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This case study is designed to illustrate the principles of project management and simulation. All the characters and places are fictitious and used for the purpose of illustration. Any faculty user of this case in a college or university may contact Dr. Jack Yurkiewicz, Department of Management & Management Science, Lubin School of Business, Pace University, 1 Pace Plaza, New York, NY 10038, for the instructor's notes for the solution of the case.

INTRODUCTION

“In a recent article in *The Academy of Management Review*, the author predicted that there will be an increasing emphasis placed on distance education with a delivery system that is potentially global. *Business Week* reported that, as of early 1998, there were few schools of business that had taken a very entrepreneurial stance with goals to dominate business education globally through the use of distance learning. Thus, several “action-oriented” schools have started to investigate distance learning to fill that void and to seek lower cost delivery systems that can provide a quality education product to a broader student market. As aggressive schools of business use distance learning to expand their markets, they pose a threat to many schools of business that only employ traditional education-delivery systems. Since there are few players delivering quality products to the broad business education market at this time, opportunities exist for schools that can present a differentiated product in this emerging global business education market.”

As the Dean of the Winthrop Business School at Monticello University read these words, written by a task force of faculty and staff charged with investigating the concept, he knew that they were accurate. Monticello, long noted for being a “teaching” rather than a “research” institution, should now become the Chicago metropolitan area's innovator in Distance Learning. Internet-based learning could provide the Winthrop School with an opportunity to expand its regional student base to a much broader base of students without a great expenditure in capital assets. In fact, Winthrop could expand its marketplace through telephone wires, telecommunications cables, and satellites. In effect, the school could take advantage of Internet technology to provide a business education experience for students outside the school's natural service area by connecting them to Monticello's facilities and faculty through the use of modern computers and communications technology. Internet Distance Learning (dubbed IDL) would give Winthrop the opportunity to expand its natural market domain and, at the same time, offset threats by other schools and universities that would hope to provide business education to students that are normally within Monticello's traditional markets.

The advantages of providing an education through the Internet was quickly apparent to the Dean and his Task Force. This is a field that many trade schools, for-profit training institutes and colleges, and traditional colleges and universities were already flocking to. Several educational institutions were already providing degree and non-degree programs over the Internet. Schools as varied as Duke University and the Keller School of Management are offering degree-granting programs mainly through Internet access. Other schools, such as Bienville College in Louisiana, are offering bachelor's and master's degree programs without any residency requirements. Programs can be taken over the Internet from anywhere in the world without the student ever going to a campus.

The Dean was particularly intrigued with the model developed at Duke University. Duke University offers a global MBA that has a residential requirement along with completing MBA courses. These courses follow the traditional MBA curriculum, but were converted from a classroom environment to an Internet environment. There, students analyze and complete projects through collaborative efforts using Internet technology. They also “meet” with cohorts and faculty continuously throughout the course via “chat rooms.” When certain topics or

concepts are not amenable to Internet learning, students and faculty get together “in person” several times during the course of the class through the program's residential experiences.

After much thought and consultations with colleagues, the Dean decided that Monticello would offer, via IDL, several MBA courses at least, or a “full-blown” MBA program at best, by the Fall term of 1999. He recognized that Monticello would have “one shot” at this venture, and if it were not done well or correctly, other schools would have entered the market by then and Monticello would not recover its innovative lead. The Dean looked at this venture as a project management topic with four distinct but sometimes related areas: Initial Preparation, the Marketing Aspect, the Mass Mailing Advertising-Journal Placement aspect, and Course and Curriculum Preparation. The marketing facet of the project would develop specific plans to market and promote the IDL program. The advertising aspect would focus on “nontraditional” ways to advertise the program. Monticello has traditionally advertised with mass mailings (to alumni, high-school students, corporations, etc.) and placed advertisements in key journals. The University has a group of people who have done this for many years. This group would familiarize themselves with the new IDL program so that they could use the time-honored traditional advertising approach — mass mailings and journal ads — to sell the new program.

Each of these areas has specific tasks or activities that must be performed. As in all projects, these activities have a certain hierarchy.

In the interests of facilitation, the Dean decided to list these tasks by alpha-numeric labels. That is, the Dean and his colleagues on the Task Force would describe the tasks (and their specific “predecessors”) and label them in parentheses.

INITIAL PREPARATION

The Initial Preparation would start with the identification of teachers who are interested and capable of developing IDL courses (A), while selection of specific MBA courses that could be taught via the Internet (B) is being made. IBM's Lotus' Notes has a dominant market share as the software-hardware platform to IDL, and since other schools in the University had chosen that platform, this software was a “safe bet.” Thus, once the instructors are chosen, the Dean felt they should attend a Lotus' Notes seminar that facilitates IDL (D). After the seminar, the selected teachers would be trained in the specifics of Notes (E). Once the selection of MBA courses is made, information would be gathered on how other universities teach these courses on the Internet (F). After the faculty have completed their seminar on Notes and the information about how other schools teach the courses is found, the faculty would attend a combination seminar and “mock” class on the teaching and facilitation of the courses on the Internet (G).

MARKETING

Following the initial preparation, the Dean and his Task Force on IDL would meet to discuss how to market the new Internet program (C). A “two-tiered” approach would be established as a result of these meetings. First, a specific “Marketing Team,” made up of Monticello personnel from several departments (not necessarily from the School of Business) such as the Admissions Department, the Provost’s Office, and other key personnel who have been marketing the Monticello “name” for many years would be chosen (J). The Marketing Team would be sent to a special “retreat” upstate to prepare marketing plans for the new program (O).

While the Marketing Team was being chosen, the Dean would simultaneously gather information (with the help of his Task Force) on how other universities are marketing *their* Internet programs (I). Some of these marketing schemes included placement of ads in key academic and relevant journals, the development of specific web sites, etc. It would *not* cover mass mailings, the traditional approach to reaching potential students. The Mass Mailing Ad Group, with their expertise, would do that phase of the project. While this may sound like work the Marketing Team should be doing, the Dean feels that his Task Force’s independent “Winthrop-point-of-view” on marketing the program should be established. An important result of these discussions would be the design of a “marketing action plan” that would give guidelines on the plans, goals, and capabilities of the program to those people who are responsible for the actual details of the marketing. The Marketing Team would then be given special training sessions that would consolidate the ideas of the Marketing Team and the Dean’s Task Force and plan the overall marketing approach for the IDL program (P).

MASS MAILING ADVERTISING

Monticello University has had a special department specifically devoted to recruiting students via mass mailings. The mailing list comes from alumni, corporations, cross-classification with other universities, etc. This team would be brought in to work on the IDL project, which was a recommendation of the Dean’s Task Force when they met initially to discuss how to market the IDL project (C). The Monticello Advertising Team (PAT) would meet to consolidate the plans for the IDL program (H). This meeting would lead to the formation of a sub-group responsible for the preparation of a brochure (which would be mailed to thousands of potential applicants) that describes the program and includes a “tear-off” mail-in requesting an application and further information (M). The brochures would then be sent for printing (Z). The PAT meeting would also lead to another sub-group formation charged with the writing and layout of print ads in key journals (L). After this group has the copy written and proposes a tentative layout, they would meet with the Dean and his Task Force to approve the ad (Q). After this approval is granted, the sub-group would meet with the various advertising editors of the journals and finalize details on when the ads would appear, their specific placement in the journal, size of ad, etc. (Y).

After the meeting with the journal editors, the printing of the brochures, and the conclusion of the special training sessions of the Marketing Team (these had consolidated and

planned the overall marketing approach for the IDL program), Monticello would release the advertising (A3). That is, the brochures would be mailed, the ads placed in journals, web sites would be activated, etc.

CURRICULUM AND COURSE PREPARATION

After the Monticello Advertising Team's meeting to consolidate plans for the IDL program, the Dean and his Task Force would prepare a draft discussing which courses would be taught via IDL, the depth of their coverage, specific dates, etc. (K). As a result of this, two things will happen:

- i) One is the submittal of "initial intent" of the program to Monticello's consultant to the AACSB (The International Association for Management Education, the premier accrediting organization for business schools in the world) (R). Because Monticello had recently attained AACSB accreditation, and while the scope of the entire program was not yet ready at this point, the Dean feels that submitting the school's plans for IDL to the consultant from the AACSB would be valuable. The consultant (based on past experience) usually promises a "quick turnaround," but almost always asks for a meeting with the Dean and key faculty for "further clarifications" (T) before he gives his final recommendation (V) on the efficacy of a program.
- ii) The second sequence is the involvement of Department chairpeople and the Winthrop's Curriculum Committee to design course content (S). As a result, an ad-hoc committee is usually formed to decide appropriate textbooks, reading lists, appropriate web sites to visit, what kind of web searches should be conducted, etc. (U).

After the AACSB consultant gives his efficacy recommendation and the ad-hoc committee completes its recommendations, Monticello would formally submit the IDL program for AACSB confirmation (A2). Also, once the AACSB consultant's recommendation report comes in, that report would be given for reading and discussion to the faculty who would teach the IDL program and the staff support of the program (W). At the conclusion of the faculty's seminar and "mock" class on the teaching and facilitation of the courses on the Internet (done in the Initial Preparation) and the faculty's reading and discussing of the AACSB's consultant report, the faculty would make final changes and "tweaks" in the program (X). After all have agreed to these final tweaks, one last mock class would be run to try to anticipate any unforeseen problems (A1).

THE PROBLEM

The duration of the activity times of the IDL project is a random variable. That is, we are not certain how long each task will take, and so we must determine a probability distribution of the duration time. For each task, that probability distribution is assumed to be discrete, and after much discussion, arguing, debate, research (looking at similar past activities, etc.), the Dean and his staff have determined the probability distributions of the task duration times. Each duration time is given in days, and there are corresponding probabilities for these duration times occurring. They are given in the spreadsheet below.

The Dean needs to determine the expected duration time of the project. He needs your help. The first thing that must be done is to draw a network diagram (sometimes called a *precedence diagram*) of the project, showing all the activities. Then we have to make a simulation model that will tell us the expected duration time of the project. That is, what is the mean and standard deviation of the duration time of the project? What is the critical path(s) of the project? It would also be useful to determine the percentage of times each activity was critical in your simulations. That is, every time a simulation is run, you could get different results. What percentage of the time would activity A be critical? Activity B? Determine the percentage for each activity. Name the “top two” critical activities. That is, which two activities should be completed “on time” or the project will be delayed?

Finally, the Dean wants the entire project completed in less than a month (31 days). The Dean is the sort of person who would like to hear unfavorable news as soon as possible. What is the probability that the project will not be completed in time?

