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SIM MAP: TURNING ACTION-BASED LEARNING INTO SIMULATED CONSULTING PROJECTS

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ABSTRACT

Describes the SimMAP program at the UM Ross School of Business that captures student action-based learning experiences and re-uses this content as simulation content for other UMBS classes. This paper described the first year of progress in this area, how some key challenges were addressed, and shows the pedagogical models for re-use we have developed that range from short class discussion activities to longer case- and simulation engagements.

LEVERAGING ACTION BASED LEARNING

Action based learning, also called project-based learning (Blumenfeld, et al. 1989) is an experiential learning method with high potential but also high difficulty. Action learning can promote active engagement, teach problem-solving skills, critical thinking skills and teamwork skills in students at all levels, which are central goals of modern pedagogy (Bransford, Brown and Cocking, 2000).

The University of Michigan's Ross School of Business runs what is one the largest and most immersive Action Based Learning program in existence. Its flagship program is MAP, or Multidisciplinary Action Projects, where every first-year MBA student participates in a seven-week consulting project. Corporations pay $2,000-45,000 dollars each to sponsor student teams, who are given real data-intensive business problems to address in a short time. A smaller number of student teams address problems for nonprofits, often in the developing world, or examine targeted research issues requiring field data collection.

Action Based Learning is considered an extremely valuable part of the MBA curriculum, and was cited high among the reasons that Ross was recently ranked #1 among MBA programs by the Wall Street Journal. Recently the Dean's office has undertaken a project to try to further leverage the value of these experiences. Currently, when an MBA team has a particularly rich or interesting MAP experience, its learning benefits do not go beyond the immediate team and their two faculty supervisors. How could these experiences be captured and used to help enrich education at UMBS, particularly for Undergraduate BBA students who do not get a MAP-like experience?

The SimMAP project is attempting to recreate MAP experiences with interactive video simulations. Using MAP data for simulation content has a number of possible advantages over other sources. First, the business problems are authentic and current, being based on recent MAP projects with corporate sponsorship. Second, these projects have been selected to make sure they have worthwhile academic content, and the theoretical models used by MAP teams are often taken directly from the MBA core curriculum. Third, using projects conducted by real Michigan students lends some intrinsic authenticity and excitement, in the way that 'Reality TV' piques viewer interest by showing real scenes between characters with whom viewers can identify. This paper describes the first year of progress implementing this vision, including key design findings and challenges.

The vision of this research is to use Michigan's Action Based learning program to open a window onto practice for the entire business school, not just the students participating in MAP. Action learning projects are an excellent learning experience for students, and we are seeking to further leverage that learning to benefit other students, particularly undergraduates at Michigan.

PREVIOUS WORK ON SIMULATING ACTION BASED LEARNING

This project is not the first time our research team has attempted to simulate MAP projects, although it is the first time we have used authentic student-captured video. Prior to this project, Professor Michael Gordon developed and used

The Utility Company (TUC) simulation in undergraduate classes (Bos and Gordon, 2005). TUC was a multimedia simulation that challenged students to analyze and recommend changes to the technology infrastructure, billing, customer relations, collections, HR, management, and other aspects of a hypothetical utility company trying to prepare itself for deregulation. The simulation contained 38 videotaped interviews with simulated employees from all parts of the organization, augmented with ten internal reports, seven spreadsheets of raw data, and a variety of other data. Students explored this simulation in teams, following a weekly cycle of requesting new interviews and documents, reporting findings and working hypotheses, and receiving communications from the instructor along with his permission or denial of new interviews or documents. *TUC* has been very successful at simulating an open-ended, project-like experience. Students described the simulation in glowing terms as a challenging and immersive learning experience. It received student ratings that are significantly higher than both the school and professor average. Evaluations of the simulation show that it promoted skills of analysis, synthesis, and critical thinking while also covering important content goals (Bos and Gordon, 2005).

From this research we know that it is possible to create high-quality learning simulations that mimic some of the qualities of action-based learning. The challenge of SimMAP is to combine the open-ended learning experience of TUC with the currency and authenticity of MAP projects. But is it really realistic and feasible to create learning simulations based on authentic video shot by student project teams rather than scripted video with actors?

We are nearly finished with one academic year cycle of data collection, design and re-use, and this paper will report on progress made and lessons learned. In the spring of 2004 we trained two departing MAP teams in elementary videography, and briefed them on the goals of the SimMAP project. Both teams collected extensive video footage in the course of their projects. Video mostly included interviews, but also included some round table discussions, some contextualizing footage of the companies they studied. Over the summer the SimMAP project team catalogued video, summarized content, and began meeting with professors who were potentially interested in using MAP data in their classes. In the course of this work we identified key challenges, and useful pedagogical models for re-use which we report for the first time here.

KEY CHALLENGES

In the process of trying to create quality simulations based on authentic action-based learning experiences, we encountered several challenges.

Challenge 1: Privacy and permissions. An unavoidable issue in re-using company video is receiving permission to do so. Companies that sponsor MBA student teams usually have those teams sign non-disclosure agreements to protect their intellectual property. Capturing and re-using video of company employees of course would involve some relaxation of these restrictions. Companies worry about two risks. The first risk is that some valuable processes or products will be copied. This assumes that students will capture some aspect of the company that is exemplary and of competitive advantage. The second risk, conversely, is that the company's weaknesses and inefficiencies will be exposed. MAP projects often focus on a company's weakest areas, and interviews zero in on the sources of these problems. So, under what circumstances might a company agree to take these risks, and make this type of information public?

Our strategy for the first year was to focus on an organization that was relatively immune to these risks, the Aravind Eye Hospital System in India. The fact that they were overseas made it less likely that exposure within our business school might do them damage. Nonprofits also tend to be more open than for-profit organizations, because their relationship with other non-profits is less competitive. All of the content we developed in the first year of this project used video from Aravind. This hospital was one that did not depend on outside funding and was relatively immune to competition, allowing them to maintain a very open climate for students.

While this provided a temporary solution, we know that the issue of privacy will be more critical in the future as we venture into more domestic for-profit ventures. If we do a good job of protecting a company's image and proprietary information in the first-generation simulations we are developing, we may engender trust in future partners. We will be able to argue that the benefits of increased publicity at least outweigh the remaining potential risks.

Challenge 2: providing context. The second challenge is to provide a meaningful context to the video information collected by MAP teams. Video interviews done in the middle of a complex and immersive engagement often do not make very much sense to viewers not immersed in the project. Questions that are asked in interviews are often follow-ups on previous interviews, clarifications of information gained from other sources, etc. How could we make this information meaningful in a completely different context?

The answer to this question is more art than science at this point, involving much iteration of viewing video, designing re-use, investigating context, etc. In the final designs, almost all video needed some kind of explanation surrounding it. Sometimes this was as simple as a paragraph explaining who the interviewee was and what the main goals of the interview were. For more complex data, we found that voice-over narration was an effective tool. Prefacing a video clip with an interesting still shot combined with a 1-minute narration could provide needed context without burdening the students with too much background reading. The biggest lesson learned was not to assume that video by itself could be understandable to anyone outside the immediate project, but instead to assume that a great deal of effort must go into contextualization.

Challenge 3: Re-creating an authentic problem. The most interesting challenge of this project was figuring out how to re-use MAP data in such a way as to re-create the MAP experience on a smaller, but still authentic scale. Obviously we could not re-create the entire MAP experience, which included dealing with international travel, cultural barriers, communications difficulties, team dynamics, etc. For the most part we were asked to create small, self-contained content units that would fit within existing class structures. But we also wanted to retain some of the open-ended 'messiness' of a real MAP engagement. Two central goals of action-based learning are dealing with ambiguity and framing open-ended problems, and we wanted to maintain these qualities even in small-scale simulations. We have developed four models for creating an authentic problem with re-used data, as described here.

FOUR CURRICULUM MODELS

In the first year of this project we designed and implemented three curriculum modules using MAP data, which we will describe in increasing order of complexity. Each of these represents a design compromise, between our ideal version of how a MAP simulation should be and the needs of a professor at UM Ross Business School trying to fit new content into an existing class. We will also describe a fourth, idealized model for how we would like to use this content in the future.

Model 1: video with commentary. The simplest model for re-use, used in two Fall '04 classes, was to show a video with some associated commentary as a grounds for class discussion. This was the model used in an MBA class on organization change and an Evening MBA class on economics. In the organizational change class, the video was presented as an example of information interviewing technique. Students viewed a six-minute section of video in which a MAP team interviewed a senior company official in an on-site interview. The organizational change students had prepared for this activity by reading about the organizational context and MAP project goals and writing some of their own questions. After viewing the MAP interview, students could compare the questions asked by the MAP team to their own. Students also discussed aspects of the MAP team's interview technique including how the MAP team created rapport, asked both open-ended and closed-ended questions, and improvised follow-up questions. Finally, we had arranged for an experienced faculty member to provide written commentary on the interviewing techniques used in this video, which was made available to the students as part of the debriefing. The commentary helped direct the discussion, and also compensated for some areas in which the student interviewing technique was not ideal. This exercise provided grounds for a productive class discussion on interviewing techniques to a class that was going to be conducting their own informational interviews. In both cases, (the economics and organizational change classes) students seemed to be more engaged in discussing this authentic video, taken in an interesting context by some of their contemporaries, than they might have been in discussing fake video interview or having a decontextualized discussion of interviewing technique.

Model 2: video case. A slightly more complex and interesting model is to edit several video clips together, with some associated text commentary, into a video 'case.' Business school students are well acquainted with case discussions and can engage in them without much explicit preparation. We developed one such case for use in an economics class to discuss comparative advantage. Video interviews done on-site by the MAP team were paired with another interview done by the case designers at a U.S. based hospital. Students then contrasted the international nonprofit's core competencies and strengths with those of the US institution, and discussed what the best expansion and development routes for the nonprofit would be. Authentic video interviews also gave the cases depth and flavor that a text case might not have had.

Model 3: Jigsaw case. As we move into the more complex models, we get closer to the most exciting potential of this project, which is to re-create the open-endedness and immersiveness of a real project learning experience. To simulate the numerous and sometimes conflicting data sources students collected in MAP we adapted a version of a jigsaw method (Aronson and Patnoe, 1997). In the jigsaw model students work in small groups, and specialize their research within the group. Individual students take on separate research directions and then report back to the group, and the group as a whole must combine and synthesize the various perspectives in completing the project. This method provides for particularly rich and interesting small-group discussions because different team members are assured to have different information of value to bring to the discussion. It is also realistic to an MAP project where there is a great deal of information to gather and MBA teams must divide and conquer to cover the territory, then synthesize disparate findings.

Our implementation of a jigsaw was done in the context of a core MBA class on Organizational Behavior, on the topic of motivation. We had video interviews from one MBA team, and also had supplementary text and other data from other sources including a survey given at Aravind hospital by a previous MBA team and a Harvard case written about the same institution.

We focused in on a fairly broad issue, performance evaluation. We then gathered the relevant interview outtakes we had and divided them into two different 'perspectives', one stressing the value of standard quantitative performance measures and one the necessity of flexible, qualitative perspectives. In class, students were divided into six-member teams and then told that two sets of virtual interviews would soon be shown in two different rooms simultaneously. Teams divided themselves into three two-person subgroups. One subgroup attended each video set, while the third subgroup analyzed results of an employee survey on motivation that had been administered at Aravind

the year before. Each subgroup took notes and reported on each perspective back to their team after about 20 minutes. Each of the two video sets (quantitative and qualitative performance metrics) contained two edited video segments.

After gathering and synthesizing data, teams focused on their main task, which was to evaluate one of three proposals related to performance evaluation at Aravind (see Appendix A). These proposals were partly based on real proposal that had been floated at Aravind either internally or by student teams. The proposals also each had some known flaws or simplifications. The idea of presenting students with 'straw man' proposals to evaluate was useful in that it focused student energy and attention quickly in approximately the right direction, and gave them something to respond to. While it might have been a more ideal learning experience to let students write their own recommendations from scratch (see model 4), time constraints of this project made the straw man proposal evaluation a better fit. Student teams had 60 minutes of class time to address three questions related to their proposals: "What are the motivation theory or assumptions that appears to underlie the logic upon which the proposal is founded?" "What are the proposal's key strengths and weaknesses?" "What are the most likely intended and unintended outcomes if it were to be implemented as stated in the proposal?" At the end of 60 minutes each student team reported their main conclusions back to the whole class. This jigsaw model was implemented in six sections of core class in a two-hour class with approximately 70 students per class.

We followed-up on this exercise with an anonymous online survey asking ten Likert items and one open-ended evaluation question. The surveys are not all in yet (having been sent only 18 hours ago as of this writing) but we have already received a decent 122 responses from 416 recipients, a response rate of 29%.

Overall the feedback was very positive. In the open-ended responses, many students praised the simulation e.g. "Really liked the format" and "There should be more of these types of exercises". But most of the students also said they would have liked to have had more time, and suggested extending the simulation beyond one class period.

Overall the jigsaw model was judged by both researchers and professors to be a successful use of action-based learning video, presenting a do-able task that still replicated some the open-endedness and higher-level thinking skills used in MAP projects.

Model 4: Project simulation. We have not yet found an instructor at our institution willing to integrate a significantly longer project simulation into one of their classes, so the full project simulation has not yet been developed. We hold this out as a goal, however, and are doing initial design work for it. A full project simulation would follow a similar design pattern as the TUC simulation, but with authentic data. A larger number of video interviews (20+) would be edited and made available. Supporting documents in the form of reports, previous studies, and raw data would also be part of the simulation. Students would have to request interviews, not all of which would be granted, and search for data. The investigation phase would go on for some weeks, after which time all student groups would have seen much of the content, but no groups would have seen all of it. From there, student teams would have to write a report very similar to a final MAP report. It would summarize findings, prescribe changes for the organization, and also specify an implementation plan for those changes.

A full project simulation would also involve solving some technical challenges. The instructor would need to be able to easily set and re-set access controls at the folder level in order to customize data access to individual student teams, and prevent outsiders from accessing content. The instructor would want to be able to track student usage and progress. Students would want an easy and robust front end, and would not want to have to login in repeatedly to access different data files. Finally, we would like to have an appealing front end to the simulation. In the TUC project these technical requirements were accomplished by creating a customized version of CourseTools, which was then the University of Michigan's course management system. CourseTools has since been replaced by CTools, which is an open source courseware and collaboration platform being co-developed at the University of Michigan, MIT, Stanford, and Indiana University. We have begun discussions with the CTools developers about how to create a simulation platform on top of CTools which would be general and powerful enough to accommodate many different such simulations.

CONCLUSION

The first year of the SimMAP project, appears to be a success. We have demonstrated proof of concept for capturing and re-using data from student consulting engagements. We navigated three challenges of privacy and permissions, providing context, and re-creating authentic problems for classroom use. We developed a set of models for authentic problems of varying complexity. The simplest model uses MAP video as a basis for class discussion. More complex models construct video 'cases' that present open-ended problems similar to the original MAP student engagement. In the third use model, we divided video content into separate perspectives and used a jigsaw model to structure student team's analysis of the case. In the future we hope to develop more elaborate simulated projects similar to our previous TUC simulation, but using authentic MAP content.

Question	1. Strongly agree	2. Agree	3. Neutral	4. Disagree	5. Strongly Disagree	Average
This exercise was interesting and engaging	39% (48)	50% (61)	8% (10)	2% (3)	0% (0)	1.74
I understand motivation theories better now having applied them in a real case	17% (21)	55% (67)	23% (28)	5% (6)	0% (0)	2.16
My group did not have enough time to evaluate our proposal	13% (16)	35% (43)	24% (29)	25% (30)	3% (4)	2.70
My group was able to combine different sources of information effectively	12% (14)	63% (76)	18% (22)	6% (7)	2% (2)	2.23
I was more interested in this case because it was based on a Michigan IMAP team's experience	23% (28)	37% (45)	25% (30)	13% (16)	2% (2)	2.33
I learned a lot from the overall exercise	18% (22)	55% (67)	20% (25)	5% (6)	2% (2)	2.17
I learned a lot from the small group discussion	20% (25)	52% (63)	22% (27)	4% (5)	2% (2)	2.15
I learned a lot from the group presentations	11% (13)	33% (40)	33% (40)	20% (25)	3% (4)	2.73
The video interviews added to the exercise	24% (28)	46% (55)	23% (27)	6% (7)	2% (2)	2.16
The survey results from the 2003 IMAP team added to the exercise	31% (37)	44% (52)	19% (23)	6% (7)	0% (0)	2.00

Table 1. Feedback from MBA students on the Jigsaw simulation

Other questions of particular interest include these:

1) How far will we be able to go in supporting simulated projects that stray from the MAP students' original purpose? MAP teams have definite agendas, and ask particular questions in a particular way. So far we have mostly tried to recreate projects that are somewhat similar goals to what the original MAP teams had. In contrast, the TUC simulation supported many different directions of student research. Will it be possible to collect data and design simulations in ways that would data support very different lines of inquiry?

2) Can we develop simulation content that is rich enough to be re-used by multiple instructors? Does content have to be custom-developed for each class, or could some simulations be broad and flexible enough to have wide applicability?

3) Can we develop a general model of a 'consulting simulation' that is widely applicable? Can we develop a technological front end to CTools which would aid instructors at other institutions to design similar projects?

We are very excited to be undertaking the second year of the SimMAP project with these ambitious goals ahead of us. We are also eager to share results and exchange ideas with the ABSEL community about both our current work and future directions.

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APPENDIX A

THREE PROPOSALS EVALUATED BY STUDENTS IN THE JIGSAW MODEL

Proposal 1. Doctor's pay raises need to be closely related to their surgical output. Since surgical productivity is the key metric by which Aravind is able to achieve its mission of eradicating needless blindness it should be carefully tracked and highly rewarded. Under this proposal, Doctors will receive weekly reports on their surgical performance including number of surgeries performed, hours in the operating room and the complication rates. These rates will be compared to the benchmarks for the hospital and each doctor's performance will be compared to all doctors, to their peer group and to a high-performing benchmark for their type of surgery. Seventy-five percent of their yearly raises will be determined by doctor's performance on these measures. The other 25% will be a uniform cost of living adjustment given to all physicians regardless of performance. Finally, quarterly non-monetary awards will also be given to the doctors with the highest rankings based on highest surgical output and lowest complication rates.

Proposal 2. Under this proposal there would be an effort to reduce disparities in doctor's pay. This avoids the potential stress and embarrassment of performance reviews and saves the precious time of senior staff who would have to conduct these reviews. To curtail turnover of new doctors, Aravind will develop internal activities to instill the positive attributes of Aravind culture into incoming physicians. For example, the hospital would create a monthly newsletter that will give more exposure and recognition to younger doctors and those at peripheral hospitals who are doing new and innovative things at Aravind. The newsletter would be distributed internally, put on the web and sent out to contributors and friends of Aravind. The hospital would also build a new physician lounge where doctors can comfortably eat lunch and rest between duties. This would give them a space to relax and will reduce their stress. It will also provide the opportunity to exchange innovation and advice in informal lounge discussions. Finally, Aravind would begin an annual physician appreciation dinner where they will celebrate the total number of sight-restoring surgeries that that have taken place that year along with innovations that have enabled increased productivity or quality.

Proposal 3. Under this proposal, doctors will be asked to write quarterly statements that outline self-determined goals in several categories. Doctors will be given quantitative feedback of their surgical output, complication rates and other productivity measures and be advised to incorporate them into their goals. These goals will include both quantitative (e.g. "publish at least one research article") and qualitative (e.g. "improve rapport with patients") components. Doctors will meet with senior staff twice a year to discuss goals and give performance feedback. Senior staff will meet at the end of the year to discuss doctors goals, progress made toward these goals and other issues in order to determine raises for the next year based on goal attainment.