

Developments in Business Simulation and Experiential Learning, Volume 29, 2002
**VBOTZ: A PEDAGOGICAL CROSS-DISCIPLINARY, MULTI-
ACADEMIC LEVEL MANUFACTURING CORPORATE
SIMULATION**

Kuvshnikov, Joseph
Kent State University Ashtabula

ABSTRACT

VBOTZ is a pedagogical structured cross-disciplinary business simulation that sells a dynamic product. All concepts taught in participating disciplines are applied to planning and operation of VBOTZ. Faculty serve as the board of directors and use the hands-on simulation to enhance class content. Classes spend varying amounts of their time in the classroom with their instructor and the remainder in VBOTZ meetings applying concepts learned. This virtual classroom is designed to employ students from all disciplines needed to create a real business, and to progress students up the corporate ladder at a pace that parallels their curriculum.

**INTRODUCTION:
THEORETICAL FOUNDING AND
RELEVANT CONSTRUCTS**

The goal of the Kent State University School of Technology is to prepare students to apply discipline concepts to real world situations. Professors in each discipline strive to teach students how to apply their specific conceptual tools equipping them to become problem solvers and solution providers once they leave the academic setting of the university. Even though the current pedagogical methodology used to achieve the goal of the School of Technology has been in place historically in education, there is room for improvement in several areas. Six general areas need to be addressed. First, there is limited instructional interaction between students in different disciplines. Second, instruction is often abstract. Students often learn concepts for the exam but “Solve this problem for Company A and Company B” or “Perform this analysis for Product A and Product B” leaves little lasting impact on students. Third, there is a lack of continuity in problem solving situations. Students often see many unrelated problems in a short time frame. Very few if any situations cross semester boundaries. Fourth, students learn in an “antiseptic” environment with very few variables. For example, students need to learn how to schedule time for budget preparation and product development under a fixed production deadline and create time for labor negotiations. Fifth, students often are unable to perform tasks outside of

their own discipline. Finally, students often fail to understand the language and needs of other disciplines. For example, Accounting Technology students need to be able to communicate with Engineering Technology students in order to work toward individual and shared goals. Understanding the need to address these issues, School of Technology faculty at Kent State University Ashtabula created the cross-disciplinary virtual corporation simulation.

SYNOPSIS OF CORPORATE SIMULATION

The cross-disciplinary virtual corporate simulation (VBOTZ) is a structured time-lined manufacturing simulation that sells robotic teaching aids to other schools and institutions. Students enrolled in Accounting, Business Management, Computer, Electrical, or Mechanical Technologies at the Ashtabula Campus are involved in creating and operating the simulated business. All concepts currently taught in respective discipline classes are applied to strategic planning and day-to-day operation of the corporation. The comprehensive accounting software system MAS 90cs is in the process of being implemented as the information system backbone. MAS 90cs will enable students to develop communication skills required in data input, report design and generation, and interpretation of results to both internal and external participants. Faculty, who serve as both the board of directors and outside consultants, are careful that individual course content is not diminished but enhanced through application. Students spend part of their time in the classroom with their instructor and part of their time in virtual corporation cross-disciplinary meetings applying concepts. This two-year, or four-year (depending on the degree) virtual classroom employs students from all disciplines needed to create a real business, and progresses students up the corporate ladder at a pace that parallels their class curriculum.

Through involvement in the virtual corporation students develop skills required to make them successful in business communication. Faculty in the respective classes teach the necessary skills. Classes from different disciplines are involved in the virtual corporation at different levels. Due to expertise of the faculty involved in the simulation, Cost Accounting, Seminar in Management Technology, and Robotics have served as core competencies in the virtual organization while Networking has acted as an outside consulting firm.

Developments in Business Simulation and Experiential Learning, Volume 29, 2002

PEDAGOGICAL IMPLICATIONS

The overall pedagogical goals of this simulation are to provide freshman and sophomore level cost accounting, business management, computer technology and engineering students with the opportunity to directly participate in the planning and development of a manufacturing business entity. Students are required to collaborate and provide a financial plan (including a master budget) for the business. Engineering students are also involved in research and development of the product. All underlying work is to simulate actual situations as closely as possible. Outside consultants are to be used for implementation of a computer information system and design of a web page for the corporation.

IMPLEMENTATION ISSUES SUCH AS THE SEQUENCING OF THE EXERCISE IN RELATION TO COURSE MATERIAL OR CURRICULUM CONSTRAINTS

The following steps were developed to commence each semester in which the VBOTZ' cross-disciplinary virtual corporation instructional environment is implemented at the Ashtabula Campus of the Kent State University.

The first step involves the selection of disciplines to be involved in the core virtual corporation. This selection process affects the variety of concepts that can be covered and the course topics that can be applied to the simulation. Based on the preference of the instructors involved, the disciplines selected can gravitate toward both courses with shared enrollment and/or toward disciplines in which there is no overlap of students.

Second, after the participating disciplines are chosen for the semester, the goals of the corporate simulation and the pedagogical vehicle for deliverance of the goals are determined. At this point, topics that are addressed include the academic goals of the college, school, or division. These academic goals are reviewed at both the macro and micro levels.

Third, faculty prepare a listing of all specific courses and desired level of involvement for the core of the virtual corporation. Participating faculty review all available courses for the best courses in which to teach the desired skills.

After selection of the specific courses is made, the number of academic levels involved in the virtual corporation environment is chosen. The levels indicate the degree of involvement. Levels of involvement can vary between classes and within classes. The following list provides the five involvement levels developed at the Ashtabula Campus.

Involvement Level One consists of "Observer Classes."

These students are not directly involved but only observe the operation of the virtual corporation. In effect, students act as a "gallery" that watch application of the skills they are learning. Faculty are free to encourage discussion as to application methods before they become actively involved in the operation of the corporate simulation.

Involvement level two consists of "Part Time Participants." This involvement level permits students to be involved on a part time basis based on faculty preference. At this level, students will continue to meet with the faculty of the classes in which they are enrolled. Opportunity is provided for students to take the concepts they are learning in class and immediately apply them to situations with students from other classes and/or disciplines.

Involvement level three consists of "True Teams - Undergraduate Students." At this level students begin performing work in self-directed teams. Students bear the responsibility of group management and progress. Faculty continue to provide guidelines regarding course requirements and deadlines. Interaction with faculty in the traditional classroom setting is limited.

Involvement level four consists of "True Teams - Graduate Students." The fourth level is similar to the third level but requires that students simulate the functions of upper level management. Synthesis of solutions and the methods of achieving those solutions fall heavily on the students involved. Faculty believe that this level works best with graduate level students.

The fifth involvement level is "Track 5 - Outside Consultants." After the instructional environment is designed, faculty can review basic data sheets for other classes that are held at either the same or similar time blocks for collaboration on specific issues. Basic data sheets for classes can be obtained from either faculty within the specific disciplines being considered or from the Provost Office page of the Kent State University website.

After listing the specific courses and desired level of involvement, the fourth step involves the listing of specific goals for each class involved and pedagogical procedures to achieve goals. After selection of the classes, professors meet to prepare a week by week or topic by topic review of the material to be taught during the semester. Each topic needs to be considered from the following aspects:

Which students should be taught this material.

- 1) Which faculty should teach the material.
- 2) What type of exercises should be incorporated to help students develop the skills necessary to apply these skills in the real world.

The final and fifth step in the initial setup of the virtual corporation is the designation of common time blocks and instructional locations. The establishment of common time blocks permits the development of a synergy between students in different classes. These time blocks allow students to have a preset time in which business is conducted and the simulation is managed.

Developments in Business Simulation and Experiential Learning, Volume 29, 2002

LOGISTICS

This section of this condensed paper will present some of the logistical aspects of implementation of the virtual corporate manufacturing simulation at the Ashtabula Campus. Since Kent State has assembled all of the aviation, business and engineering technologies under one academic head, many of the problem issues of working between departments have been eliminated. Faculty have selected Monday and Wednesday evenings from 6:00 to 7:15pm as the designated meeting time. Each class that participates is also scheduled at this time.

Implementation of the simulation resulted in a variety of responses from both faculty and students. Faculty experienced the benefit of real world simulation for their classes but at times felt challenged when other faculty were in the classroom with them. The amount of time required to prepare for class changed. Additional time was required at the outset of the semester for planning but the amount of time preparing for specific classes sometimes was reduced.

Students displayed a full spectrum of responses when participating. Faculty continuously monitored student progress through exam questions and daily journals. Some were excited and looked forward to the new opportunities. These students enjoyed group projects and role playing. Students at the other end of the spectrum did not enjoy the simulation and expressed that they would prefer to come to class, take notes, take an exam and go home. Responses ranged from accounting students who became actively involved in engineering projects to accounting students who did not understand why they ever needed to be able to talk to an engineering student. Encouraging students to participate was an issue that is still being considered. In the real world any student who does not participate at work is dismissed, but in the classroom, the methods to enforce participation are limited. Students who did fully participate displayed noticeable improvement in their critical thinking and communication skills.

OUTCOMES

Faculty have observed benefits of the virtual corporate manufacturing simulation both within and outside of the university. Students are receiving the greatest benefits through enhancement of various skills. Understanding and the ability to communicate with other discipline student groups have improved students' learning in other classes. Discussions with graduates have indicated that students are better equipped for responsibilities in either existing or new employment positions that they hold upon graduation.

Externally, employers both locally and nationally have supported the simulation. Sage Technology has donated the accounting information software MAS 90cs to the university for the project. Various funding groups have provided additional hardware, software and miscellaneous

equipment necessary. Employers have also been very interested in interns and graduates who have participated in the simulation.

CONCLUSION

The cross-disciplinary, multiacademic level manufacturing corporate simulation has provided faculty with an opportunity to enhance the learning environment of students taking classes within the School of Technology. These students have experienced the benefits of learning how to apply their specific field concepts in situations where they are interacting with students from other disciplines. Further, these students have had to develop the critical thinking and communication skills necessary to function in environments with multiple variables. These new communication skills have enabled them to begin understanding the language and needs of others in different fields. These skills better equip students to embrace a wider variety of functional responsibilities when they leave the academic setting of the university.