A Learner-Centered Capstone Course for a MIS Master's Degree Program

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ISM-6155, Enterprise Information Systems, is the capstone course for the University of South Florida's Master's in MIS (MsMIS) program. As a capstone, the principal goal of the course is to prepare students for what will come next—either working as an MIS professional or undertaking further study. In the course syllabus, these broad goals are presented in the form of the following course objectives:

1. An appreciation of the complex interaction between individual/organizational forces and technological issues in the development, deployment and use of information systems, with a particular focus on organizational strategy.

2. An understanding of how events in the evolution of MIS have impacted its current form in organizations.

3. The ability to articulate convincing positions with respect to some of the most critical debates in the field of IT today.

4. Familiarity with some of the types of activities that constitute MIS research.

Superimposed upon these specific objectives are a series of more general pedagogical goals. Foremost among these is enhancing each student's communications skills—in discussion, in presentation and in written form. Additionally, the course attempts to introduce students to a constructivist, active-learning approach to teaching—ubiquitous in some programs (e.g., case-method business schools) but uncommon in the relatively technical MS program. Finally, it acquaints students with a number of technological tools for learning (e.g., infrared response systems, library data bases, synchronous online discussions) that have substantial applicability to industry, as well as academia.

Innovative Features

The course is organized into three activity streams (case discussions, debates, and strategic system research) which, collectively, represent 100 percent of the student's grade. Each stream has a number of innovative elements.

Case discussions. The case discussion pedagogy is widely used in business schools. For the purposes of the course, however, a number of innovations have been introduced. First, because the students have generally had little exposure to the case method, the initial discussion case used in the course is not an MIS case, but rather a case—written by the instructor—about a case method Executive MBA class that went into open rebellion shortly after its first session. Discussion of the case introduces students to case method protocols and clarifies the expectations of the instructor, without resorting to the self-defeating expedient of lecturing students about what a case discussion is like. Another innovation is the use of a classroom response system (CRS) that allows students to register responses using infrared remotes. Each case begins with a five- or six-question multiple-choice quiz on the case facts, with the top scorer being announced to the class and sometimes (based on a coin toss) being given the choice of whether or not to open the case.

A final innovation to the case discussion process is the "online class week." Towards the middle of the semester three case discussions are conducted over the course of a week, each using a different protocol: (1) an in-class discussion, (2) an asynchro-

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nous online discussion (using Blackboard), and (3) a synchronous online discussion. The last of these takes place using Elluminate, an Internet application providing useful capabilities that include text and voice chat, shared whiteboard (for drawings or slides), online testing and private breakout rooms—all of which are used during the discussion.

Debates. Although there are relatively few examples of debating being used as a teaching tool in business education, the instructor was attracted to the technique for three reasons: (1) prior experience had convinced him that conducting more than one case discussion during a 3-hour night class session resulted in a considerable decline in discussion intensity; (2) the analytical skills involved in debating seemed similar to those associated with case discussions; and (3) although debates offered the opportunity for students to make presentations, they were also an activity that could involve the entire class.

The instructor's protocol begins with creating a list of nine or ten topics each semester. A topic is generally expressed as a short statement, such as:

> **Resolved:** Within 50 years, we can expect to see information technologies capable of the same type of flexible, common sense reasoning that humans alone are capable of today.

Each student is required to sign up for two or three topics. Once groups have been formed for each topic, members are assigned—at random—to the pro and con sides, with one student also being assigned to the moderator role. No allowance for student preferences is made when determining these assignments. As a result, students frequently find themselves arguing against a position they passionately favor. After teams and roles have been assigned, debates take place weekly. At least a week before each debate, the moderator uploads a one-to three-page briefing paper to Blackboard, outlining the topic and identifying specific questions to be addressed. From that point until the day of the debate, the pro and con teams post the references they intend to use on Blackboard, for everyone in the class to see (including the opposing side). Currently, a wiki-style "team site" is used for this purpose, with both pro and con sides being able to edit the reference list or make comments.

In class, each debate begins with a survey of opinions on the topic, conducted using the CRS with summary results displayed to all students. An instructor-developed, five-question multiple-choice test on the contents of the moderator's briefing paper is then administered to the entire class—not just panelists. The moderator then gives a short introduction (approx. five minutes) to the topic, followed by short presentations by the pro and con sides, after which the moderator (assisted, when needed, by the instructor) leads a discussion between panelists and the class as a whole. At the conclusion of the debate, the opinion survey (conducted at the beginning of the session) is repeated. No attempt to announce a "winning team" is made. The reasoning here is to avoid creating incentives that could lead to "gaming" the system (e.g., withholding key references from the opposing team until minutes before class begins).

During online class day, a synchronous online debate is also conducted—run by a student moderator trained to use Elluminate by the instructor.

Strategic Systems Research Project. The strategic systems research project is another exercise developed specifically for the course. The project revolves around fostering a deeper understanding of the nature of "strategic information systems." To complete the assignment, each student first chooses two or three historical systems (drawn from a list of over a 100 systems compiled by the instructor and a doctoral student). The student must then classify each system according to schemes developed in references provided by the instructor and trace its impact to the present day. The form of the project is a long questionnaire that asks both general questions about the nature of the system and requires Likert-style rankings on about 15 questions, each of must which be justified (in essay form) using citations describing the system. Prior to the start of the project, students are given a 75-minute lecture—conducted by a research librarian who has been assisting the class for over two years—that identifies online and paper sources of information previously found to be relevant to the project.

The project differs from a typical masters-level class paper in a number of ways. First, each student submission is intended to be part of a larger research project that will ultimately become an online database made available to the MIS research community, as well as being the principal source for a number of research papers detailing the project's findings. Second, to ensure rigor, each system is being researched at least three times. The first two projects on a given system are prepared completely independently by students in different semesters. The third project involves taking the two independent reports and reconciling them, to create a final report and a system summary. In situations where the two independent assessments differ significantly in their conclusions, the system is classified as a "problem system," and is researched in one additional semester.

A third difference between the project and typical papers relates to the grading process. Specifically, the principal grading activity on these reports occurs more than a month before the final drafts are due. The objective here is to get students to respond to comments (a doctoral student and the instructor both review and comment on each submission), much the way an author responds to reviewer comments during the manuscript submission process. The final difference involves how the writing process is monitored. As they conduct their research, students must keep an online journal of their findings and references. These journals are then regularly examined by the instructor over the course of the project.

One interesting implication of the strategic systems project's design is a continually changing mix of activities. The original project was expected to take five semesters but—owing to a trend of declining MIS enrollments—it will actually take seven semesters. During the early semesters (fall 2003, spring 2004), students necessarily researched individual systems exclusively. As of spring 2006, nearly all projects involve either problem systems or system consolidations. In fall 2006, focus will shift yet again, and the assignment will include a class project to develop an online delivery system to make the reports available to researchers over the Internet. In spring 2007, an entirely new multi-year project—on a different topic—will be initiated.

Organization

The typical semester of ISM-6155 consists of 15 three-hour class blocks. These blocks are broken into two 75-minute segments. Normally the first segment consists of a case discussion, while the second consists of a debate. As shown in Figure 1, cases relating to similar topics are grouped together, and debate topics relating to similar issues are normally scheduled for a week or two after the corresponding case. Lectures, shown in white, take place at the beginning and end of the course. A 90-minute period is also set aside specifically for filling in class-related forms, which include the university's course evaluation, the department's exit survey for MS-MIS students, and the instructor's own data-gathering instrument. Finally, content with strong ethical considerations and global management implications is spread uniformly throughout the semester.

Outcomes

The effectiveness of the course design has been assessed through student reactions, instructor observations and performance assessments. Among the observed outcomes:

- *Student evaluations* of the course and instructor have been far above college averages. For example, the fall 2004 set of evaluations (with a 74 percent response rate), awarded both the course and the instructor perfect (5/5) scores—an event so noteworthy that the department chair circulated a memo to the faculty.

- *High quality of student-prepared work*, with both debate preparation and research papers substantially exceeding the instructor's original expectations. Anecdotally, it is a rare debate where the instructor does not learn something material about the topic. Also, one manuscript—written by a doctoral student and inspired by observations made in project reports—recently received a "best paper" award at the 2005 AMCIS conference.

- *High levels of effort,* with students reporting spending more time on the course than on their average MS course. These self-reports seem to be confirmed by student journals, with the fall 2004 consolidated research logs of 18 students coming to 309 single-spaced pages (when imported into MS-Word).

- *End-of-semester survey items relating to course design* not only show students are satisfied with each course activity, but also show complete lack of consensus regarding any alternative design direction.

- *Enthusiastic participation in course activities,* such as the online class day—first offered up by the instructor as a possible voluntary activity in late January 2005. (Amazingly, 17 of 19 students surveyed anonymously afterwards opted for a second online day, despite the extra effort required).

Transferability

As a conclusion to this description of the ISM-6155 capstone course, it is useful to consider one further question: would the approach taken in the course work elsewhere? The answer depends mainly upon the degree to which an individual can embrace a discussion-dominated pedagogy. Since such an approach necessarily entails some loss of instructor control over content and topic, it is likely that many instructors would find themselves uncomfortable applying the techniques presented here.

Where a faculty member is willing to place much of the responsibility for learning in student hands, however, the protocols developed for ISM-6155 appear to be highly transferable along two dimensions. First, there is nothing in the protocols devised for the course that is MIS dependent. Thus, any discipline where the case method can be used effectively would seem to be a reasonable candidate. Suitable debate or research topics, specific to the field, can be chosen by the instructor or—even better—identified based upon student input (in the constructivist tradition).

The second dimension of transferability is to distance learning. The initial positive reaction to the online class days (admittedly, only three so far) suggests that case discussions and debates can move online relatively seamlessly—given the proper IT tools. In addition, resources required for research projects are increasingly available online at universities supporting strong research libraries. The implication, then, is that such a design could be implemented online with only modest modifications. ∎
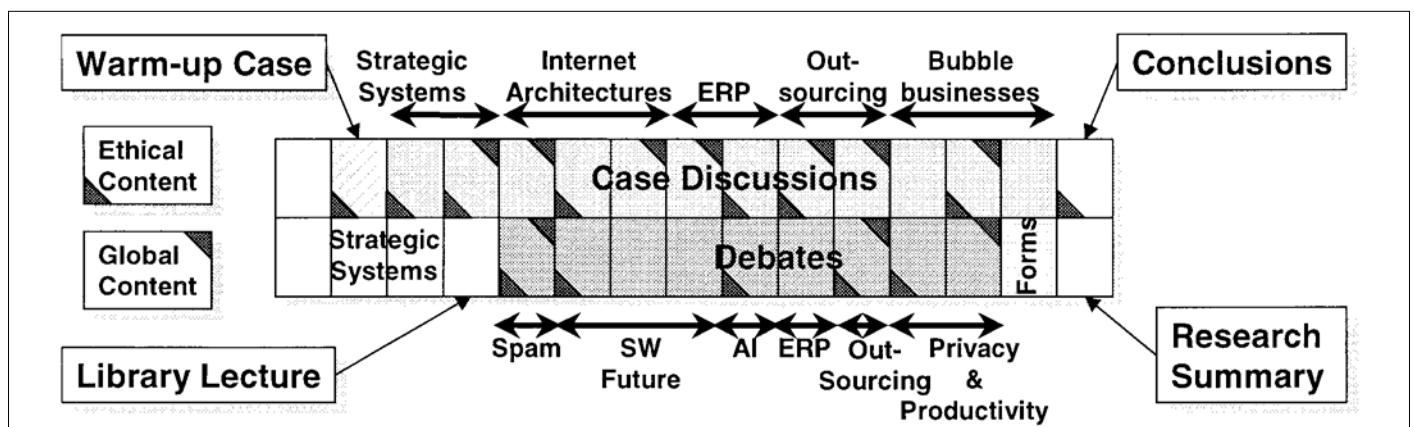

Figure 1: Sequence of course topics.