Debating E-commerce: Engaging Students in Current Events

Amber Settle[1] and André Berthiaume[2]
School of Computer Science, Telecommunications, and Information Systems
DePaul University
Chicago, IL 60604
USA

Abstract

A fundamental task for information technology educators is to help students understand the basic ethical, social, and legal issues inherent in the discipline. We present a method for achieving this goal using in-class debates. Debates allow for a high-level of participation, demand that students conduct significant research, and provide an interactive environment. This encourages the development of communication skills and exposes students to alternative points of view. The debates were conducted in two courses that provide a survey of some aspect of e-commerce technology, one at the undergraduate level and the other at the Masters level.

Keywords: Ethics, e-commerce technology, e-commerce, e-business

3. INTRODUCTION

A fundamental task for information technology educators is to help students understand the basic ethical, social, and legal issues inherent in the discipline. This is true both for computer science and information systems programs (Computer Sciences Accreditation Board, 1992; Davis, Gorgone, Couger, Feinstein, and Longnecker, 1997). There are two ways to bring these issues into the curriculum, either by introducing a separate course or by adding the content into existing courses (Wahl 1999). The School of Computer Science, Telecommunications, and Information Systems at DePaul University has for the most part taken the latter approach. Undergraduates, as a part of their general education requirements, are required to take an ethics course, but this course has minimal technical content (DePaul Liberal Studies Program 2002). Masters students can take the ethics course designed for the Ph.D. students as an elective, but to the best of our knowledge, this has never occurred (DePaul CTI 2002). Thus, any coverage of ethical, social, or legal issues with respect to technology must be done in existing courses throughout the program. There is evidence that this approach is beneficial, improving students' attitudes toward most ethical issues in computing (Cohen and Cornwell 1989).

There are several ways to introduce students to these issues within a technical course. The most passive approach, from the students' perspective, is to add the topics to the lecture for the course. While this exposes them to the material, it does not engage them in the process. A more active approach is to ask students to prepare written materials dealing with some ethical, social, or legal aspect of technology. While this may improve their comprehension, the lack of exposure to multiple points of view may lead to narrow opinions and reinforce personal bias (Siegfried 2001).

A more complete picture can be conveyed to the students if they are involved in an interactive dialog. The standard way this is done is through class discussions. However, in large courses this can be cumbersome. One way to handle the logistics is to conduct discussions on-line (Clark 2000). We feel that while discussions expose students to other points of view, introducing more structured research would increase the benefit. To do this, we adopted the idea of in-class student debates.

Because the purpose of the debates is to engage students in critical thinking about controversial topics with a significant technological component, the focus is on the content of the debates and not the format. We explicitly chose not to follow any formal debating style or methodology.

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[1] asettle@cti.depaul.edu
[2] berthiaume@cti.depaul.edu

We present results from our debate experience. We selected two courses from the CTI curriculum, one undergraduate and one graduate, in which these debates would take place. Both courses provide a survey of some aspect of e-commerce technology, and thus offer the best context for the introduction of a broad spectrum of issues related to technology. In the remainder of the paper, we provide background on the courses, outline the debate structure and topics, and discuss our findings.

4. THE COURSES

It has been our experience that graduate students show more maturity regarding coursework than undergraduates do. In general, CTI graduate students take their work more seriously and are able to handle stress better than their undergraduate counterparts. Since a public-speaking situation is particularly stressful for students, it is logical to expect that more mature students would handle such assignments better. For this reason, the course in which a debate assignment is given can have an impact on the results. With this in mind, we selected an undergraduate course, ECT 250: Survey of e-commerce technology, and a graduate course, DS 420: Foundation of distributed systems for this work. It should be noted that both courses operate within a quarter system. In the quarter system at DePaul University, each course has 10 weeks of regular instruction followed by a one-week final exam period. The 5th or 6th week is the standard time for a midterm exam. Classes meet 3 hours a week, either twice a week for 1 ½ hours, as is the case for ECT 250, or once a week for 3 hours, as for DS 420.

Undergraduate Course
ECT 250: Survey of e-commerce technology is a course required in several of the undergraduate degrees at CTI, including the bachelors degrees in E-commerce Technology, Information Systems, and Network Technologies (DePaul CTI 2002). The purpose of ECT 250 within the undergraduate curriculum is twofold. First, it provides students with a general survey of the topics important to the study of e-commerce technology. The topics of the course range from a history of the Internet to legal issues surrounding e-commerce. The survey topics are supported by the textbook for the course (Laudon and Traver, 2002). The second purpose of the course is to prepare students for the client-side Web application development course that follows it within each of the three undergraduate degrees mentioned earlier. This preparation entails learning how to create Web pages using FrontPage 2000 and how to publish Web pages on a Unix system. The goal in giving some topics more coverage is to expose students to a deeper knowledge of topics than a survey can provide. A course that takes both a breath-first and depth-first approach simultaneously is unusual (Reed 2001; Settle 2001).

Since the topics in the survey portion of the course are closely tied to current trends in e-commerce, including international, legal, and ethical issues surrounding the Internet, the course is a natural setting for the debate scenario described above. ECT 250 serves as an orientation for the remainder of their undergraduate experience, and it is crucial to impress upon them both the fluctuating nature of e-commerce and the importance of remaining engaged in public debate over the impact of changes in technology.

Graduate Course
DS 420: Foundations of Distributed Systems is a course required by two of the Masters degrees at CTI, E-commerce Technology and Distributed Systems, as well as an elective for the Computer Science degree (DePaul CTI 2002). The purpose of the course is to introduce the foundational and technological issues in building distributed systems. It examines current architectures, protocols, and tools. In particular, the course covers network protocols, network programming with Java, HTTP, operating systems and threads, remote procedure calls and remote method invocation and security in a distributed environment. No single topic is covered in great depth, so that the course serves as a survey of the area. The textbook for the course provides material on the required topics (Coulouris, Dollimore, and Kindberg, 2001).

Although DS 420 is more technical than ECT 250, it serves a similar purpose by providing Masters students with a framework for understanding the material that will follow in the advanced phase of their degrees. With their newly acquired understanding of fundamental e-commerce technology, students in DS 420 are encouraged to dissect and critique current events and trends in the field. These students are keenly aware that they will soon be regarded as e-commerce experts in their work environment and it therefore behooves them to sharpen their analytical skills.

3. THE DEBATE STRUCTURE

The debates were not introduced until the midpoint of the course, since the debates required a substantial amount of background information. There were two roles for each debate topic: pro and con. The pro participant was required to present the case supporting one side of the debate issue while the con participant presented the opposing viewpoint. Suggested positions were given for each topic to provide some structure to the students. The debate topics and suggested positions for each topic are given in Table 1.

Offensive Web content: Controlling content viewing
Pro: Offensive Web content must be controlled and monitored in order to protect portions of the population (e.g. minors)
Con: Web content is protected under free speech and

should not or cannot be controlled.
Copyrighting digital media: The Napster case and other licensing issues
Pro: Copyrights should be enforced on the Web.   **Con**: Copyrights should not or cannot be enforced on the Web.
The U.S. government versus Microsoft Corporation: Was the settlement appropriate?
Pro: The settlement is fair.   **Con**: The settlement is not fair.
Legal issues in e-commerce: Legal standing of digital signatures and electronic transactions
Pro: Digital signatures and credit card authorization are or must be made enforceable, even at the risk of privacy violations.   **Con**: Completely secure and verifiable digital signatures and credit card authorization should not or cannot be achieved.
Sklyarov case and code breaking in general: Should we allow public discussion on how to break encryption code?
Pro: Public discussion on encryption breaking should be allowed.   **Con**: Public discussion on encryption breaking should not be allowed.
U.S. bill draft: Government imposed software security
Pro: The U.S. government should or has the right to impose software security measures.   **Con**: The U.S. government cannot or should not impose security measures on software.
The French government versus Yahoo! : How can territoriality of laws apply in cyberspace?
Pro: Governments have the right to enforce local laws on the Internet.   **Con**: Governments cannot or should not be allowed to enforce local laws on the Internet.
Virtual child pornography: Should it be allowed?
Pro: Virtual child pornography is protected by freedom of speech.   **Con**: Virtual child pornography is harmful and should not be allowed.

Table 1: The debate topics and suggested positions

Students who participated in the debates picked a topic and a position for that topic. In order to prepare for the debate they were asked to research their topic and provide a document summarizing their research. In both courses, this document was required to contain the following items: 1. A statement giving the context for the topic. This should include any background information necessary to understand the arguments provided by either side. One to two pages were the suggested length for this portion of the document. 2. A summary of the position taken by the student. Again, one to two pages were the suggested length. 3. A list of sources for information supporting the position taken in part two. These sources could include books, newspaper and magazine articles, Web sites, etc. The title and

reference of the source were required in addition to one or more short quotes (each a maximum of 3-4 lines) from the source.

The debates themselves took place during regularly scheduled class sessions. Each topic was allocated 30 minutes of time. The exact speaking order and allotted times were as follows: 1. **Pro's opening statement** (*5 min*): Pro states the context, his/her position and provides supporting evidence. 2. **Con's cross-examination** (*3 min*): Con's rebuttal of pro's position statement in which pro's points are addressed in turn 3**. Con's position statement** (*4 min*): Con states his/her position and states supporting evidence. 4. **Pro's cross-examination** (*3 min*): Pro answers con's position statement, addressing con's points in turn. 5. **Audience questions/comments** (*8 min*): The audience and/or assigned interrogators ask questions. 6. **Pro's closing statements** (*2 min*): Pro recaps his/her point s. 7. **Con's closing statements** (*2 min*): Con recaps his/her points.

Students who chose not to participate in the debate were required to answer additional questions on the final exam. These questions covered the topics discussed during the debates. As a result, all students were required to attend the debates. This option was provided so that students whose native language is not English and students uncomfortable with public speaking would not be forced to participate.

Although the debates had the same basic structure and nearly the same set of topics in each course, there were some differences. These are described below.

Undergraduate Course
The set of topics suggested to the ECT 250 students included all of the ones listed above, with the exception of the U.S. bill draft issue. Students were required to research at least one of the topics and produce a summary paper. Each student was then required to either debate their topic or answer extra questions on the final exam covering the topics debated in class. Extra credit on the final exam was given to those who chose to debate as incentive to encourage the more reserved students to participate.

Additional guidance was provided to ECT 250 students on the format of the research paper. The students were required to produce a paper with four sections. The first section gave the context of the debate. It was made clear to the students that this should include information necessary to understand either position, including names, dates, laws, and other relevant facts. The second section was a summary of the position the students to present. Students were explicitly told not to copy from their sources, but instead provide a summary of the facts supporting their position. This extra requirement was added based on the observation that some of the students in the Winter quarter DS 420 debates had simply cut and pasted this section from their sources. The third section

of the paper asked students to provide a summary of arguments against the position. Again, students were told not to copy verbatim from their sources. Finally, the last section of the paper was a list of supporting sources. The students were required to give 10 sources and list at least two relevant quotes per source. Since ECT 250 students have less experience in preparing written documents, we felt that this extra guidance would help them to produce a better quality final product.

The grading scheme for the debate was also explicitly given. The debate portion of the course is worth 10% of their overall grade, with exams and homework contributing the remaining 90%. For the debate portion of the course, the timely choice of a topic is 10%, the research paper 40%, and the debate or exam questions answered 50% of the overall debate grade. The context section of the research paper is 10%, the summary in favor of the position 10%, the summary against the opposition 5%, the list of sources and quotes 10%, and spelling, grammar, and presentation of the research paper is 5% of the debate grade. The debating grade is based 30% on completion of all required elements, 10% on attendance, and 10% on the quality of the debate given. The exam questions themselves are worth 40% and attendance at the debates 10% of the debate grade. We hoped that an explicit grading scheme would give the ECT 250 students a better idea of what was expected of them, encouraging them to focus their effort wisely.

Graduate Course

The debates for DS 420 were scheduled in two consecutive quarters: Winter and Spring 2002. The suggested set of topics for included all the ones listed above with the exception of the virtual child pornography issue. Students who participated in the debates were graded on their research document and debate performance. Students were told that when preparing their position statement, they should keep in mind the possible views that their opponent could take and prepare accordingly.

Debating teams also including a third party: the interrogator, whose role was to force the pro and/or con side to address hard issues. The interrogators had to research the topic and produce a document describing the context of the topic with appropriate references and including two questions to be directed either at the pro or con participant. In addition, interrogators had to describe the answers they would expect.

The grading scheme for the debate was as follows: debaters (pro, con and the interrogators) were graded on 20 points for the research documents they prepared and their debate performance. These points were directly added to their final exam score and excused them from the debate question on the final. Non-debaters had to answer a special question on the final that was related to some of the issues raised in the debates.

4. RESULTS

Much to our surprise, there was enthusiastic response to the debates from both populations of students. We had predicted that the fear of public speaking would discourage students from participating, but this was not the case. Also, the quality of the research papers produced was good. For the most part students took the assignment seriously and put a great deal of effort into their research. Finally, the quality of the debates was also higher than expected, and the students demonstrated a remarkable ability to use their technical knowledge in the analysis of the issues. As could be expected, there was some difference in the results between the two classes. The details for each class are given below.

Undergraduate Course

The debates in the ECT 250 class were conducted during the Spring quarter 2002. There were 14 students in that section of the course, a number well below the average of 35 for the course as a whole. The number of students majoring in a technical degree was also low, with 5 students majoring in an area within CTI, 7 majoring in an area associated with the School of Commerce, and 2 in the School of Liberal Arts and Sciences. Since the course is taught during the day, all of the students were traditional-age undergraduates. Also, all students were native English speakers. The overall rate of class attendance and homework submission was lower than has been our experience in previous quarters. Despite this, as noted above, there was enthusiastic response to the debates.

Four debates were scheduled, one on copyrighting digital media, one on the Skylarov case and code breaking in general, and two on offensive Web content. The debates were scheduled two per class session during the last week of the quarter. Given the poor overall preparation of the class in other aspects of their coursework, our expectations for the debates were low. We were pleasantly surprised. It was clear that all of the debate participants had thoroughly prepared, and all were able to list some important dates, names, and other relevant facts. Interestingly, the students were far more articulate than anticipated. They were able to not only express themselves well in the their prepared statements, but they handled questions from the audience and the instructor in a clear manner. Some students were not, however, perfectly prepared. Their debates were unorganized, and several important facts were missing from the required statements. Overall, it was a success, and the students earned an average of 92% on their debates.

Unlike in the DS 420 class, the ECT 250 students not participating in the debates were also required to produce research papers. We believed that the undergraduates would benefit more from the experience if they took an active role in learning about the topics.

They were allowed, however, to choose the topic of their papers. They were given extra credit if they choose to research two topics rather than one. Several of them elected to do this. We believe that this preparation prior to the debates had its intended effect, as many of the students in the class were able to ask pointed and knowledgeable questions of the debaters.

Graduate Course

In the DS 420 class the debate format was tried during two consecutive quarters. The Winter quarter class had 52 students while the Spring class had 36. When presented with the debate option, both classes were extremely enthusiastic. During Winter quarter, all topics had an associated debating team with the exception of the French government versus Yahoo! During Spring quarter, only three topics attracted debating teams: The U.S. government versus Microsoft Corporation, legal issues in e-commerce and copyrighting digital media. The much lower debate participation in the Spring quarter may be explained by the smaller class and the fact that some of the proposed topics may have appeared less "current" to students in Spring quarter. It is interesting to note that our concern regarding non-native English speakers may have been overstated, since non-native English speakers accounted for more than half of the debaters in DS 420.

The results from the Winter class were encouraging. With a few exceptions, it was quite evident that the speakers and interrogators had done extensive research of their topic and quite admirably presented their assigned position, regardless of their personal beliefs (a rather difficult task given the sensitivity of certain topics). More importantly for DS 420 students, it was clear that the students were able to appropriately evaluate technical aspects of their issues. For example, when debating U.S. government versus Microsoft, the issue of creating a modular operating system had to be addressed. The DS 420 students were capable of appreciating the complexity of the task from a programmer's point of view, and they were able to see possible repercussions on software security and user privacy. Similarly, when debating the legal standing of digital signatures, students distinguished desirable properties that would be impossible to actually implement from reasonable compromises that could be designed.

The results from the Spring class were surprising. The verbal and analytical skills demonstrated by the debaters were consistent with those of the Winter class, but the class audience was far more participative and better prepared for the debates. Conveniently, since this class only selected three debates, class time was not at a premium and more latitude was given for interaction with the audience. The audience thoroughly questioned the debaters, who in turn demonstrated excellent knowledge of their topic.

The significant increase in audience participation can be explained in two ways. First, the list of topics was given to the students much earlier than in the Winter quarter. This appears to have encouraged some students to look up the material on their own, as demonstrated by the fact that numerous non-debaters came in with notes, ready for the question period. Secondly, the debate topics were more closely integrated with normal lecture material during the quarter. For any solution or answer students provided, they were required to justify their specific choices, and if general users were involved, they were expected to explain how the users would be affected. This emphasis on the human components as part of any solution appears to have better prepared students for the debates.

5.   CONCLUSIONS

The most surprising outcome was the difficulty in predicting student reaction. Students were far more enthusiastic about the debates than we anticipated, yet the number of students volunteering to debate was more varied. For example, in the Winter quarter DS 420 class, we were forced to turn away interested students because of time constraints, but in the Spring quarter DS 420 class, we experienced a scarcity of volunteers.

We were impressed with the quality of the debates. Students were certainly well prepared for their debates, having taken the assignment seriously. However, the quality of the debates varied between the graduate and undergraduate courses. The DS 420 students were able to take the material they had learned in the course and integrate that into their debates. Though only midway through their Masters program, the graduate students were able to apply their technical knowledge to ethical, social, and legal issues. Further, they were able to look objectively at the issues, divorcing their personal opinion from the facts at hand. As expected, the undergraduates were less skilled at debate than the graduate students were. They were unable in most cases to take the facts they had researched and analyze them to understand how the information was relevant, or more importantly irrelevant, to the question at hand. A characteristic that both sets of students shared was a high quality of presentation. Both native and non-native English speakers showed an ability to clearly articulate their position. Such analytical and communication skills are crucially important for future IT professionals who will be called upon to make technological decisions that may affect the public at large.

Future work

There are several avenues for future work. First, we intend to make debates an integral component of ECT 250 and DS 420, providing us with broader experience and allowing better analysis of the results. One possible modification to the experiment would be to have the debates one or two weeks earlier in the course to provide an opportunity for in-class reflection on the points that

surfaced during the debates. Also, it would be interesting to consider adding debates to other courses in the curriculum. One possibility is CSC 200: Survey of computer technology. This is a course similar to ECT 250, but for computer science undergraduates (DePaul CTI 2002). Another excellent choice would be the capstone courses in each of the undergraduate degrees at CTI. As part of the Liberal Studies Program at DePaul, undergraduates are required to take a course that integrates their general education requirements and the body of knowledge gained in their major (DePaul Liberal Studies Program 2002). This context provides an optimal environment for introducing debates on ethical, social, and legal aspects of information technology. A similar idea has been applied in the Biology department at DePaul with great success (DePaul Department of Biological Sciences 2002).

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