentation

In this study, Questmap™ was used to support legal argumentation by equipping the students with the language needed to construct and analyze arguments (see Figure 3).

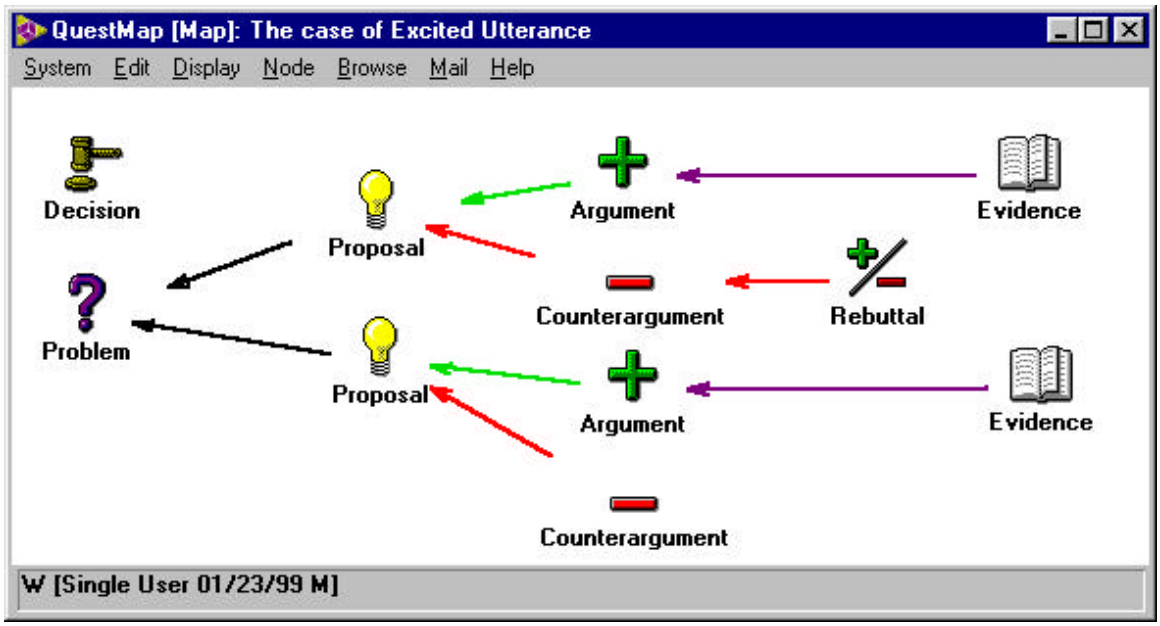

Figure 3 Sample CSCA structure including multiple components of Toulmin's Model of Argument, recording using Questmap™. In this example, there are two claims (labeled, 'proposals' in accordance with legal terminology), several warrants, with backing (labeled, 'arguments' and 'counterarguments'), and grounds or data (labeled, 'evidence'). This is a rudimentary example; legal arguments can become extremely complex and elaborate.

Though Questmap™ (see Conklin, 1993) incorporates slightly different terminology (i.e., Question, Idea, Pro, and Con), the law students were able to rename the icons to represent argumentation in a legal context. Figure 3 shows the language used by the law students. In this structure, a *problem* is a statement of an unknown or something that is unsettled, such as a controversy, an issue, etc. The problem is introduced by the professor in the form of a question (e.g., should this evidence be allowed in court?). A *proposal* is a recommendation for action in response to the problem (e.g., it should be admitted). Finally, an *argument* is comprised of evidence that supports a proposal (because of mandatory precendent). Thus, to elaborate on a **problem**, students submit **proposals** with supporting **arguments**. Additionally, students can create links (e.g., supports, contradicts, competes with, etc.) that indicate relationships between arguments. Students can then respond further with counter-arguments and rebuttals. Finally, the professor will announce a *decision* that serves as his summary judgment in the instant case after considering all relevant arguments.

Method

Throughout the course, students were assigned five problems to solve (one every other week). The control group completed them in study groups, using traditional legal resources, such as Westlaw™, legal texts, and library resources. After discussing the problem, the students would prepare one summary statement in narrative form that represented the consensus of the group. In addition to the traditional legal resources, the treatment group was also allowed access to Questmap™ to complete the assignments in study groups. The students within the treatment group each logged into Questmap™ on their own computer and worked in a shared 'virtual' space with their study group (such that each person within a study group could view and modify contents submitted by other group members) and were seated beside one another to facilitate communication.

Students adopted different methods for constructing arguments, but a general pattern emerged. During a typical Questmap™ session, a study group proceeded as follows: (1) read the problem, (2) discussed the

problem orally, (3) discussed what rules of evidence may apply, (4) volunteered to 'map out' certain rules and argue how they would apply, (5) began mapping arguments (arguments appeared in each students shared workspace instantly), (6) read other group members' arguments, (7) responded to other arguments with rebuttals, (8) orally discussed issues such as, "Good idea…", "I didn't think that would apply here, because…", and "Wow, that's exactly what this is about [in response to a posting by a fellow group member]…", (9) organized the final map on the screen for printing, (10) printed the map view, (11) printed the outline view of the map.

Throughout the semester, students were asked to submit responses to each problem including their arguments, expected counterarguments, and rebuttals. The control group handed those responses in on paper while the treatment group recorded their responses graphically using Questmap™. The graphs were then automatically converted to outline form and printed out for submission (see Figure 4).

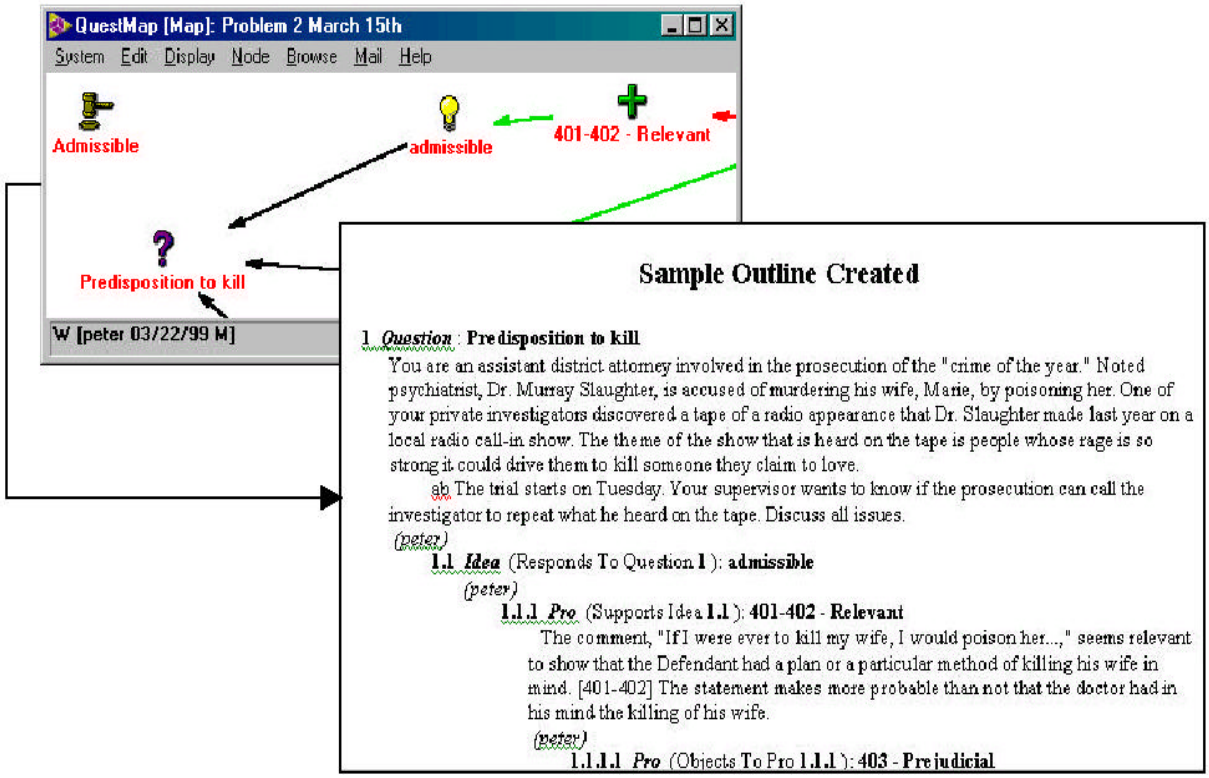

Figure 4: Sample Questmap™ Map and corresponding Outline

Finally, the professor would generate the optimal solution and distribute it to the control group in written form and the treatment group in Questmap™ form.

After completing these five problems throughout the semester, a final exam was administered to assess the effectiveness of argumentation skills. A comparison of final exam scores (control vs. treatment group) was conducted to assess the effectiveness of the CSCA tool in developing argumentation skills in second-year law students over the course of one semester.

Results

The results of this study are discussed in terms of efficiency and effectiveness of CSCA use in a legal education.

Efficiency

In a study of CSCA use by instructional designers, Buckingham Shum (1994) describes a situation in which the argumentative mode of reasoning proved incompatible with the construction task at hand. A designer encountered "severe difficulties in breaking another problem into discrete Questions, Options and Criteria" (the names of the primary argument components used in this instance).

Alternatively, in this study, law students reported an increase in the efficiency in which they were able to complete assignments (Carr, 1999). Further, the complexity of the maps (as determined by the number and types of nodes present) did not significantly increase through continued use of Questmap™, suggesting that students did not encounter such 'cognitive overhead' as reported by Buckingham Shum (1994) in a study involving instructional designers. Not only were the students able to complete individual assignments more efficiently, they were able to automatically generate outlines from which to study for the final exam.

Effectiveness

An assumption that the use of Questmap™ would support the development of argumentation skills in second-year, second-semester law students proved false. The results of this study indicated that the treatment group did not have a significantly different score (t=0.05, df=69.210, p>0.05) on the practice final than the control group.

Since these students were all second-year law students and did not have any real difficulty in learning how to use Questmap™, it is suspected that the students were already very good at legal argument.

Conclusion

The use of Questmap™ supported the efficient creation of arguments among groups of second-year law students throughout a legal education course. Further, Questmap™ maps could easily be converted into an outline format and printed to help students study for final exams.

Nearly all students reported that Questmap™ sessions helped them maintain a focus on the task at hand, providing for structured argumentation sessions. Further, they were able to benefit from the comparison of their argumentation maps with those created by the professor. In an exit interview, one student commented:

> For me, it got me in here every week to review. I thought that was great…Plus, [Questmap] gives focus for our study group. Instead of interrupting us with conversations about what's going on in our lives, the computer focuses us and keeps us on task…Also, it is a way to compare our analysis with [the professor's] which is basically, a correct analysis.

Further, students attested that [using Questmap™] was much faster than meeting in groups for several reasons: (1) it focused group discussion, (2) it provided for adversarial role-playing, and (3) it provided a means for efficient storage and retrieval of arguments throughout the semester. Shum et. al (1997) reported similar results with designers using CSCA (see Table 1).

Table 1: Benefits of CSCA (adapted from Buckingham Shum et. al, 1997)

	Collaborative Argumentation
Store information	serving as a long term, reusable project memory
Express ideas	supporting the emergence and debate of new ideas
Mediate interaction	structuring and focusing discussion

Buckingham Shum et. al., (1997) classified the overall benefits of CSCA to designers into three important functions: (1) to store information (Questmap™ stored all entries in a central database. Users could browse old argument structures and search them for keywords), (2) to express ideas (Questmap™ supported the ability to express ideas using common legal terminology (e.g, objects to, supports, etc.)), and (3) to mediate interaction (students reported less 'small talk' and more intense focus on argumentation throughout weekly Questmap™ sessions).

Future Research

No significant differences in final exam scores were found between the treatment and control groups indicating that Questmap™ was not effective in increasing argumentation skills in second-year, second-semester law students. Further research should investigate the level of expertise at argumentation in which CSCA can be effective, yet still reasonably efficient. Since the results yielded a marginally significant result (t=0.05, df=69.210, p>0.05) with students highly skilled in argument, it is suspected that the use of Questmap™ by students with less expertise in argumentation would provide significant results. Indeed, expert vs. novice studies in the field of economics have shown argumentation skills to be positively linked with level of education (Voss, et. al., 1986).

In every study, there are dozens of questions that divulge themselves throughout the research. Future studies should consider the complex interactions between factors, including: domain and argumentation knowledge, training in CSCA tools, user interface design, and motivation to use CSCA.

In similar studies, future research should help explicate the group argumentation processes in both the control group and the treatment group. Does CSCA change the interactions between group members or the process of constructing arguments? Video-taping both processes and analyzing transcripts would help identify key differences that may be taking place with and without CSCA present.

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