# TEACHING WITH TECHNOLOGY
# A CASE BASED APPROACH

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## ABSTRACT

The innovation being described involves a new, integrative approach for teaching business doctoral students (and other faculty members) how to use technology to enhance the effectiveness of their teaching. The approach has been applied in two separate venues: i) as the core of a semester-long doctoral seminar on teaching with technology, taught principally to business doctoral students, and ii) in the context of a week-long workshop on teaching for faculty participants drawn from many disciplines.

**Keywords: case method, instructional technology, scholarship of teaching**

## DESCRIPTION

### Topic or Problem

In the competitive world of research I institutions, the mission of teaching increasingly takes a secondary role to the mission of conducting publishable research. Ironically, this growing emphasis on research productivity is taking place at the precise time when technology—particularly Internet-enabled information technology—has dramatically increased both the options available for and the potential complexity of teaching. Furthermore, it is plausible that many teaching technologies could actually impact faculty productivity in a manner that could support, or at least not undermine, the goal of spending more time on research. But this will only occur if faculty members can master their effective use.

The problem being addressed, then, is how to assist current and future faculty members in their efforts to incorporate technology into their teaching. More importantly, how can we help them to do so in a manner that enhances their teaching effectiveness without destroying their research productivity?

### Students

Participants in the innovation have come from two distinct groups: 1) doctoral students participating in a required 3-credit seminar, drawn from business disciplines (with a sprinkling of cross-enrollment from the college of education), and 2) faculty members, participating in a week-long workshop, ranging in rank from adjunct instructor to full professor and drawn from nearly all of the university's colleges.

The workshop is offered every summer to a group of 20 faculty members, who must apply for admission to the University of South Florida's Center for 21st Century Teaching Excellence (C21TE). The doctoral seminar is projected to be offered every 1-2 years, with current enrollment of 15.

**Objectives**

As stated in the course syllabus for the doctoral seminar, the objectives of the innovation are as follows:

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1. To acquaint participants with a variety of technologies that will add flexibility and new dimensions to their teaching, while simultaneously ensuring that they are also aware of the practical implications of using the technologies.
2. To provide participants the opportunity to develop small learning objects using different technologies
3. To familiarize participants with the case method—both in the classroom and augmented by technology, and
4. To introduce participants to scholarship of teaching research methods.

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The workshop goals are similar, but omit the final objective (owing to lack of time during the workshop's one week time frame).

**Innovative and Unique Features**

The principal innovation being described, which is common to both venues, is the process through which doctoral students and faculty members are introduced to teaching technologies using the case method while, simultaneously, being required to use those same technologies in the class itself. For example, the class might discuss a case study presenting a dilemma faced by an instructor who had decided to use audience response technologies in her large auditorium class. During the same period, participants would be given the opportunity to use audience response systems as part of the discussion and in exercises. To complete the integration, they would also be given a walkthrough of the technology—presented by an experienced instructor— demonstrating the features of the technology and how to accomplish basic tasks, such as question creation. This type of integration was achieved for virtually every technology featured in the seminar and workshop. These technologies included:

- CPS audience response systems
- Blackboard course management system
- Elluminate synchronous classroom technology
- Camtasia animated screen capture and production software
- Flashlight Online and Survey Monkey online survey tools
- Tablet PC
- Hot Potatoes and other interactive web exercise generators

- Moodle and other open source tools (Doctoral only)
- PDA and cell phone technology (Workshop only)

**Content**

With the exception of a single case study that had already been developed, all of the content for the workshop and seminar had to be created by the instructor during the period from fall 2004 to fall 2005. This content came in three forms: case studies, web-based multimedia tutorials on the specific technologies, and exercises designed to allow participants to make meaningful use of the technologies.

To develop the case studies, the instructor worked with the university's Center for 21st Century Teaching Excellence (C21TE) to identify sites (i.e., courses) at the university where key technologies were being employed in a meaningful way or where obstacles were stifling faculty in their attempts to use the technologies. During fall 2004 and spring 2005, four discussion cases were developed, examining:

1.  A gifted education course, conducted entirely online using Blackboard, where challenges were being faced with respect to group formation.
2.  A self-paced, blended programming course where—despite the availability of extensive online multimedia resources and assistance (both face-to-face and online)—student procrastination was endangering their ability to pass the course.
3.  A human sexual behavior course where use of audience response systems was experiencing serious setbacks owing to technological and user-training problems.
4.  An engineering course, concurrently taught in the classroom and via video feed, where a newly arrived assistant professor was seeking ways to increase interactivity without taking up so much of his time that he would put his career in jeopardy.

These case studies were similar in size and appearance to typical business cases (8-14 single spaced pages plus exhibits), and provided details on the situations being presented, an explanation of the educational context and goals of the discipline involved and background information on the case protagonist(s).

The accompanying tutorial content for these cases consisted of multimedia segments (most often created using Camtasia—the same tool used in case #2) developed using a Tablet PC (a key element in the eventual resolution of case #4) as well as textual material posted to Blackboard (common to all of the cases). During the classroom discussions, a CPS system (the focus of case #3) was used to poll participants on their opinions, as well as to quiz them on their knowledge of case details. In addition, asynchronous case discussions on Blackboard (similar to those described in case #1) were conducted during the week prior to the workshop, as a warm-up, and an entire morning of the workshop was conducted synchronously, using Elluminate, in order to allow participants to contrast the synchronous and asynchronous experience.

For the doctoral version of the course, where greater demands could reasonably be placed on participants, three additional cases were developed. The first of these dealt with the use of Elluminate to hold an online class session in a contemporary arts course. The second dealt with

issues facing an instructor teaching a large (750 student) introductory MIS course that were actually being dealt with at the time the case was being discussed. The last addressed the technological and career implications of managing an online journal and the role played by open source educational software applications, such as Moodle. In addition, three additional cases were nearing the final stages of development—written by the doctoral students using instructor-identified sites or (in one case) a student's own site. These cases were discussed in April.

## Organization

The workshop version followed the same basic organization most days. A case study was presented during the morning, followed by a technology demonstration or lab, generally relating to technologies central to the case study. In the early afternoon, invited faculty presentations on specific topics were generally given. For the last 75 minutes of each day, participants were assigned to small groups, were they would brainstorm the case to be formally discussed on the next day. The last minute of each day was assigned to filling out an online survey to provide feedback on the day's events.

The doctoral course was organized into 3 main modules: discussion classes, classroom techniques and teaching research. In the discussion classes module, the central theme was the case method. Facilitation techniques were explored in different technological environments—face-to-face, asynchronous and synchronous—with students being given the opportunity to experience each approach. For this module, cases studies were selected involving case-discussion related pedagogies or situations. In addition, a case writing workshop session was conducted.

In the classroom techniques module, case studies relating to larger classes—face-to-face and blended—were introduced. The debate pedagogy, which can be used as an alternative to case discussions for larger classes, was also employed for three sessions, allowing each student to participate as a panelist in one debate. During this period, technologies particularly useful for delivering lectures (e.g., Camtasia) or to enhance the effectiveness of lectures (e.g., CPS) were demonstrated, along with technologies for generating interactive online exercises (e.g., Hot Potatoes, SoftChalk), open source options (e.g., Moodle, MediaWiki) and tools for surveying large classes (e.g., Flashlight Online, Survey Monkey).

In the final module, teaching research, students were introduced to the notion that teaching is fundamentally a research activity and to techniques for measuring outcomes, along with appropriate venues for publishing results. The final three sessions—yet to be completed, at the time of this writing—will involve student-led discussions of student-authored cases, three of which are under development.

For both the workshop and seminar venues, creating actual teaching materials using some of the technologies presented was central to the experience. Owing to their makeup and timing, however, the workshop and seminar approaches differed. In the case of the workshop, the intensive one week session represented the start of a 10 month institute. During the fall semester that followed, each faculty member was required to implement at least one technological innovation in a course that he or she taught. During the subsequent spring semester, he or she

then had to report on the experience to his or her departmental colleagues, as well as to the other institute participants. As an inducement, faculty members were given $750 for successful completion of each stage (i.e., workshop, fall and spring).

The spring 2006 doctoral course presented a different challenge, since about half the students had never taught a course and were not scheduled to teach one in the near future. To address this problem, the instructor required students to form into teams with appropriate skills (an exercise in its own right) to develop interactive modules on case development and facilitation that would be hosted on the community site for the journal that is to publish the cases already developed (along with teaching notes and follow-on cases). The instructor set up a Moodle site (an open source course management system) for these modules, whose peer-review by other students was also a course exercise.

Another exercise for doctoral students was to complete a substantial project (e.g., developing a teaching case, writing a research paper, preparing a grant proposal). In spring 2006, however, many students had to take the seminar as a fourth course—largely as a result of the abrupt decision to require all doctoral students to take the seminar (not announced until November 2005). To address this situation, the instructor agreed to allow those students not wishing to complete the project to take the course on a pass/fail basis. As a result, only about half the enrolled students chose to develop a project.

## Presentation

Two beliefs held by the instructor were principally responsible for the manner in which the material was presented in both the workshop and seminar venues. The first was that it is counterproductive to lecture participants regarding the many pedagogical benefits of discussion techniques. The second was that there are strong parallels between the fields of business and education. Most particularly, in neither field is mastery of theory necessarily accompanied by effective practice—otherwise all education professors would be outstanding teachers and all business professors would be rich—nor can it even be shown to be a prerequisite (otherwise a Sam Walton or Bill Gates could not exist). Given these parallels, extending the case method— already accepted as effective in teaching business—to the discussion of technology-enabled educational situations seemed like a reasonable strategy. In addition, few business schools have the time, or expertise, to devote resources to developing teaching cases and training students in discussion leadership. For this reason, the emphasis on case discussions in the design of the seminar seemed particularly appropriate for business doctoral students.

## Effectiveness

Indicators of the effectiveness of the innovation include:

- Number of technologies used per workshop faculty member in their fall courses nearly doubled in fall 2005 following the first use of the new pedagogy (average 2.6) when compared to the two previous cohorts (average 1.3 and 1.4), both of which had been taught in a more conventional manner but were otherwise similar (e.g., 3-phase design, compensation, faculty composition, technologies covered).

- Number of incremental changes implemented per workshop faculty members in their fall courses roughly doubled, going from 1.5 (2003 & 2004) to 3.1 (2005).
- At a 2006 symposium on teaching held by the university, 2 of 3 keynote presenters (invited based upon their innovative teaching work) had attended the summer 2005 workshop and, during the course of their presentations, made direct reference to the workshop as a key factor in their success. That symposium, an annual event, was attended by over 200 members of the university community.
- Surveyed reception to the case approach from doctoral students, where—in an anonymous mid-course survey—11 of 13 students surveyed agreed with the statement "The case discussions were valuable activities".
- Surveyed expectations of the doctoral students, where, in the same survey referenced above, a median of 8 out of 13 agreed with the statement that "I think it is more likely that I'll use … as a result of the course" for each of 8 listed technologies with a median of 1.5 expressing (mild) disagreement.

Further, based upon the in-progress work already completed, the instructor anticipates that that the 7 students taking the ISM-6930 seminar have collectively produced 3 published teaching cases, with 2 additional scholarship of teaching research papers under submission. In addition, active case development activities in 3 departments (special education, counseling and aging studies) have been initiated as a side-effect of the workshop.

**Transferability**

The techniques described have already demonstrated considerable effectiveness across a variety of academic disciplines (not limited to decision science or business disciplines). The major obstacle to transferability, then, becomes the development of suitable cases and associated learning materials (e.g., teaching notes, technology demonstrations). The difficulties presented by this obstacle should be substantially reduced with the Informing Science Institute's (ISI) decision to launch a new journal in spring/summer 2006 whose specific mission is to publish teaching cases of teaching situations and materials supporting faculty in their use of those cases. Indeed, the enthusiasm with which the ISI embraced the new approach to helping faculty incorporate technology into their teaching can be seen as further evidence of the perceived value of the techniques described.

**References (Bibliography)**

References and case studies available upon request from T. Grandon Gill (ggill@coba.usf.edu).