

CASE

The Use of Student Consulting Projects as an Active Learning Pedagogy: A Case Study in a Production/Operations Management Course

Kirk C. Heriot[†]

Department of Management and Marketing, D. Abbott Turner College of Business, Columbus State University, 4225 University Ave., Columbus, GA 31907, e-mail: heriot kirk@colstate.edu

Ron Cook

College of Business Administration, Rider University, 2083 Lawrenceville Rd., Lawrenceville, NJ 08648, e-mail: cookr@rider.edu

Rita C. Jones

Department of Accounting and Finance, D. Abbott Turner College of Business, Columbus State University, 4225 University Ave., Columbus, GA 31907, e-mail: jones_rita@colstate.edu

Leo Simpson

School of Business & Economics – Management, Seattle University, 901 12th Ave., Seattle, WA 98122-1090, e-mail: simpsonl@seattleu.edu

ABSTRACT

Active learning has attracted considerable attention in higher education in response to concerns about how and what students are learning. There are many different forms of active learning, yet most of them are classroom based. We propose an alternative to active learning in the classroom through active learning outside of the classroom in the form of student consulting projects. While the literature on student consulting has largely focused on projects to assist small business owners, this research demonstrates the potential for using student-consulting projects in the Production/Operations Management course. We use a case study to describe the use of a student-consulting project as an alternative to the other types of active learning described in the Operations Management education literature.

Subject Areas: Active Learning, Production and Operations Management, and Student Consulting

Most ideas about teaching are not new, but not everyone knows the old ideas.
Euclid, c. 300 BC

[†]Corresponding author.

INTRODUCTION

Active learning is defined as any strategy “that involves students in doing things and thinking about the things they are doing” (Bonwell & Eison, 1991, p. 2). The introduction of active learning has become increasingly important to schools and colleges of business as they respond to criticisms about the lack of relevancy in the classroom (Bennis & O’Toole, 2005; Porter & McKibbin, 1988; Porter, 1997; Wren, Buckley, & Michaelsen, 1994). Fortunately, educators have begun to find evidence that some educators are responding to the criticisms. Research published since 2000 shows that business and economics educators are using active learning techniques in the classroom (Zygmunt, 2006; Dallimore, Hertenstein, & Platt, 2006; Whitting, 2006).

Auster and Wylie (2006) are among those that make suggestions for responding to the criticism of America’s business programs by using active learning in the classroom. Active learning is defined as anything that “involves students in doing things and thinking about what they are doing” (Bonwell & Eison, 1991, p. 2). They argue that active learning can have a high impact on what students are able to learn. They propose a systematic approach to create active learning *in the classroom*. We use their arguments as well as the research by other writers (e.g., Zygmunt, 2006; Dallimore, Hertenstein, & Platt, 2006; Whitting, 2006) as a point of departure for this article. We propose an alternative to active learning in the classroom in the form of student consulting projects that emphasize work outside of the classroom. This article uses a case study to analyze the efforts of a faculty member to introduce a new form of active learning into an operations management course.

We use a case study methodology to describe the process used to help students gain a better understanding of the operations problems facing businesses through the completion of field-based consulting project. Using the extant literature on field-based student consulting projects as a point of departure, we describe the use of field-based consulting projects as an alternative to other forms of active learning described in the Production/Operations Management (POM) business education literature. Then, we describe the results of a semester’s worth of projects that were completed by students at a regional, public university in the South. We discuss how other POM instructors might entertain the option of having their students complete consulting projects. Then, we conclude by discussing possible directions for future research, for faculty that use student consulting projects in POM courses.

LITERATURE REVIEW

Active learning has attracted considerable attention in the past 10 years, although its roots go back at least 30 years. Nonetheless, recent work has yielded a growing body of research. In their recent study, Auster and Wylie (2006) point out that active learning emphasizes the application of theory and concepts by involving students in the learning process. A variety of methods exemplify active learning. These include problem-solving exercises, informal small groups, simulations, case studies, role-playing, and other activities.

Rather than attempt an exhaustive review of past research, this section will emphasize research relevant to field-based student consulting, a form of active

learning that has not been well documented by researchers. For the reader that has an interest to learn more about active learning, Auster and Wylie (2006) offer a very good description of many of the forms of active learning.

Field-based student consulting is a form of active learning in which the student or a team of students is a real business consultant. The students leave the classroom. They go into the field, much like one of their collegiate peers may describe the process of observing a scientific or engineering field experiment. In this case, the field is the place of business of the client. Student team consulting offers students an opportunity to integrate their academic and work experiences in the creation of a consulting solution for a client's real-world problem. The consulting course provides students with experiential learning in small group dynamics, problem definition, research methodology and application, project management, and in making presentations. As active learning, fieldwork is an excellent mechanism to improve research abilities and critical thinking skills. Students will be challenged to not only discover information about a particular issue but in many cases they need to determine if this issue is important at all. The educational process is about lifelong learning and equipping the student with the skills to handle ambiguous situations. Consulting fieldwork does just that (Cook & Belliveau, 2006).

Field-based consulting introduces action learning into the entrepreneurial pedagogy. Though the host course may be taught primarily as a combination of case studies and planning, participating in consulting teams moves students into a new realm. Rather than *receive*, they have to *do*. Under the guidance of the professor/program director, students engage in a real-world business problem, and *they* have to decide upon a solution. We believe this learning-by-doing approach to entrepreneurial education introduces a radically different educational experience which has not been considered in mainstream business education periodicals.

Student consulting projects have at least four benefits (Cook, 2000; Cook & Hazelwood, 2002). First, the students gain confidence by selling their abilities as a consultant to a business. Second, the business owner or manager also benefits from the analysis and recommendations that the students make. Third, the student learns how a specific operations management topic of their choice must be evaluated in a real business. Lastly, the students benefit from offering a professional opinion on a real operations management problem.

Active Learning in Operations Management

This section briefly discusses the literature on the use of active learning in operations management courses. Both Polito, Kros, and Watson (2004) and Sower (1997) point out the inherent challenges of teaching operations management, a course that is required in the business core at many business schools and colleges throughout the United States. In general, much of the difficulty in teaching operations management centers on how students perceive the course. Students in accounting, marketing, and finance, as well as students looking toward nonmanufacturing careers do not believe an operations management course is relevant to them (Polito, Kros, & Watson, 2004). As a result, many leading instructors in operations management have adopted active learning to increase student interest in the course. By involving students in their own learning, they not only increase interest, but also increase the perceived relevance of the material.

Space limitations prevent us from discussing the way active learning has been used in operations management courses. Examples of active learning in the operations management classroom include case studies and video plant tours as well as in-class simulations (Sower, 1997). Sower demonstrates the effective use of a flexible manufacturing cell (FMC) to help students learn production and operations management at Sam Houston State University. He provides detailed explanations of the equipment and the process he used. Perhaps the most difficult issue he details is the total investment of \$15,000 (in 1997) to create the tabletop FMC. This price could be out of reach for many schools.

Polito, Kros, and Watson (2004) describe a mock factory they developed in 1994 and have modified ever since. Their Zarco mock factory requires some students to serve as a production team while other students serve as customers, marketing managers, timekeepers and shipping clerks, and production accountants. The Zarco factory starts very smoothly, but gradually introduces more complexity and problems. At the end of the exercise, the class is asked to engage in postproduction discussion about the causes of factory problems and how the factory might be improved. Polito, Kros, and Watson's evaluation of the effectiveness of this form of active learning was supported by their experimental design in which four sections of students were treated with the Zarco mock factory and four were not.

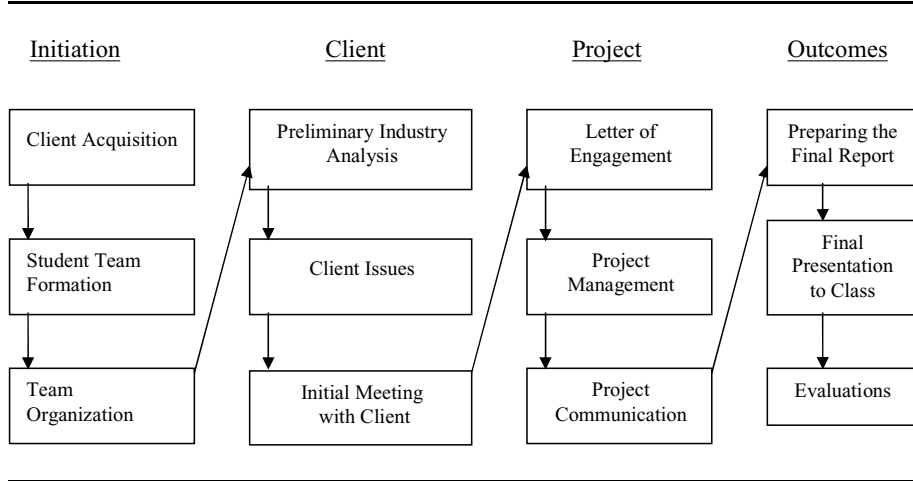
McKone and Bozewicz argue that "simulations and games are an effective way to engage students in significant learning outcomes by overcoming the limitations inherent in courses that consist primarily of lectures and cases" (2003, p. 497). They point out that several simulations and games are available for operations management courses. McKone and Bozewicz (2003) note that most simulations and games emphasize manufacturing operations rather than service operations. To that end, their article describes the Integrated Service Management Simulation, a simulation especially designed to emphasize service operations in a competitive airline setting.

Each of the articles we have described emphasized experiential learning in the operations management classroom (see, e.g., Sower, 1997; Polito, Kros, & Watson, 2004). This research offers an alternative to classroom-based active learning for operations management courses. This study will propose a form of active learning in an operations management course that moves the students away from the comfort and stability of the classroom.

Small Business Institute[®] (SBI)

The literature on entrepreneurship education and student, field-based consulting is dominated by descriptions of the SBI. The SBI was formerly a federal outreach program created and directed by the U.S. Small Business Administration on a contractual basis with over 500 colleges and universities. Participating colleges and universities were paid a small fee to complete consulting projects on behalf of small businesses. Faculty members were responsible for recruiting clients and assigning teams of undergraduate and graduate students to complete the project during the fall or spring semester (SBI, 2006). However, federal funding for this program was eliminated in 1996, so a group of SBI directors used their existing advisory organization, the Small Business Institute Director's Association (SBIDA), as a means to continue this program on an independent basis. SBIDA trademarked the

Figure 1: A typical field-based consulting project process.



Source: Ronald G. Cook and Paul Belliveau, 2006. *The Experiential Student Team Consulting Process* (2nd edition). Mason, OH: Thomson Custom Solutions, Thomson Publishing.

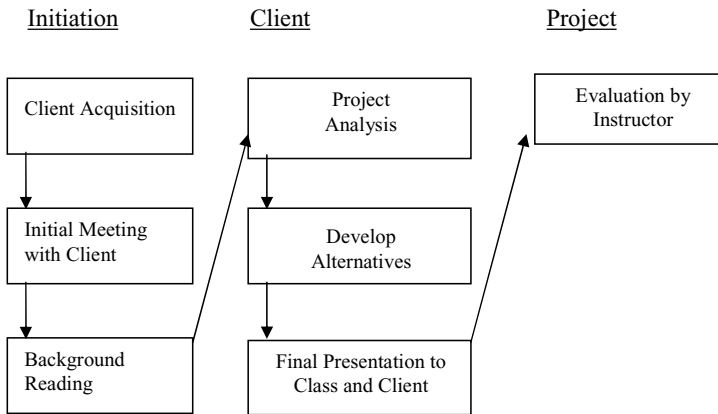
mark Small Business Institute[®] and continues to operate SBI programs through some, but not all, of their 140 members.

Several studies discuss the SBI program (see Brennan, 1995; Dietert, Halamtim, & Scow, 1994; Hatton & Ruhland, 1994; Schindler & Stockstill, 1995; Watts & Jackson, 1994). Most of the studies focus on the ability of the SBI program to provide clients with a viable consulting job or with the program’s student-educational benefits. For many schools, a primary impetus for starting an SBI program was the potential benefits for students’ learning experience. The literature (Hedberg & Brennan, 1996; Brennan, 1995; Borstadt & Byron, 1993) provides considerable evidence that SBI programs are of educational value to students. In addition, recent evaluations of business schools reinforce this value as they call for “a stronger practicum and projection emphasis in both curriculum and coursework” (Porter, 1997). The SBI program represents just such a practical approach to learning and applying business concepts.

Figure 1 shows the process that is used in part or in its entirety to manage a student, field-based consulting project. The process is fairly systematic, although there are allowances made for modifying the project parameters. As Cook notes, because fieldwork involves an actual client and a real-life experience, the situation will be fluid and information may change over the course of the consulting assignment. As a result, the consulting process can be somewhat unsettling, as many issues do not have a clear-cut solution. Nonetheless, the typical field-based consulting project is initiated by the instructor rather than by the student. The student is assigned to the project after the client has agreed to participate. In addition, as Figure 1 demonstrates, the student is fairly well supervised throughout the entire semester.

Cook and Belliveau (2006), and Cook (2000) point out that field-based, student consulting programs have a variety of benefits. In addition, they also address the fact that this pedagogy has a major weakness—field-based consulting requires a number of critical resources, especially time on the part of the instructor to seek out

Figure 2: Applying the student consulting process in a production/operations management course.



clients, supervise students, coordinate multiple sections, and teach other assigned courses. Thus, Cook and Belliveau (2006) suggest that the instructor may need to limit the number of cases supervised in order to provide a quality experience. In addition, they point out that the instructor may need the support of the school in order to teach a small class, perhaps smaller than they would otherwise have in their normal teaching load.

Unfortunately, the time and resource constraints described by Cook and Belliveau (2006) and Cook (2000) are a major issue. In fact, Heriot and Campbell (2002) describe client recruiting and case supervision as major challenges of creating and sustaining a field-based consulting program. Given the time constraints facing the instructor, the structured process employed by Cook and Belliveau (2006) was modified as shown in Figure 2. This modified process helps resolve issues such as the instructor's teaching load, class size, and the time available for identifying and recruiting clients and/or supervising projects. In addition, it helps emphasize the specific course content of POM.

Clearly, this abbreviated process is not without potential problems. The primary issue is simply that students are not formally supervised throughout the process. Nonetheless, this is a potential constraint that cannot be avoided given the large class sizes for a typical operations management course.

RESEARCH METHOD

Our choice of a research design was influenced by the limited theoretical knowledge researchers have of active learning in POM. In fact, to our knowledge there is no published literature on the use of student consulting projects in POM courses. Given this situation, it is appropriate to use a qualitative research method in order to gather the necessary information (Eisenhardt, 1989; Yin, 1994). The current research necessitated that we observe the process of using field-based student consulting projects to help students learn more about POM. Thus, we adopted a qualitative research method described by Audet and d'Amoise (1998) which

was broad-minded and flexible. Like their study, our aim was “to combine rigor, flexibility, and structure without unduly restricting our research endeavor” (Audet & d’Amoise, 1998, p. 11). We start by describing background information that provides a context for using the consulting projects. Then, we describe the way the projects were handled as well as some of the projects that were completed by students during the fall semester 2006.

Background

One of the authors was hired to become the first Endowed Professor in Entrepreneurship at a public university in the southeast. Prior to joining the university, he served as the director of a SBI program at a regional university in the far west. Thus, he had quite a great deal of experience with student consulting. While his primary teaching duties were in teaching entrepreneurship and directing the entrepreneurship program, he also was asked to teach operations management to help the Department of Management.

The University and Region

The university is a regional university with a student body of approximately 18,500 students at the time the individual was hired. The university has programs of study in Engineering, Education, Science, Arts, Letters, Humanities, and Business. The university has a broad array of academic majors and academic minors. In addition, it offers several master’s degrees including the Master of Arts, Master of Education, and the Master of Business Administration. Table 1 shows a profile of the university and the region in which it is located.

The Students

Forty-four students were enrolled in one section of Operations Management, a three-credit-hour course required of all students in the business program. The course

Table 1: Profile of university and region.

Item	Comment	Profile
Region	Lower midwest, upper southeast	Serves large regional rural area.
Environment	Rural area	Ten county service region. Most projects completed near the city.
City	Small town	The county seat has a population of 50,000.
University	Small State University	Founded 1906 as a teacher’s college. Operates as a regional university with 18,500 students. Business is accredited by AACSB.
Instructor	Instructor was a faculty member in entrepreneurship with an undergraduate degree in engineering and professional experience in the chemical industry.	This pedagogy was used systematically when the instructor was assigned to teach the POM course.
Course	Operations management	

is taught as a survey of the field of operations management with an emphasis on service operations rather than production operations. The university notes that the average ACT score for entering freshmen at the university in 2004 is approximately 20 on a 36-point scale.

The Projects

The syllabus for the course provided written instruction to each student at the beginning of the fall semester 2006. Appendix A shows these instructions. In addition to verbal and written instructions, time was spent during several class periods explaining what to do and answering students' questions. Lastly, several groups met the instructor after class or contacted the faculty member to discuss their projects. Due to the number of students enrolled in the course and the limited number of class days available for presentations, students were given a choice between presenting the project in a 5–6 minute format in front of the class using MS PowerPoint with no requirement to hand in written material or to turn in a five-page paper with no oral presentation. Fifteen students elected to write a paper about their consulting projects, while the remaining 29 students presented a summary in MS PowerPoint about their consulting projects to the class.

Students were regularly reminded of the project and required to advise the instructor of the nature of their project and their progress on the project. Unlike traditional field-based student consulting projects (see, e.g., Heriot & Campbell, 2002; Cook & Belliveau, 2006), the student projects in this course were not managed by the instructor. Forty-four projects were completed by the students during the fall semester 2006.

Rather than describe each of the projects that were completed by the students enrolled in this section of the operations management course, we have chosen to highlight five of the projects in order to demonstrate the variety of operations management topics that were applied by the students. Inventory control was a popular

Table 2: Selected operations management consulting projects^a.

Project	Topic	Brief Description
Restaurant	Scheduling	Student worked to help the owner decrease customer waiting times.
Retail Store	Cashier utilization	This project focused on the boredom of a repetitive job with a lot of down time. The student suggested job enlargement and the use of pagers to let employees work in multiple locations.
Printer	Robotics	The student analyzed the impact of new robots at a bindery.
Restaurant	Ordering systems	This project evaluated inefficient ordering systems that are underutilized by a regional restaurant chain.
Screw and bolt manufacturer	Quality	This project entailed an evaluation of the impact and cost of poor quality at a manufacturing facility.

^aFrom the fall semester 2006.

topic for the students to evaluate, so a project on inventory control was selected. Otherwise, we selected projects in order to demonstrate the depth of operations management topics that were the basis for a project rather than to select topics on a random basis from among the 44 completed projects. Table 2 summarizes the five projects that are described below.

Project 1

This student evaluated the implications of poor quality on a manufacturer that sold products to high-profile customers such as Honda and Toyota. The student calculated the impact that poor quality had on waste and reworks. In this project, the student was able to observe firsthand the impact that poor quality has on the productivity of a company. The process this student evaluated extended from the suppliers all the way through the production process to the customer.

Project 2

This project focused on the use of two independent ordering systems used by a regional chain of sports bars and restaurants. The final analysis by the student showed that the systems were redundant and largely underutilized. The company appears not to have been able to adopt new technologies to their purchasing system. The adoption of electronic ordering systems has improved productivity, but not to its fullest potential, as exemplified by a persistent use of manual overrides in the process.

Project 3

The theme of this project was customer service, specifically in terms of reduced ordering times. The student assisted the staff at a Mexican restaurant, one of eight owned by the proprietor. The owner wanted to decrease the time between placing an order and the customer receiving the order. The student was given full access to the entire restaurant. This student made recommendations on both kitchen layout and housekeeping based on a process flow analysis. The result was an improvement of ordering times for this location.

Project 4

Labor utilization was the priority in this project at a large retail store. The student analyzed the job of cashier at the store. This particular job is very boring and involves a lot of waiting and down time for the cashiers. The student recommended a more progressive system to decrease the boredom and increase the utilization of the cashiers to permit them to perform other activities. This student recommended a combination of job enlargement, cross training, and the use of pagers to permit cashiers to assist sales personnel in other areas of the store.

Project 5

The fifth project focused on the adoption of robots at a book bindery. The student analyzed the overall impact of the adoption of a number of robots that were being used to increase efficiency and productivity while also lowering production costs at the bindery. This particular student did not offer any true analysis of the situation, but rather described the observations. This project demonstrates one of the

potential weaknesses of letting students complete consulting projects without formal supervision. The intent of the consulting projects in this course was to have the students analyze an aspect of operations management and to offer a recommendation. Nonetheless, the project did have one positive outcome. It forced the student to consider the application of a topic in operations management, the adoption of technology in the form of robotics, to improve productivity in a business.

LIMITATIONS

This study is limited by the nature of case studies (Yin, 1994). The findings of case studies cannot always be generalized to other situations. However, given the lack of any evidence of the use of student consulting projects in POM courses, it was both practically and theoretically appropriate to use a case study. While the results of this research may not specifically be extended to other American universities, the faculty and administration at other universities may certainly use the current study as the basis for their own efforts to use consulting as a means to help students learn the theory and application of POM concepts.

DISCUSSION

It is premature at this juncture to argue either for or against the success of consulting projects in POM courses. The variety of techniques used to teach POM courses are probably only limited by the imagination of the instructor, the abilities and motivations of the students, and the resources available to the school. Clearly, pedagogical issues are among the most debated in higher education. We believe instructors should feel free to use any technique they believe will enhance the learning environment. Table 3 highlights the critical differences between traditional student consulting projects and the POM consulting projects completed during the fall semester 2006 in our case study. In the following paragraphs we describe specific issues that should be addressed in order to successfully introduce student consulting as a form of active learning in a POM course.

Practical Issues for Introducing Student Consulting Into the POM Course

Heriot and Campbell (2002) argue that implementing student consulting may be a time-consuming endeavor. Given the many competing interests in a typical faculty members' schedule, the type of consulting described in this study was specifically designed to avoid the weaknesses of traditional student consulting projects (Cook & Belliveau, 2006).

So, how might instructors introduce student consulting into their POM courses? We suggest the adoption of the modified process previously discussed. This approach resolves some of the time and resource constraints associated with recruiting participating companies and supervising multiple student projects (Heriot & Campbell, 2002). In the following paragraphs we address five specific issues that will help instructors introduce student consulting into their POM courses.

Table 3: Comparison of traditional student consulting for small businesses and student consulting in the production/operations management (POM) course.

Issue	Traditional	POM	Rationale
1. Project identification	The client usually discusses the nature of the project before the semester begins.	Students must identify a business and meet with an owner or a manager.	The onus is placed upon the student to take initiative in finding a project.
2. Project supervision	Highly structured with regular deliverables (completed items) to be turned in for review.	Students are given very limited direction. Email and the course Web site were used for communication in addition to meetings with the instructor outside of class.	The lack of instruction is intentional. The students must learn to take responsibility for their own project. This ambiguity can become very frustrating to students.
3. Project topic	Some traditional projects are comprehensive, while some are specialized. However, traditional projects usually have a strong supervisor element. The unit of analysis is strategic.	Specialized projects with an emphasis on making an immediate impact. The unit of analysis is largely tactical. Any topic in POM was fair game so long as it could be completed in the semester.	A comprehensive project requires a great deal of supervision (Cook & Belliveau, 2006; Heriot & Campbell, 2002), which was not possible. The emphasis was POM!
4. Project completion	Traditional field-based consulting projects include a written analysis and a final presentation. SBI projects may be submitted to the Small Business Institute [®] for awards.	Microsoft PowerPoint presentations with copies of slides. The final presentation was limited to 6 minutes.	The students were forced to truly think about what they did, why they did it, how they did it, and whether it helped the client, in the 6 minutes available to them.

The first issue to be considered is simply whether student-consulting projects meet the needs of the course and the instructor. We do not advocate this pedagogy for all POM courses. Consulting projects are not nearly as predictable as simulations (McKone & Bozewicz, 2003) or facility tours (Hanna, 2000). Students can become frustrated with the process as it is ambiguous (Cook & Belliveau, 2006). The hands-on nature of applying the concepts the students have learned and the practical aspects of seeing POM in action are benefits that may overcome the ambiguities of consulting.

The second issue that should be addressed is how to incorporate student consulting into the existing POM course. Space limitations prevent us from addressing all of the pertinent issues. However, they include, but are not limited to the following issues:

1. How much will the project count? We advocate making it a significant part of the course as it will be taken much more seriously by the students if it has a weight of 15% or greater.
2. Will the projects be completed by individuals or teams? The size of the course and the amount of material that will be covered during the term will influence this issue, but we advocate a team approach as it most closely replicates what students will experience when they begin working fulltime after college.
3. Will the students write a final report? This issue is entirely up to the discretion of the instructor. Of course, grading written reports is a time-consuming task.
4. Will the students deliver an oral presentation? The projects described previously in this research were all described by the students in short MS PowerPoint presentations. The use of oral presentations forced the issues to consider the most salient points in their projects. Appendix B shows an example of a rubric for grading oral presentations.
5. What, if any, milestones will be used throughout the term? We advocate having students provide short updates on their progress to avoid the ill-fated procrastination so common among college undergraduate students. Scheduling a series of milestones ensures that the students and the participating companies are being well served by the consulting process.

A third issue that should be considered is the consideration of backup plans. What happens if a participating company fails to cooperate with the student(s) throughout the term of the course? We believe students should be advised of the possibility of exactly this situation. One way to resolve this problem is to require students to identify the scope of their project very early. Doing so gives the students time to select another organization if the process does not work with the first company. Clearly, this situation may not occur early in the term of the course. Thus, students may need to simply complete the project independently of the participating company. In other words, if they have collected information, but the client is no longer interested in working with the students, the students can still learn from the analysis of their findings.

A fourth issue is the nature of the POM projects. The students should be strongly encouraged to identify a topic with an emphasis on making an impact on the company. The instructor should want the students to provide a useful outcome to the company. Students should be advised to select fairly simple topics. The instructor must literally caution the students to avoid taking on too complex a project, as their schedules may not permit them to do so. Simple projects include things like creating an inventory control system for a small bookstore or suggesting ways to measure quality at a restaurant trying to differentiate itself. Employee

scheduling, purchasing projects, and machine utilization are also likely projects. Appendix C shows a handout that will help students consider the types of projects that are acceptable and the types of projects that are not acceptable. The real purpose of using student-consulting projects is emphasized in this issue. These projects are intended to demonstrate the application of POM topics in a real business setting, without overwhelming the students.

A fifth and final issue worth noting is the role of the instructor. We have intentionally discussed the adoption of a modified or abbreviated consulting process because that is what we actually implemented in our respective POM courses. Nonetheless, we realize that some instructors may choose to select their own participating firms. Doing so ensures commitment by the clients and ensures the projects are appropriate to the instructor's goals for the course and the skills of the students in the course.

The issues addressed above are not a comprehensive list. In our experience, however, they represent the most important issues to consider should one want to introduce student consulting as a form of active learning in their POM course.

CONCLUSIONS

This research provides early evidence of the viability of requiring students to complete consulting projects in the traditional POM course. This research does not propose the use of consulting projects in all POM courses. Rather, this research was completed to describe an alternative to other active learning pedagogies in the traditional POM course. While student consulting projects are not the only practical business education programs available to POM faculty, they can be distinguished from other alternatives because they require interaction between a student or a team of students and a real business owner faced with a real problem or issue that needs to be resolved. They take the student out of the comfort of the classroom right into the real world. Nonetheless, future research is needed to help us better understand the many issues associated with assigning students to complete consulting projects in a POM course. Future research should attempt to follow up on the use of student-consulting projects in POM. A number of issues remain uncertain, as the literature does not explicitly address this form of active learning in POM. For example, how widespread is the use of student-consulting projects in POM courses? What types of POM projects lend themselves to student consulting?

The implications of students as consultants in a POM course are easily stated. At a time when critics complain about the lack of relevance in business education, we demonstrate the use of student consulting projects as a viable form of active learning. Students gain a far better understanding of POM by applying the many things they have learned than by simply passively absorbing material in a classroom setting.

REFERENCES

- Audet, J., & d'Amoise, G. (1998). The relationship between strategic scanning activities of small and medium-sized enterprises and their performance: A multi-site study approach. *Proceedings of the United States Association*

- of Small Business and Entrepreneurship* (<http://www.sbaer.uca.edu/Research/1998/USASBE/98usa296.txt>), 24. Last accessed on December 15, 2001.
- Auster, E. R., & Wylie, K. K. (2006). Creating active learning in the classroom: A systematic approach. *Journal of Management Education*, 30, 333–353.
- Bennis, W. G., & O'Toole, J. (2005). How business schools lost their way. *Harvard Business Review*, 83(5), 96–104.
- Borstadt, L. F., & Byron, A. (1993). The impact of student consulting programs on decision-making, operations, and financial performance of small firms. *Proceedings of the 1993 Small Business Institute Director's Association*, Retrieved December 15, 2001, from <http://www.sbaer.uca.edu/Research/1993/SBIDA/93sbi090.htm>
- Bonwell, C., & Eison, J. (1991). *Active Learning: Creating Excitement in the Classroom (ASHE-ERIC Higher Education Report No. 1)*. Washington, DC: George Washington University.
- Brennan, D. (1995). What is the value of an SBI program: Students' perceptions. *Proceedings of the National Small Business Consulting Conference*. (<http://www.sbaer.uca.edu/Research/1995/SBIDA/95sbi054.txt>), 7.
- Cook, R. G. (2000). Quality field case consulting: New program possibilities. *Journal of Small Business Strategy*, 11, 105–107.
- Cook, R. G., & Belliveau, P. (2006). *The experiential student team consulting process* (2nd ed.). Mason, OH: Thomson Custom Solutions, Thomson Publishing.
- Cook, E. D., & Hazelwood, A. C. (2002). An active learning strategy for the classroom- Who wants to win . . . some mini chips ahoy? *Journal of Accounting Education*, 20, 297.
- Dallimore, E. J., Hertenstein, J. H., & Platt, M. B. (2006). Nonvoluntary class participation in graduate discussion courses: Effects of grading and cold calling. *Journal of Management Education*, 3, 354–375.
- Dietert, J., Halatim, T., & Scow, R. (1994). Improving SBI program educational quality through feedback: A survey of former SWT SBI Students. *Proceedings of the National Small Business Consulting Conference*. Retrieved December 15, 2001, from <http://sbaer.uca.edu/research/sbida/1994/pdf/41.pdf>
- Eisenhardt, K. M. (1989). Building theories from case research. *Academy of Management Review*, 14, 532–550.
- Hanna, M. D. (2000). Touring a supply chain with students: Pedagogical and practical considerations. *Production and Operations Management*, 9, 203–211.
- Hatton, T., & Ruhland, S. (1994). Student entrepreneurial characteristics and attitude change toward entrepreneurship as affected by participation in an SBI program. *Proceedings of the National Small Business Consulting Conference*. Retrieved December 15, 2001, from <http://sbaer.uca.edu/research/sbida/1994/pdf/19.pdf>

- Hedberg, P., & Brennan, D. (1996). The SBI experience from the students' perspective: Implications for student learning. *Proceedings of the Southwest Small Business Institute Annual Conference*. Retrieved December 15, 2001, from <http://sbaer.uca.edu/research/sbida/1996/pdf/05.pdf>
- Heriot, K. C., & Campbell, N. D. (2002). Starting new small business institute programs: A survey of new programs begun since 1996. *Journal of Small Business Strategy*, 13(2), 90–96.
- McKone, K., & Bozewicz, J. (2003). The ISM simulation: Teaching integrated management concepts. *Journal of Management Education*, 27, 497–515.
- Mintzberg, H. (1990). Strategy formation: Schools of thought." In J. W. Fredrickson (Ed.), *Perspectives on strategic management*. New York: Harper and Row.
- Plaschka, G. R., & Welsch, H. P. (1990). Emerging structures in entrepreneurship education: Curricular designs and strategies. *Entrepreneurship: Theory & Practice*, 14(3), 55–70.
- Polito, T., Kros, J., & Watson, K. (2004). Improving operations management concept recollection via the zarco experiential learning activity. *Journal of Education for Business*, 79, 283–286.
- Porter, L., & McKibbin, L. (1988). *Management education and development: Drift or thrust into the 21st century*. New York: McGraw-Hill.
- Porter, L. (1997). A decade of change in the business school: From complacency to tomorrow. *Selections*, 13(2), 1–8.
- Roussev, B., & Roussev, Y. (2004). Active learning through modeling: Introduction to software development in the business curriculum. *Decision Sciences Journal of Innovative Education*, 2, 121–152.
- Schindler, P., & Stockstill, L. (1995). Beyond client satisfaction: SBI's educational impact. *Proceedings of the National Small Business Consulting Conference*. Retrieved December 15, 2001, from <http://www.sbaer.uca.edu/Research/1995/SBIDA/95sbi.htm>
- Small Business Institute[®]. (2006). SBI history. Available at <http://www.smallbusinessinstitute.biz>. Last accessed on November 14, 2006.
- Sower, V. E. (1997). A tabletop flexible manufacturing cell for use in the production operations management classroom. *Journal of Management Education*, 21, 200–208.
- Umble, M., & Umble, E. J. (2004). Using active learning to transform the Monte Hall problem into an invaluable classroom exercise. *Decision Sciences Journal of Innovative Education*, 2, 213–217.
- Watts, L.R., & Jackson, W. T. (1994). The SBI program and student outcomes: A study of business policy classes. *Proceedings of the 18th Annual Small Business Institute Director's Association Conference*. Retrieved December 15, 2001, from <http://sbaer.uca.edu/research/sbida/1994/pdf/45.pdf>

- Whiting, C. (2006). Data-base active learning in the principles of macroeconomics course: A mock FOMC meeting. *Journal of Economic Education*, 37, 171–177.
- Wren, D. A., Buckley, M. R., & Michaelsen, L. K. (1994). The theory/applications balance in management pedagogy: Where do we stand? *Journal of Management*, 20, 141–157.
- Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Zygmunt, Z. X. (2006). Debating the socialist calculation debate: A classroom exercise. *Journal of Economic Education*, 37, 229–235.

APPENDIX A: COMMUNICATION TO STUDENTS

Original Assignment

Student Consulting Project

Each student must select one partner with whom to complete a project. The purpose of this assignment is to have you investigate some aspect of Operations Management in the real world of manufacturing, retail, and/or services. You must analyze an issue in a business and report your recommendations and findings in a professional manner.

Suggestions for selecting and conducting a successful project:

- A. Get started early and identify a good candidate for this type of project.
- B. Do some “homework” prior to your interview. Know something about the company and try to have some basic questions about the area you are investigating.
- C. Keep your area of investigation narrow and try to get examples of actual forms, procedures, and methods used by the company.
- D. Analyze your findings in terms of the theory presented in class, that is, are the methods the organization uses good, bad, like the ones we learned, different, etc.?
- E. You must make a recommendation to them or conduct an experiment that helps them in a tangible way. You must help the company or organization improve some element of production or operations management. Do not simply present a descriptive report. I want you to apply what you have learned in this class. Focus on proposing new procedures based on improving effectiveness, customer service, competitiveness, and productivity.
- F. Remember that you must be able to tell me what you did, why you did it, how you did it, and whether it helped the client within the 6-minute timeframe for the presentation.

Suggestions for a successful oral presentation:

- A. Use visual aids such as overheads or MS PowerPoint.
- B. Keep in mind you only have 6 minutes. Time is critical so practice your presentation so that it lasts *only* 6 minutes.

- C. Present the most important aspects of your project rather than getting too involved in detail. You may provide me with additional written information that supports your analysis and demonstrates your efforts. You must attend class each day that student projects are to be presented! No excuses will be accepted!

Working With a Partner. You may choose to complete this assignment by yourself if you prefer to do so. You may also fire a partner if you choose to do so. However, you must inform the student and the instructor via e-mail NLT than October 11, 2006 of your decision. Once you fire a partner, you may not select a new partner.

Update: Please provide me with the name of your proposed client and the nature of the project you have considered. If you have not determined what you will do, then please let me know that so we can meet to discuss some options.

Reminder 1: Please update me on your progress on your project for a small business (one typed page).

1. Remind me of the name and type of business.
2. What do you plan to do?
3. How do you expect it to help your “client?”

Reminder 2: Please meet with me if you have any questions about what you are doing or how you are doing it. (Verbal Reminder during class before the Thanks giving Break).

Reminder 3: Presentations will be done during the final exam period for the course. Please remember to print out a copy of your MS PowerPoint slides for me to use as a reference during your presentation. (Verbal reminder: the last week of class).

APPENDIX B: OPERATIONS MANAGEMENT {PRIVATE} CONSULTING PROJECT RUBRIC

Student(s): _____

Organization: _____

APPENDIX C: ACCEPTABLE AND UNACCEPTABLE PROJECTS FOR POM STUDENT CONSULTING PROJECT

Examples of Projects That Would Be Acceptable

Steve helps his father and grandfather to develop a system using an Excel spreadsheet to track when cattle have been immunized. Steve’s recommendations will ensure that all cattle are immunized according to a schedule prescribed by the veterinarian.

Greg visits a company that has a pallet-sorting operation. They must move pallets to a sorting area. They have a problem with downtime. The sorting operation was located in a remote area of the facility. They have a great distance to move the

	<u>EXCEL</u>	<u>GOOD</u>	<u>FAIR</u>	<u>MARG</u>	<u>POOR</u>
1. Introduction of Project (Purpose) (20 points)	—	—	—	—	—
2. Project Analysis (35 points)	—	—	—	—	—
3. Recommendations (Outcomes) (20 points)	—	—	—	—	—
4. Presentation (15 points)	—	—	—	—	—
5. Miscellaneous (10 points)	—	—	—	—	—
GRADE _____					

Comments:

pallets. He recommends that the operation be moved to the front of the warehouse closer to a dock with access to 80 doors. His presentation includes several slides that show the layout of the facility before and after his recommendation as well as some preliminary evidence of the impact he has had.

Examples of Projects That Would NOT Be Acceptable

Chad and Jenny visit a restaurant and describe how the wait staff handles their duties. They do not interview wait staff or talk to the owner/manager. They do not investigate factors that may affect service. They simply report what they saw. They make no recommendations.

Susan and Mike write about a company's efforts to implement total quality management (TQM). They do not provide recommendations based on their understanding of the topic and the activities of the company. They simply describe what they saw.

Kirk C. Heriot is the Crowley Endowed Chair of Entrepreneurship at Columbus State University. He completed his PhD in Industrial Management at Clemson University in 1996. He served as an officer in the United States Army and as a manager in a privately held textile corporation prior to completing his doctorate. He has taught a variety of courses, including operations management, at several universities in the United States. Kirk has extensive experience working with small firms as a consultant and also as a faculty member supervising student-consulting teams. He has over 20 peer-reviewed publications in journals such as the *Journal of Developmental Entrepreneurship*, *Journal of Small Business Strategy*, *Journal of Supply Chain Management*, and the *International Journal of Purchasing and Materials- Management*.

Ron Cook is a professor of Entrepreneurial Studies at Rider University, where he develops and teaches upper-level undergraduate and MBA courses in entrepreneurship/small business, new venture planning, and experiential student team

consulting. He is the director of Rider's Center for Entrepreneurial Studies and heads Rider's Small Business Institute[®], where his student-consulting teams have earned multiple national and regional awards for excellence. Ron is the coauthor of *The Experiential Student Team Consulting Process* textbook and has published numerous papers in peer-reviewed journals such as *Journal of Small Business and Enterprise Development*, *Journal of Small Business Management*, *Journal of Small Business Strategy*, and *Industry and Higher Education*. He is the vice president of Programs for Small Business Institute[®] association and is a member of the editorial board of *Journal of Small Business and Enterprise Development*. He also ran two ventures prior to joining academia.

Rita C. Jones is an associate professor of Accounting at Columbus State University, and she received her doctorate in Accounting from Mississippi State University. She earned the CMA certificate, and serves on the board of directors for the IMA chapter in Columbus, GA, as well as for the Society of Business, Industry and Economics conference. Her current research interests include ethical issues as well as teaching pedagogy in business. She has published in such journals as the *Journal of Business, Industry and Economics*; *Journal of Accounting and Finance Research*; and *Journal of Business and Leadership: Research, Practice, and Teaching*.

Leo Simpson is the Lawrence K. Johnson Endowed Professor of Entrepreneurship at Seattle University. He completed his PhD in Business Management at the University of Colorado in 1975. He has taught at the University of North Dakota, Eastern Washington University (Distinguished Professor of Entrepreneurship), Griffith University in Australia, and Western Kentucky University (Mattie Newman Ford Professor of Entrepreneurship) prior to joining Seattle University. Leo has supervised over 1,200 student-consulting teams working with small and medium sized enterprises who have won numerous awards through the Small Business Institute[®] for the quality of their work. He has been honored by the Small Business Institute[®] as a fellow, mentor, and showcase winner, and has occupied many leadership roles. He has published in journals such as the *Academy of Management Journal*, *Journal of Entrepreneurship Education*, and the *Journal of Business and Economic Research*.