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E-Biz Consulting 101: Collaborating with Small Business on E-Commerce Projects

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ABSTRACT

While hiring companies continue to emphasize the importance of communication and team skills for new IT graduates, students emphasize their dislike for academic team projects. In an effort to make the team project a more interesting and valuable experience, our upper-division e-Commerce course includes the development of prototype e-commerce sites for actual businesses. Transferable consulting skills applied to real-world businesses have resulted in successful team experiences for the students and expanded horizons for the participating businesses. Part of the success is attributable to well-defined expectations, team-building exercises, and a structured client engagement process that serves the needs of the businesses as well as the student teams.

INTRODUCTION

Teaching electronic commerce in an IS curriculum is a challenge, primarily due to the cross-functional nature of the topic. While few would disagree that e-commerce requires a great deal of technology to make it happen, many functions within the organization impact an e-commerce project. When the author developed her first upper-division e-commerce course in 1998, she found few textbooks or teaching materials and none that balanced business and technical aspects of the topic. Since that time the quantity of e-commerce textbooks has exploded, yet most authors still emphasize either business or technology issues and vary extensively in theory versus applicable knowledge.

An additional challenge is that research in e-commerce in organizations shows an increasing tendency for e-commerce to be initiated outside the Information Technology (IT) organization, a trend we have seen with other technical innovations (Swanson, 1994). Those organizations claiming success in e-commerce, however, emphasize the importance of getting IT involved early in the strategy building process, before a functional business model is developed. In fact, a new breed of IT professional who is business savvy as well as technically competent seems to be a critical factor for e-commerce success (Tabor and Wojtkowski, 2001). This trend supports what academics have been hearing from business advisory boards across the country — that general business knowledge, communication, and team skills are as important as the technology students learn in their degree programs.

To address this interesting challenge, the author searched the academic literature and also drew upon a twenty-year business background in management and technical consulting roles. The goal was to find an approach that improved team skills and the team experience, while better preparing IS students to contribute in our increasingly electronic business environment. After an initial try at small group projects of the teams' own choosing, and a virtual company project that had each class conceptualize a company scenario, working with live companies seems to be an optimal solution. This method allows students to rapidly apply new skills to business problems while still in learning mode in the classroom. In addition to being a more successful project effort, students contribute to the local business community by developing e-commerce models and prototype Web sites that help small organizations expand their horizons and explore the potential of e-commerce.

SMES AND E-COMMERCE

Primarily antidotal evidence tells us that small to medium enterprises (SMEs) are adopting e-commerce rather slowly. They typically have limited financial resources, rarely have the skills on staff to go very far toward building their own Web sites, and often haven't a clue whether their business would benefit from the electronic medium. If they think of e-commerce in relation to their business at all, it is often after seeing competitors take the plunge, or in the hopes of dramatically increasing sales (Auger and Gallaugher 1997; Lederer 1997). Other benefits of e-commerce such as transaction cost reduction, marketing, information retrieval, or strategic networking (Wigand 1997) rarely come into their thought processes.

Many of those small to medium sized enterprises that have ventured forth, however, have found success and are showing profits. This segment of the new economy, labeled the 'mini-dots' by *Business Week* (Weintraub, 2001), is predicted to grow to $120 billion by the end of 2002 (Weintraub, 2001). In addition to expected business-to-consumer (B2C) models, SMEs are benefiting from participation in business-to-business (B2B) exchanges, where they share technical infrastructure and sell to each other, often doing business with other SMEs they would never have known about (Ince, 2000). A survey of 453 small businesses conducted in the summer of 2000, indicated only 17% were currently doing business online, but one-third expected to go online during the next year (Roberts and Pepe, 2000). If that statistic is transferred to the 10 million small businesses in the United States alone, 1.3 million more business will enter the world of e-commerce. While a slowdown in the U.S. economy is undoubtedly impacting these numbers, businesses getting off to the right start with e-commerce may still find success and assist in the economic recovery. Federal government sources including the National Institute of Standards and Technology's Manufacturing Extension Partnership (MEP) and local Small Business Administration offices are trying to aid in these efforts (Korchak and Rodman, 2001).

With our own small sample of pilot companies we see great enthusiasm for expanding electronically, but little understanding of the requirements to proceed. Most assume they'll accept orders online, but haven't thought about security or transaction processing. Most begin the project with a minimal level of technology infrastructure, and often the owner is the resident computer 'expert.' Our effort attempts to educate our participant companies to the potential of e-commerce for their individual situation, gives them a non-threatening introduction to the technology and what they need to know to implement a commerce site, as well as a choice of prototypes to support their business strategy with a complementary e-commerce model. Where it evolves, of course, is up to the business owners, but the first year's efforts proved successful for those who went forward with their sample plans.

TEAM PROJECT ISSUES

Why don't students like team projects? The biggest response to that question from the author's experience seems to be the time commitment. Those students who get to know others with similar schedules and work ethic during their program typically report better team experiences. Other researchers have researched various techniques for team projects, including assigned teams (Fellers 1996), junior teams with senior team advisors (Nance 1998), and self-selected, guided teams (Van Slyke, et al. 1999). Most of these authors mention the problems in expecting students to be natural participants in the team process without any type of teamwork training.

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Several educators have expanded the concept of student teamwork. Fellers (1996) experimented with cooperative learning groups where the teams studied together, completed group assignments, and in several cases received group testing grades; each team member received the lowest scoring member's test grade. In general, he found students more receptive to the idea of active learning than in sharing a common grade. Nance (1998) developed a cross-class collaboration effort with students in an advanced class assigned to mentor students in an entry-level class. He found that while his senior students should have had the background and knowledge to assist junior students, some were not prepared to give advice or act in a leadership role. Regardless, he found over 80% of the participating students felt the collaborative project was "useful, helped develop collaborative skills, and brought together ideas and input that otherwise would not have occurred" (Nance, p.148).

The Van Slyke, et al. (1999) study specifically targeted teamwork training and used a multi-group quantitative study comparing classes taught with and without teams to attempt to measure attitudes. Pre and post surveys regarding the team experience indicated that factors such as in-class teamwork exercises improved the students' perceptions of success but not their attitude toward working in teams. The latter attitude was impacted by common complaints of scheduling problems, social loafing (non-contributors) and interpersonal conflicts (Van Slyke et al, 1999).

E-COMMERCE CLASS DEVELOPMENT

Starting out as a new professor with a new e-commerce course in 1998, the author chose the best alternatives among business-oriented e-commerce texts with practitioner handbooks for the technical aspect of the class. Book selection and course content continue to change each year with availability and new technical tools. Team projects began in the typical mode of letting students form teams and choose their own project concept within some general parameters. Some teams chose research-oriented projects while others dove into the technology and a few brave teams tried to build Web sites for family, friends, or local non-profit organizations.

The second year, however, the author raised the bar in suggesting that the class as a whole develop a virtual business concept, then split into three primary teams to address Web commerce, Intranet, and Extranet functions for the company. While both sections rose to the occasion and turned out innovative concepts, students bitterly complained about having to get together across teams as well as within their own groups to accomplish their tasks. The downfall of this concept was the increased requirement for inter-group communication and time delays waiting for content or group decisions from others.

In the fall of 2000, a student approached the author wanting to develop an e-commerce application for the company for which he worked as IT manager. This organization needed a closed, extranet application to provide communication, scheduling, specification changes, and an overall closer electronic relationship with its contractor customers. With this interesting possibility and a few phone calls, three additional businesses were found that were interested in working with the class. Each class section split into six teams, delivering three prototypes for each business participant.

Principals of each organization visited the class and presented an overview of their business plan, information about their products or services, their initial goals in looking at e-commerce, and a pledge to be available by email and our class message board. At the end of the semester, each business owner returned for the prototype presentations and was presented with a copy of each final report and a CDRom with the prototype Web sites. Each of the businesses was delighted with the outcomes, and each adopted one primary prototype, often incorporating ideas from others in their final product. One company hired their favorite prototype team to complete the implementation through a local hosting company; one year later they are very pleased with the resulting increase in sales and national exposure.

Lessons Learned

In spite of the successful prototypes developed for our live companies, the process wasn't as smooth as the author had hoped. While all the students must complete the prerequisite core courses of marketing, accounting, networking, and various technical courses to give them an adequate development background, their work experience varies widely. On the average, they did not have an easy time communicating with their client companies and felt unsure of making suggestions other than what they were directly told. A skeleton milestone plan was available for teams to use to develop their prototype and the ultimate project documentation. Few teams made any additions or modifications to the milestone shell, and consequently had some trouble putting together all the appropriate components for both the Web site and the business plan. While a team contract was intended to achieve division of labor, on most teams a single person developed a majority of the site and few tried to learn tools they didn't already know.

What was wrong with this approach? The students lacked the consultative and analytical skills to look at the big picture, in this case how e-commerce could benefit the business, and how to communicate with a non-technical client to get the information they needed for a successful prototype. Additionally, project requirements indicated they should discuss other issues in their final reports such as security, hosting requirements, and additional Web site functionality that the clients would need to understand to go forward. Some did this well, and others didn't. While many students indicated in a follow-up survey that they learned more and had a more successful project experience than in other classes, they clearly felt frustrated about aspects of the project that didn't go well, or communication problems with their companies.

Structured Expectations and Process Improvement in 2001

In the fall of 2001 we had major obstacles to overcome in bringing a sense of normalcy to the classroom after the terrorist attacks in the United States. Our students are typically older than average (26), but many had never experienced a major crisis in their adult lives. Not only did better structure in the classroom assist to get the semester on track, but new in-class topics and project processes were put in place to ensure each student was better prepared to work on a team and begin the consulting project.

New Processes

In an effort to address each of the weaknesses and feedback from the prior year's projects, the following processes were added to the team project plan.

1. The classes voted whether or not to work with live businesses thereby achieving concept buy-in. Various students made suggestions for business participants, but the author carefully screened these options to insure they would provide an appropriate e-commerce project experience and that business owners would have the time to communicate with teams.
2. The five-part project milestone plan was more tightly structured to include task elements that would fulfill the basic project requirements, while allowing flexibility in how the tasks were accomplished and with the team's choice of technology. Each milestone section included task items that would become a part of the final project report. Milestone task items were reviewed in class prior to each deadline to ensure understanding, and teams could revise prior milestones to make up missed points. As part of each milestone submission, members committed to the next set of tasks, responsibilities, and output for that section of their team contract.
3. Hands-on labs in class addressed the basic technical tools available to the teams to complete their prototypes, including JavaScript, ColdFusion, and CGI. Refresher material was linked to the class Web site to cover Web technology the students should have had in other classes. In this manner, every student was exposed to enough technology in the classroom to ensure they had the basic skills for e-commerce development.
4. A primarily technical textbook was chosen that included basic e-business issues that could be easily supplemented with available materials from the Web and print media. Supplemental materials included business benefits of implementing e-commerce business models, alternative e-business drivers, elements of Web design, analyses of business Web sites and secure transaction technology.

5. Team-building and role playing exercises conducted in class helped develop basic consulting skills and prepared team members for working with each other and their client companies. Communication processes were discussed and sample templates were developed as a group to aid in the interviewing and interaction process, providing a structured and professional client engagement process.
6. Information about the SME population was shared to ensure teams had reasonable expectations about small businesses and their understanding of e-commerce and technology. Communication problems and client perceptions of e-commerce and the required technology were discussed at various times during the semester to share the different team experiences.

Figure 1 summarizes the consulting project process. It reflects skills developed both in incoming prerequisite courses and in the e-commerce course, along with those skills developed in class support the engagement process to produce a successful consulting relationship with the client companies.

Figure 1: E-biz consulting team model

PROJECT OUTCOMES & CONCLUSIONS

The actual prototype projects and the responses of the client companies to them have been very good. Beyond that tangible outcome, student learning and attitudes toward team projects were of interest in the ongoing development of this class.

Data Gathering Methodology

A simple pre and post project anonymous survey was conducted for both the fall 2000 and 2001 projects. Of the 47 students who took the class in 2000, results were mixed about past projects, but expectations were positive going into the project on the potential for learning with live companies. Representative questions on expectations and outcomes are shown in table 1.

Table 1: Pre & post survey means on selected questions (1=strongly disagree to 5=strongly agree), fall 2000

Pre-project:	Section 1	Section2	Combined
On previous teams all members contributed equally:	2.5	2.16	2.3
My expectation for learning for this project is high:	3.8	4.04	3.94
Post-project:			
On this team all members contributed equally:	2.88	3.78	3.4
The learning value for this project was high:	3.29	4.22	3.82

Section 1, the day class, consisting of more traditional students, had lower expectations going into the project and lower perceived learning outcomes than the evening section, consisting of more working students. This could be a reflection of additional maturity in the evening section as well as more work and team experience. Participation was judged to be more equal for this project than on others students had experienced in their major, although obviously not to the level the instructor would have liked.

Outcomes for the fall 2001 semester with 58 students are shown in table 2 but reflect few changes that can be attributed to the new processes. How much of the outcome can be attributed to the students' state of mind given the difficulties on the economic and world fronts? Hard to say, and so perhaps another year of process tweaking will be needed to determine the actual strength of this learning method.

Table 2: Pre & post survey means on selected questions (1=strongly disagree to 5=strongly agree), fall 2001

Pre-project:	Section 1	Section2	Combined
On previous teams all members contributed equally:	2.2	2.4	2.6
My expectation for learning for this project is high:	4.1	3.9	4.0
Post-project:			
On this team all members contributed equally:	3.6	3.1	3.4
The learning value for this project was high:	3.6	3.7	3.6

Students who add optional comments often indicate the projects are too much work, and the team project concept is not the same as working with co-workers in a real job situation. Perhaps a better question next time around is did they learn skills they can use on the job and do they better understand the issues of e-commerce development.

Teaching the e-Commerce Consulting Class

Teaching a structured project class such as this one requires an additional time commitment from the professor for both preparation and availability. Planning and upfront preparation is important, as well as the choice of participating businesses and active involvement to insure both businesses and students benefit. This year, for example, a sole-proprietorship artist was one of the organizations selected; almost daily e-mails with this client added workload for the professor as well as the teams.

Students who pursue consulting careers or choose to work within private or government organizations will find their share of difficult clients. This first experience should go as smoothly as possible to build their confidence, but difficult clients are a reality, inside or outside the organization. It is necessary to guide a class through these unknowns, and hopefully the learning outcomes will far outweigh the effort, for both professor and student population. Although the survey numbers don't necessarily reflect it, verbal comments from students at the end of the course are that they like the course and learned from the project experience.

Further research needs to be conducted in the area of team processes. A follow-up survey after students enter the workforce might tell a better story about the value of team projects. Ideally, a coordinated effort among business core courses can enhance our individual successes. While we probably cannot addresses the complete soft skill needs of our students, we can strive for a higher level of achievement and a smoother transition for them into their new careers.

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