THE INTERACTIVE CASE STUDY

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ABSTRACT

One of the many challenges faced in today's classroom is the development of the students' analytical and problem-solving skills. These skills, although technical in nature, are fundamentally based on communication skills. In the field of technology, mastery of these skills requires the technical analyst to be able to communicate to the business professional. The analyst needs to be able to formulate a cohesive solution to a complex problem through communication with non-technical managers and staff. The ability to successfully perform these critical communication and analysis skills is paramount to the success of the student in the business world. Unfortunately, this is a difficult process to address in the classroom. Utilizing business professionals in the classroom is difficult if not often impossible to coordinate. This paper will outline how collaborative tools can be used to assist in developing these skills outside the classroom in the form of the Interactive Case Study.

Keywords: Collaborative, interactive, case study, systems analysis, pedagogy, teamwork learning, groupware

INTRODUCTION

The College of Business Administration offers several concentrations with the MBA program. The most popular of these is the concentration in Information Technology. One of the courses in this concentration is BMA 675: Managing Systems Development. In this course the student is exposed to object-oriented analysis and design. The only prerequisite for this course is a two-hour introduction to technology course. The course concentrates on expanding the students' technical vocabulary and basic computer literacy, development of object-oriented methods for analysis and design, and the development of analytical skills need to resolve business problems. Through this course, the student should learn to communicate effectively with both technical and non-technical business personnel. This paper focuses on the development of a learning environment to enhance the analytical skills needed to resolve business problems.

Currently in the business world, a team approach is taken in all but the most trivial projects. Through this course, an attempt was made to enhance the students' team skills without impacting the learning process. Since, the benefit of peer learning are complex and not completely understood (Good, Mulryan, & McCaslin; Slavin, 1992) it is difficult to balance learning at the individual level with team building. According to Cohen & Lotan, (1997) those who are perceived to be more competent by others and who expect more of themselves tend to capitalize on peer learning. They perform to a higher standard. In a learning environment, this can be a detriment to the rest of the team. Cohen's research stated that low achievers have a tendency to fail to actively participate and learn in a team environment (1994 and 1997).

In addition, empirical evidence indicates that individuals in groups are less productive (Haslam, 2000). According to Salomon and Globerson (1987) the failure to make the learning experience psychologically meaningful is a key factor in the underperformance of collaborative

groups. The model developed attempts to minimize the negative characteristics of teamwork; poor information sharing, social loafing, free riding and groupthink (Lea, 2002), and maximize the learning of the student.

In the Managing Systems Development course, the students created teams that functioned as consulting companies vying for the contract to develop a new system for an existing business. Throughout the semester, the students interacted in a collaborative environment with actual business professionals who played such roles as CEO, CFO, secretary, network manager and sales representative. The learner needed to master the analysis process, learn to function in a collaborative environment, and to participate in a more realistic business experience. The locus of control was with the learner. The teacher or facilitator was the interactive role-play character in the collaborative environment (Brown et. al., 1993, Cobb 1994). These characters guided the learner through a maze of information and misinformation on a quest for a solution to a business problem.

The underpinnings of this learning experience are based on the cognitive and metacognitive factors developed of the American Psychological Association's research-based learner-centered principles (1997).

1. **Nature of the learning process.** The learning of complex subject matter is most effective when it is an intentional process of constructing meaning from information and experience.
2. **Goals of the learning process.** The successful learner, over time and with support and instructional guidance, can create meaningful, coherent representations of knowledge.
3. **Construction of knowledge.** The successful learner can link new information with existing knowledge in meaningful ways.
4. **Strategic thinking.** The successful learner can create and use a repertoire of thinking and reasoning strategies to achieve complex learning goals.
5. **Thinking about thinking.** Higher order strategies for selecting and monitoring mental operations facilitate creative and critical thinking.
6. **Context of learning.** Learning is influenced by environmental factors, including culture, technology, and instructional practices.
1. **Social influences on learning.** Learning is influenced by social interactions, interpersonal relations, and communication with others.

PROBLEM

The course, Managing System Development, lacked educationally sound tools for teaching the students the investigative methodology need for effective problem resolution. Case studies had been used in the past. When compared to the *Interactive Case Study* in a collaborative environment, the traditional case studies are more limited in educational value. In addition, most of the students do not have the personal skills necessary to perform an in-depth analysis of a technical business process. The *Interactive Case Study* gives them the opportunity to interact with real-world businessmen, to develop critical analysis skills, and at the same time get experience with a new technology, collaborative processing.

METHODOLOGY

One should think of an *Interactive Case Study* as an educational version of an improvisational play where the audience takes an active part in the outcome of the play. The actors and actresses provide the primary direction for the play but depending on the action or reaction of the audience, the play can take a different course. Through the *Interactive Case Study*, the students can develop those skills necessary to obtain the pertinent information necessary to design a model for a working system by asking the role-players questions and then and additional questions relating to the responses of the role-players. Much like the improvisational play, everyone is privy to both the question and the reply. The *Interactive Case Study* is similar in nature to traditional case studies but the material is presented piecemeal through a series of role-players.

The *Interactive Case Study* has two components. First component was a group of ten business professionals that have the time to devote three to four hours a week to answering student questions. Finding these individuals was the most difficult part of the process. All of the role-players were give the same background information as the students. In addition, each of the role-players is given a detailed resume that they are to follow. The role-players were instructed not to share their resumes with other role-players since many of the role-players have hidden agendas. The second component was the student teams acting as analysts, trying to find out as much information as possible about the scenario. Teams of three or four were used. Because the role-players were working professionals, they traveled, took vacations and were unavailable for extended periods of time. This added a additional level of realism to the *Interactive Case Study*.

Motivating the students was their natural desire to compete and obtain the best grade possible. Each team periodically posted their findings on the team web site in the form of scope documents, context diagrams, interface charts, ERDs, class diagrams and subsystem diagrams. Their work was visible to all. In addition, whichever team has the best proposal got the best grade and also gets to have their proposal used as the basis for the system prototype.

Initially the students were told the general framework of the process. They were to form teams to compete for the contract to develop a sales system for Strategic Used Equipment Enterprise (SUEE). The students were then instructed to perform an in-class interview. Each student presented himself in a manner consistent with applying for a position in a real-world environment. After the interview process was complete, the students were given adequate time hire their fellow employees to incorporate their new companies. They then created a web site and a skeleton home for the documents to be created later.

The following case overview was presented to students and role-players.

Big Dirt Movers Inc. (BDMI) is a manufacturing firm specializing in large earthmoving equipment. They sell the equipment through their global dealer network. The dealer organization is territorial in nature. BDMI focus has been the design, manufacture and sales of new equipment. The selling of used equipment has not been a key component of BDMI. Through the executive office a new subsidiary, Strategic Used Equipment Enterprise (SUEE) was created to address the used equipment business.

Up to this point in time, the DBMI dealers were responsible for the used equipment side of the business. BDMI supplied contacts and financial assistance. Used equipment can be a profitable business. During the mid 1990's several independent companies have started buying and selling used equipment. Trade

journals and a few startup web sites supported this market. This market is limited by capital constraints. Earthmoving equipment is very costly with fleets costing possibly costing over $20,000,000 and individual pieces of equipment as much as $1,000,000. SUEE has the financial resources to purchase fleets of equipment and sell it piecemeal to DBMI dealers. The profit margin for used equipment can vary from 10% to 20%.

The mission for SUEE is to setup a network to buy and sell DBMI used equipment. They are to deal in competitive equipment only as necessary to consummate a larger deal for DBMI equipment. SUEE is also chartered to work with the dealers to create a standard by which BDMI equipment can be judged. SUEE is to assist BDMI dealers whenever possible and not act as a competitor. They are to provide financial assistance through BDMI Financial Services. SUEE is encouraged to provide extended warranty on DBMI products.

After the general outline of the project was presented to the students, the following instructions were given to the student teams.

1. Use object-oriented techniques in performing analysis.
2. Determine the scope of the project.
3. Outline what business problems need to be addressed by the system.
4. Analyze an evolving environment. Things will change over the period of the project.
5. Resolve contradictory information. Not all role-players know the right answer.
6. Obtain various perspectives. The CEO will view the problem differently from the CFO.
7. Each team independently analyses the business problem and presents a solution.
8. Role-players, instructor and class members decide which proposal makes best business sense. Class members will discuss potential enhancements to the proposal.
9. The winning team will make applicable changes to the proposal.
10. The Winning proposal is distributed to other teams.
11. Each team is assigned a functional area to develop a prototype of the system.

Collaborative Environment

The computer environment used for the *Interactive Case Study* was based on Microsoft FrontPage discussion components and viewed through Internet Explorer. During the preparation for the study, both an AS/400 based Lotus Notes solution and an IIS News Group were developed. The AS/400 Lotus Notes solution was too slow and the templates provided by IBM were too limited. The IIS News group came in a close second. It would have been the preferred solution except the University lab computers as well as many of the student's work computers did not have newsreaders installed. Since this is an MBA course, requiring the non-technical student to install additional software on their computers was deemed to inappropriate.

Interactive Case Study Fundamentals

The role-players in the *Interactive Case Study* included the CEO, CFO, secretary, accountant, IS Manager, LAN Manager, Marketing Manager, Office Manager American Sales Representative and European Sales Representative.

Each of the role-players was given a Resume+. This document included the typical items one would find on a resume but also included personal bias, interoffice alliances, job expectations, work ethic and hidden agendas. The Resume+ was the basis for their personality. Role-players could adlib if they find it necessary or desirable. A sample Resume+ for the CEO is presented below.

Each role-player posted an "introduction" in the collaborative environment prior to the night the project was introduced. After the introduction of the problem, each student posted an "introduction" in the collaborative environment. This assured all participants were on the same technical page.

In order to facilitate the interactive question and answer interchange seven basic rules were imposed.

1. No multipart questions in a post. If more than one question is needed, submit each on a separate post.
2. Questions previously asked were not to be repeated. The same question may be asked of different role-players.
3. The subject line for post should reflect question.
4. Be professional at all times.
5. Role-players will respond within 48 hours unless they are unavailable. Role-players will inform the teams if they will be unavailable for an extender period of time.
6. Role-players will respond to first question in a multiple question post
7. Role-players will respond from their perspective

FINDINGS AND DISCUSSION

In this study, twenty-two students formed seven teams. The students had significant problems creating teams. Ethnic, major, gender and social issues appeared to play a big part in team creation. .

Student participation was a key issue in the analysis project. It wasn't until the third week that a significant number of questions were asked. The first week numbers were inflated by the first night introduction postings. Several students had problems formulating meaningful questions. Many of the initial questions were too vague.

Figure 1. Questions per week

The number of questions per student varied from 6 to 33. With the exception of teams B and C, each team had one or more free riders. It is unknown if the team member of the other teams passed the questions on to a team leader to post the questions. 85% of the student questions were short, 15 words or less, and to the point. Listed below are examples of student questions.

- What is the chain of command for SUEE?
- What are SUEE's financial goals for the next three years?
- What currency is used for foreign transactions?
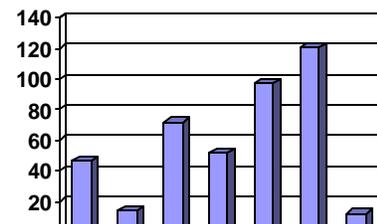- Who approves the sale of a piece of equipment?

- How many pictures of each piece of equipment are required?
- What is sludge equipment?
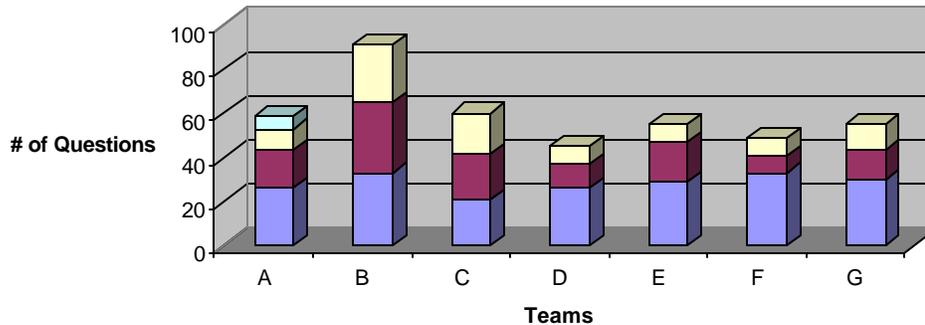- What are the condition codes for the equipment?

Figure 2. Questions Per Team Week

Of the 414 questions submitted, only three questions were near duplicates of existing questions. Two of the three actually came from the same team. There were seven technical errors such as no subject line, classification, or recipient (target) for the question. 22 questions were multipart in nature. 18 times the role-player, although instructed otherwise, answered all the questions in the multipart questions. The role-players took their responsibility seriously. On one occasion, a student repeatedly addressed the CEO in a very unprofessional manner. The CEO sent a memo to the other role-players and the instructor recommending the team be "fired".

CONCLUSIONS

As demonstrated by the documents prepared by the teams, at least one member of each team had a very good grasp of the process. The development of analysis skills and an appreciation for the process of developing questions was demonstrated to a lesser degree by all of the team members through their presentation of the findings and their presentation of the proposed system. The students' ability to reconcile diverse opinions and facts as presented by the role-players was not evident. It appeared that the students just picked one of the opinions and "went with it".

The course reviews indicated that the use of the *Interactive Case Study* or what became known as the Real-World Project was the most positive learning tool of the course. In general, the students the students overall impression of the class rated a 4.57 out our 5. When asked "What is the aspect or part of the this course that you fee gives or will give you your greatest benefit?" the students responded with the following comments:

- "The real world example."
- "Working on the real project for a company."
- "Liked project design."
- "The greatest benefit was from the case study and prototype."
- "The greatest contribution was the real-world project."

All the students participated in the *Interactive Case Study*. In each team there appeared to be a team leader that asked the more relevant questions. Unfortunately, the weakest link was the selection of teams. Personal friendships, gender and cultural factors appeared to be driving the selection of teammates, not what skills that a team member could bring to the "company".

FUTURE INTERACTIVE CASE STUDIES

The *Interactive Case Study* requires additional time and energy on the part of the instructor and the role-playing participants. The most critical factor was obtaining the personnel to play the various businessmen. Scaling back the number of characters in the *Interactive Case Study* would potentially allow the use of this type of tool in more classes but would potentially dilute the variety of opinions and responses. In a larger university environment or in a larger metropolitan area, the pool of potential players could be increased and could possibly resolve this problem.

From an instructor's perspective, once the *Interactive Case Study* is created, it is reusable. The outcome will vary from class to class simply because of the different participants. This eliminates many of the problems of recycled student work. Using variations on a theme approach, the same general scenario used in the Managing Systems Development course could be used in a web design, database management or usability course. This reduces much of the preliminary work but may appear to student as a recycled assignment.

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