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Operating a Very Large-Section, Hybrid Principles of Marketing Class at a Public University: Lessons Learned over Ten Years

Bruce Robertson
San Francisco State, robertbc@sfsu.edu

Kevin Kelly
Wiley Learning Institute, kkelly.sfsu@gmail.com

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Bruce Robertson, San Francisco State University, robertbc@sfsu.edu

Kevin Kelly, Wiley Learning Institute, kkelly.sfsu@gmail.com

Abstract - This case study describes the development and operation of a very large-section, hybrid Principles of Marketing Class. The authors describe the original structure of the class, major adaptations and decisions related to its development over time, and discuss four lessons learned through this process: (1) The non-traditional format needs a lot of explaining, (2) This will always be an experimental class, (3) Plan in advance and have contingency plans, (4) It is easier to share the work than it is to share the budget. They conclude by suggesting Principles of Marketing is a logical entry point for innovative technology.

Keywords - hybrid classes, online learning, principles of marketing

Relevance to Marketing Educators, Researchers and/or Practitioners - Marketing educators are asked to efficiently manage large numbers of students in a resource-constrained environment. This paper answers two questions--*how does it work?* and *what problems can we expect to encounter?*--about making the transition from a traditional large-section Principles of Marketing class to technology-enabled student-managed "mega" section.

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Introduction

The last decade has seen an explosion in online learning in postsecondary education institutions in the United States. The number of students enrolled in at least one online class has increased more than 400% from 2002 to 2011 from 1.6 million to 6.7 million. During the same period, total enrollment increased 13% from 16.6 million to 21.0 million. Today, 32% of all college students are enrolled in online classes as part of their program of instruction. The majority of Chief Academic Officers now see online learning as critical to their long-term strategy (Allen and Seaman, 2013).

A current "hot topic" in online learning is massive open online courses (MOOCs) designed to make instructional content available to anyone with an internet connection. Although there is a lot of press coverage around the relationship between MOOCs and higher education[1], only 2.4% of higher education institutions currently have a MOOC and another 9.4% are considering one. Whether or not a school currently offers a MOOC there is agreement in higher education that MOOCs are an important way to learn about online pedagogy and to help understand the scalability of online classes (Allen and Seaman, 2013). If nothing else, the recent rise of MOOCs highlights a number of growing challenges Marketing instructors at public universities have faced for years – namely, balancing the institutional demand for growing class sizes and the student demand for flexibility without compromising the quality of instruction.

The purpose of this paper is to present a case study of the evolution of a very-large hybrid Principles of Marketing class over a 10-year period. We describe the initial course design, discuss major changes made to the course over time, list four lessons learned while operating such a class, and conclude by proposing Principles of Marketing is an appropriate entry point for innovative technology. Although this course is not a MOOC, it does offer some insights into online pedagogy and scalability possible with Principles of Marketing classes.

A special issue on teaching the Principles of Marketing course in the Journal of Marketing Education described Principles of Marketing as a critical course for business majors. It is often the only Marketing course a student will take in college and because the majority of students who take Principles of Marketing are not Marketing majors; it is important to create a learning environment that motivates and challenges students (Ferrell and Pride, 2004). Because demand for this class is high, it is not uncommon for institutions to offer Principles of Marketing with large class sizes to maximize resources in a challenging budgetary environment (Abernathy and Padgett, 2011; Smart et al., 1999). This paper presents one approach to teaching Principles in a very large section format.

Another contribution of this case study is that it takes an innovation beyond the new and shiny stage and speaks to managing and updating the format over the long haul. As

[1] http://www.nytimes.com/2012/11/04/education/edlife/the-big-three-mooc-providers.html?_r=0 accessed March 20, 2013

Marketing educators consider the advantages/disadvantages of approaches to increase the efficiency of the Principles class, these issues can help insure an effective implementation.

Initial Course Design

The original course was developed in a hurry. Shortly before the beginning of the school year in 2002, it was learned the 400-seat movie theater adjacent to campus would no longer be able to accommodate classes. This meant the Principles of Marketing class that had been taught in the theater would have to be moved back on campus giving the instructor two weeks to respond to the following scenario:

- 320 students were registered for the class and the largest available classroom seated 150 students.
- The budget for the year was set, so any solution had to make use of existing campus resources. However, some of the money reserved for the theater rental could be used to support a web-enabled technology.

With the cooperation of the campus academic technology unit, the solution was a hybrid course conducted live in a 150-seat classroom so students could approach it as a traditional class, and streamed over the internet so students could also approach it as an online class. Online tests conducted through the campus learning management system made the class fully scalable with no theoretical limit on the number of students who could be enrolled. As this class was created in a minimal time frame with limited resources, business schools interested in using the approach may find it practicable. One Midwestern university has already replicated this design in its Business School.

In the remainder of this section, we describe the original course design in terms of its pedagogy, content delivery and the technology needed to initiate the class.

Pedagogy

This class was envisioned as an online analog of a traditional, large-section introductory class. The primary goal was to create a learning environment no worse than the format it replaced and to use technology to enhance the experience where possible. Adrian and Palmer (1999) suggest four teaching methods for use in a successful introductory class: team preparation of a project, use of chapter objectives, lectures and discussions on the textbook material, and frequent quizzes with prompt feedback. The traditional, large section lecture-test format encompasses two of these methods (chapter objectives, lectures and discussions). Computer mediated technology allowed us to incorporate a third of these methods (frequent quizzes with prompt feedback) in the hybrid class. McCabe and Meuter (2011) argue that the seven principles of good practice in undergraduate education articulated by Chickering and Gamson in 1987 are an appropriate framework for evaluating the effectiveness of integrating technology into a traditional classroom environment and found that Marketing students

perceived Blackboard (a Learning Management System, or LMS) to significantly enhance these principles.

As an analog of a traditional class, the hybrid Principles of Marketing class has the lecture-test format students have come to expect. There are 28 lectures delivered over the course of a 14-week semester. Content for the class is similar to other Principles classes – i.e., the range of topics seen in most mainstream Principles of Marketing texts, supplemented with additional material developed by the instructor. Students were able to interact with the instructor during scheduled class sessions, during the instructor's office hours and by e-mail. Student to student interaction was encouraged through two online discussion boards - one focusing on problems students were having with the technology and the other allowing students to share examples of Marketing Principles observed outside of class.

Testing

The major departure from the traditional structure was in the testing program. In a large-format traditional class there are a small number of high-stakes exams, usually multiple-choice. Research has shown multiple-choice questions are as valid as short answer questions in marketing courses (Bacon, 2003) and that there is no significant difference in performance between online and traditional face-to-face classes (Larson and Sung, 2009). The instructor prepares multiple versions of the test to discourage students from copying and runs off several paper copies of each version. It may take one to three class sessions to administer each test (review session before, administer the test, go over the results following) which reduces the amount of class time available for instruction significantly. This doesn't take into account the time needed to score the tests and to record the grades.

While recent studies (Watson and Sottile, 2013; Greaser and Dawson, 2008) have shown no significant difference in cheating or in motivations to cheat between face-to-face and online environments, we took steps to discourage cheating wherever possible. Our solution was a two-part testing program: a series of low-stakes "mini tests" tied to each week's content and a high-stakes comprehensive final examination, each part worth half of the student's grade. In a research study with 120 medical students, Wellman and Marcinkiewicz (2004, p. 1) found that "[o]nline course content paired with meaningful time-on-task (e.g. practice quizzes) was most effective when paired with proctored assessment."

Mini tests are small 10-question quizzes randomly drawn from a pool of 70 to 130 questions tied to each week's lectures. The relative importance of a given topic is weighted by the number of questions related to that topic in the test pool. Students access the mini tests through the LMS and are allowed to take each test as many times as they choose from any place they have access to the internet. The only caveat is that the final attempt at the test (not the highest) is the one that counts. An ungraded, practice version of each mini test is also made available so students can continue using the test bank to prepare for the final after they have achieved a perfect score on the test.

There are several objectives achieved by the mini tests. Taking the tests over and over encourages focused time on task, a critical element of student success in higher education (Chickering & Gamson, 1987; Chickering & Ehrmann, 1996). Students take each mini test an average of 3 to 8 times depending on the topic, and getting questions wrong (they are shown the correct answers after every attempt) allows students to identify problem areas and to remediate them without a serious consequence for their grade. Downey and Schetzsle (2012)

found students who spend more time on asynchronous assessment achieve higher scores in a large-lecture Marketing class. Because each mini test is worth about 4% of the final grade, and because students can re-take each test until they have a perfect score, there is little incentive to cheat on this part of the testing program.

The second part of the testing program is a comprehensive final examination administered in an on-campus computer lab and monitored by proctors. Randi Priluck (2004) found that, while students perceived that they learned more in a traditional Principles of Marketing class compared to an online class, there was no difference in their performance on a comprehensive final examination. The final examination is simply 50 questions randomly drawn from the entire pool of questions used over the semester. Using a 30-seat computer lab requires scheduling from 20 to 40 one-hour sessions over three or four days to administer the exam. Students are allowed only one attempt at the final exam and there is no copying because no two students will see the same set of questions. As the final exam is spread out over several days, there is no one time or one place where every student in the class needs to be present.

The comprehensive final exam is a high stress event for students. However it is a compromise that allowed the class to be fully scalable while minimizing cheating. If a student had not been doing his or her own work on the mini tests, the chances of successfully answering 50 questions randomly drawn from a pool of 1300 was slim. If a student were to obtain a copy of all of the questions and memorize them as a way of preparing for the final exam, the effort involved in memorizing the answers to 1300 questions may have been greater than the effort involved in going to class regularly, taking notes, asking questions, etc.

The grade distribution for this class has been approximately normal with a mean in the C range – typical for an upper division required class. Cole and Robertson (2006) measured student satisfaction in a large-section hybrid class, a large daytime section of the same class, and a large nighttime section of the same class. They found no differences in satisfaction between the hybrid class and the other traditional sections indicating students perceived the hybrid class to be at least as good as the traditional format it replaced.

Content Delivery

We call the multi-modal approach to content delivery "Student-Managed Learning." The student-managed approach is to provide students with a variety of options for achieving their personal goals. Steiner and Hyman (2012) argue that as performance does not differ by self-selected delivery method, Marketing educators are encouraged to offer students alternative delivery systems for the same course. In the Mega-section, students choose from a menu of content delivery, assessment and interaction options to create the class experience they prefer. Cole and Robertson (2006) found the majority of students in a large-section hybrid class take a satisficing approach to the class – they set internal personal goals for themselves and then expend the minimum effort needed to achieve these goals. Students feel less need to be engaged in courses outside of their major (Taylor et al., 2011) however adding online content can have a positive effect for students' self-regulated learning strategies (Dowell and Small, 2011).

Students have two sources for class content and six modalities for its delivery. Content for the class comes from a mainstream Marketing text and from instructor-developed content. There is about 80% overlap between the two sources so that a student who wants to do well in the class will need to use both sources.

Two of the modalities for acquiring information are through print. In addition to the textbook, study guides (outline versions of the PowerPoint slides used in the lectures, with room for taking notes) were prepared. Students could download the study guides weekly from the class website for free or they could purchase a complete set of study guides through the campus bookstore. Students saw these study guides as the most important modality for content delivery (Cole and Robertson, 2006).

The other four modalities for content delivery involved the semi-weekly lectures. To give students the most flexibility the class was designed to give students their choice of real-time or asynchronous delivery and in-person or online participation. Thus, the class originated out of a 150-seat classroom (the biggest available at the time) to allow students who preferred a traditional class format to take the class in real-time and in-person. The lectures were live-streamed over the internet to allow students to participate in real-time online. In addition, the lectures were archived on a streaming server to allow students to participate asynchronously online. Finally, a second showing of the lecture later in the day with the instructor present to answer questions allowed students to participate asynchronously in-person.

Technology

Two underlying technologies were necessary to make the hybrid class viable: a learning management system (LMS) and a lecture capture system. At the time the class was developed, Blackboard, a commercial LMS, was available on campus but had not yet been widely adopted by faculty. The academic technology unit welcomed the opportunity to migrate a large-format class to Blackboard as a demonstration of its capabilities.

There was no lecture capture system available on campus so the system had to be developed from scratch. The development was driven by two major objectives: (1) make the process as simple as possible for the instructor, and (2) minimize resources expended.

This solution was manpower intensive. Human resources involved a camera operator during the lecture, about two minutes for preproduction and about 15 minutes for postproduction time from an academic technology technician. Prior to each lecture, the instructor uploaded PowerPoint slides for the lecture to a Tomcat server using a utility that converts PowerPoint slides into JPEG images. During the lecture, the instructor accessed the PowerPoint's through a laptop computer so the lecture experience was similar to that in a large-section class. A video camera in the back of the classroom with one operator sent a digital signal over the campus network to compressors at an academic technology center where a QuickTime processor compressed it and streamed it to the Internet live. As the instructor advanced presentation slides during the lecture a time code was captured and simultaneously embedded in the video stream.

As with a traditional lecture there was no editing of the lectures after the fact. What happened in the classroom is what happened online. Postproduction was limited to trimming the video, synchronizing the slide time code, embedding time codes in the video track, and then posting them to the archive server. A link to this archive was then posted on the class website in the LMS. Students used QuickTime to view these picture archives.

Major Adaptations and Decisions

In the ten years since the class was introduced, it has become a signature class on campus. Enrollment has grown from 423 students (more than could have fit in the movie theater) in the first semester to a peak of more than 1,500 students per semester. More than 23,000 students have participated to date. In addition to absorbing all of the demand for Principles of Marketing from the College of Business, the class is accessible to other students on campus. In one typical semester, 287 students representing 57 majors from outside the College took the class as an elective. As a result, the Principles of Marketing class has increased the general awareness of the discipline on campus and has become a significant gateway for students choosing to major both in Business and in Marketing.

In addition, while the Principles class was growing steadily, the hybrid approach to large-section classes became more common throughout the University. Today, there are 145 courses with enrollments over 100 students. 124 of them are using either the LMS or lecture capture, or both. Needless to say this growth did not come without some stresses on the system. In this section, we describe some of the major issues that surfaced over the past ten years and how they affected the hybrid course. We also discuss two decisions that, while not resulting in major adaptations to the class, were important milestones in its development.

Simplified Content Delivery

The original course design lasted exactly one semester. Six modes of content delivery were cut to five and then four. Very few students attended the re-broadcast/live discussion and with the adoption of an automated lecture capture system in 2009 the live online stream was discontinued leaving students four ways to access the content for the class: textbook, study guides, live in-person lectures, online lecture archive.

Eliminated Other Options

In 2002, online learning was relatively novel in higher education with one out of ten students taking an online class (Allen and Seaman, 2013). Students were drawn to the class because of its novelty. Many students may not have cared to take an online class but were drawn to it because of the convenience. Harris and Martin (2012) surveyed students at a Western University and found convenience (both geographic location and time flexibility) as well as

to honor family commitments and to keep their jobs as the main reasons students chose to take an online course.

Closed traditional sections of the class

When the hybrid class was introduced, there was uncertainty about how the class would be received by students so three other traditional sections of Principles of Marketing were offered: two large-section classes on campus and a smaller class offered at a satellite location. As word got out about the hybrid class, enrollments in the three traditional sections decayed and they were phased out. Within four years the hybrid class was the only option available to students.

Students rejected alternative

The lack of other options for the course created a concern that there was no alternative to the course for students who might not do well with the online format. In order to address this concern, the College created a traditional, small section (45 seats) Principles class taught by a different instructor. A minimum of 10 seats in the class were reserved for students who had attempted the hybrid class and had failed. None of these students chose the traditional section and the class was cancelled after one semester. Clearly, students preferred the convenience of the online section over a traditional section even when it may not have been in their best interest.

Replaced Learning Management System Software

In Fall 2006, the University switched from Blackboard to Moodle, an open source LMS program, privately branded as iLearn. While there were many factors that went into the decision, one of them was Blackboard's inability to cope with the increasing scale of the class. The biggest issues were around the posting of grades to a student's grade book and test performance during peak demand periods. In Spring 2003 the system crashed during finals necessitating a switch to a paper and pencil contingency plan for final examinations.

Moodle was an attractive alternative for several reasons. By reassigning some of the license fees allocated to Blackboard, the University was able to join and support the open source consortium behind the development of Moodle. This helped make developers more responsive to campus issues. Locating the LMS servers on campus made it easier to integrate Moodle with other University systems and eliminated transmission issues associated with severs located on the other side of the country. Currently the campus is using version 2.3 of Moodle.

Stress on systems

There have been scale issues with Moodle as well. As more instructors adopted elements of the online testing program used in Principles of Marketing, procrastinating students could overwhelm the servers with test requests as a deadline approached. In Spring 2008 (with an enrollment of 1150) the LMS servers logged between 12,000 and 16,000 mini test attempts in the 12 hours before the test deadline. This problem was exacerbated when multiple courses had the same deadline for a test. In Fall 2010, a "perfect storm" where multiple large courses had deadlines come due at the same time the Principles final was happening created an

overload that caused Moodle to act erratically during the final. For a second time, the paper and pencil contingency was deployed.

Since then there have been several steps taken to discourage these overloads from happening. First, the capacity of the test servers for Moodle has been increased. Archive data from the Principles of Marketing class were used to stress test upgrades to Moodle before implementation to identify scale issues. Students are no longer allowed to take practice mini tests during the final exam period to reduce traffic on the servers during that period. Finally, instructors of large classes are encouraged to communicate with the academic technology unit to avoid having several major deadlines occur at the same time.

Automated Lecture Capture System

The lecture capture system originally used for the course could be scaled to handle a maximum of four to six courses each semester. The demand for lecture capture courses quickly surpassed that threshold and the Academic Technology unit recommended the University invest in an enterprise solution. That required an investment in hardware and software, but once the investment was made, the cost of capturing lectures became manageable.

In Fall 2009, the Academic Technology unit chose Echo 360, a commercial product, as the University's lecture capture system. The product is private labeled as Coursestream and is integrated with the LMS to provide a seamless experience to students. There are currently 22 Coursestream enabled classrooms on campus. These classrooms have a console in the front of the room and up to three cameras installed for a close-up view, a wide angle view (to include white boards) and a long-range camera that can be aimed and focused via remote control. There are two feeds into the Coursestream system, one from the instructor's computer (which captures PowerPoint slides or anything else displayed in the computer's monitor) and the main feed which can be any of the three cameras or a media feed allowing the instructor to project other media (such as DVD) through the system. A small LCD monitor at the front of the room shows what is going through the main feed to the Coursestream system. Both of these feeds are processed by a dedicated server and posted to the LMS usually within four hours of the lecture's conclusion. While this system doesn't allow a real-time lecture stream, the speed with which the lectures are posted attenuates the need for a live stream.

Decided Not to Take the Course Lower Division

Principles of Marketing is an upper division, core Business class at this College. Because the format is lecture-test and because of the high demand for the class there were discussions around opening the Principles class to all business majors. This would have had several benefits. Community college students planning on transferring in as Juniors would be able to take Principles of Marketing as a distance learning course before transferring to get a head start on their major. Lower division Business majors living on campus would have an

opportunity to engage with the discipline in their first two years, rather than waiting until all other lower division requirements had been fulfilled. However there was a question as to whether lower division students have adequate preparation to take Principles of Marketing.

To answer that question, the department agreed not to enforce the prerequisite for one semester allowing underclassmen to register for the course. At the end of the semester the grades were analyzed using ANOVA to determine if there was a significant difference in performance between lower division and upper division students. Table 1 shows there was a significant difference in performance between lower division students and upper division students.

Table 1. ANOVA Student Performance by Class Level

Class	*N*	*Mean Score (%)*
Freshman	16	65.0
Sophomore	75	63.6
Junior	1013	76.3
Senior	336	73.2
Total	1440	74.8

F=13.17 p>.001.

Post-Hoc Comparison Mean Difference

	Sophomore	*Junior*	*Senior*
Freshman	1.38	11.38	8.21
Sophomore		12.71***	9.60***
Junior			3.12

***p>.001

Lower division students averaged a full grade point lower than upper division students and were twice as likely to have to re-take the class. Post hoc comparisons showed no difference in performance between Freshmen and Sophomores and no difference in performance between Juniors and Seniors, but a large difference in performance between lower division and upper division students. Based on these findings it was decided to leave the upper division requirement in place.

Decided to Include Principles as Part of College's Assessment Program

Current AACSB guidelines encourage direct measurement of student performance as an assessment tool (Association for the Advancement of College Schools of Business

International [AACSB], 2013). LaFleur and associates (2009) found course-embedded assessment in Principles of Marketing classes can inform college-level assurance of learning and also enable continuing improvement for Marketing Classes. Data generated through the class testing program has been adapted for use as an element of the College's assessment program as described below.

Student learning for each concept covered in class is measured at two points during the semester: once, on the mini test offered at the time the material is covered in class and again, at the end of the semester as part of the comprehensive final examination. One measure is the proportion of students who have mastered each week's content at the time it was presented as indicated by a perfect score on the mini test. The other measure is how much of the material a student retains at the end of the semester as measured by the score on the comprehensive final. Because each week's content is tied to a specific mini test, we can use these results to make improvements to the class – thereby closing the loop.

Lessons Learned

During World War II, the United States military developed a team approach to producing instructional films and this approach is used widely today (Chen, 2007). One consistent theme through the development and evolution of this course it that it has been a team effort. There are three campus units whose cooperation is necessary for the operation of this course: the instructional unit, responsible for pedagogy; the academic technology unit; and the administration. Many of the lessons learned are the result of issues raised through the interaction of these three units. In general, the instructional unit receives the benefits from offering the class, the technology unit bears the costs of offering the class, and the administration values the overall efficiency of the design. Figure 1 is a conceptual diagram showing these issues, their valence (positive +, negative -, or neutral 0), and their interrelationships. We will highlight these issues in the context of the lessons to which they contributed.

Lesson 1: The Non-Traditional Format Needs a Lot of Explaining

The non-traditional format of this class can be confusing to students. The 150-seat classroom is overflowing the first week of class until students who don't read the syllabus realize they can take the class online. The metric for success in the testing program is to earn 100% on the mini tests and to answer about half of the questions on the comprehensive final correctly for a "C". The extra effort needed to retake the mini tests enough times to earn the perfect score prepares students for the comprehensive final. Many students are satisfied scoring 80 or 90% on the mini tests believing that this is "A" or "B" level work and are unpleasantly surprised when they do poorly on the final exam (and receive a low grade for the course). This is especially true for *procrastinators (-)*. The first time the class was offered there were no deadlines on any of the tests. Some students waited until the end of the semester to

"power watch" the lectures and take all 13 mini tests with predictable results. At their request we put deadlines on the mini tests to encourage students to stay current with the class.

This takes a lot of explaining. In addition to describing the class in the syllabus, the first class session (later an online lecture) is a mandatory orientation explaining how the class works and offering tips on how to succeed. To encourage students to pay attention to the lecture, the first mini test is seeded with questions from the orientation lecture (these questions are not included in the pool of questions used for the final exam).

On the other hand the format lends itself to *Universal Design for Learning (UDL) (+)*. One of the three main UDL principles requires "multiple means of representation to give learners various ways of acquiring information and knowledge" (Center for Applied Special Technology [CAST], 2009). Boskic, Starcher, Kelly, and Hapke (2008) described how instructors can follow UDL by recording lectures as learning objects for students to review in different ways, such as audio files, enhanced audio files that display pictures or PowerPoint slides, or video synchronized with presentations. This marketing class provides all of these types of learning objects, which students may use in conjunction with the textbook and other media related to class content. The *lectures are keyword searchable (+)* allowing students to quickly access specific topics covered in the lectures. Currently, the automated lecture capture system doesn't include close captioning for lectures. This creates an *accessibility issue (-)* as closed captioning may add 48 hours to the time the lecture archives are posted with closed captioning. All this needs to be explained as well.

Finally, while students love the *flexibility for scheduling* (+) this format offers, the convenience of the class creates a *preference for the online format* (-), even when it may not have been in the student's best interest to take the online class.

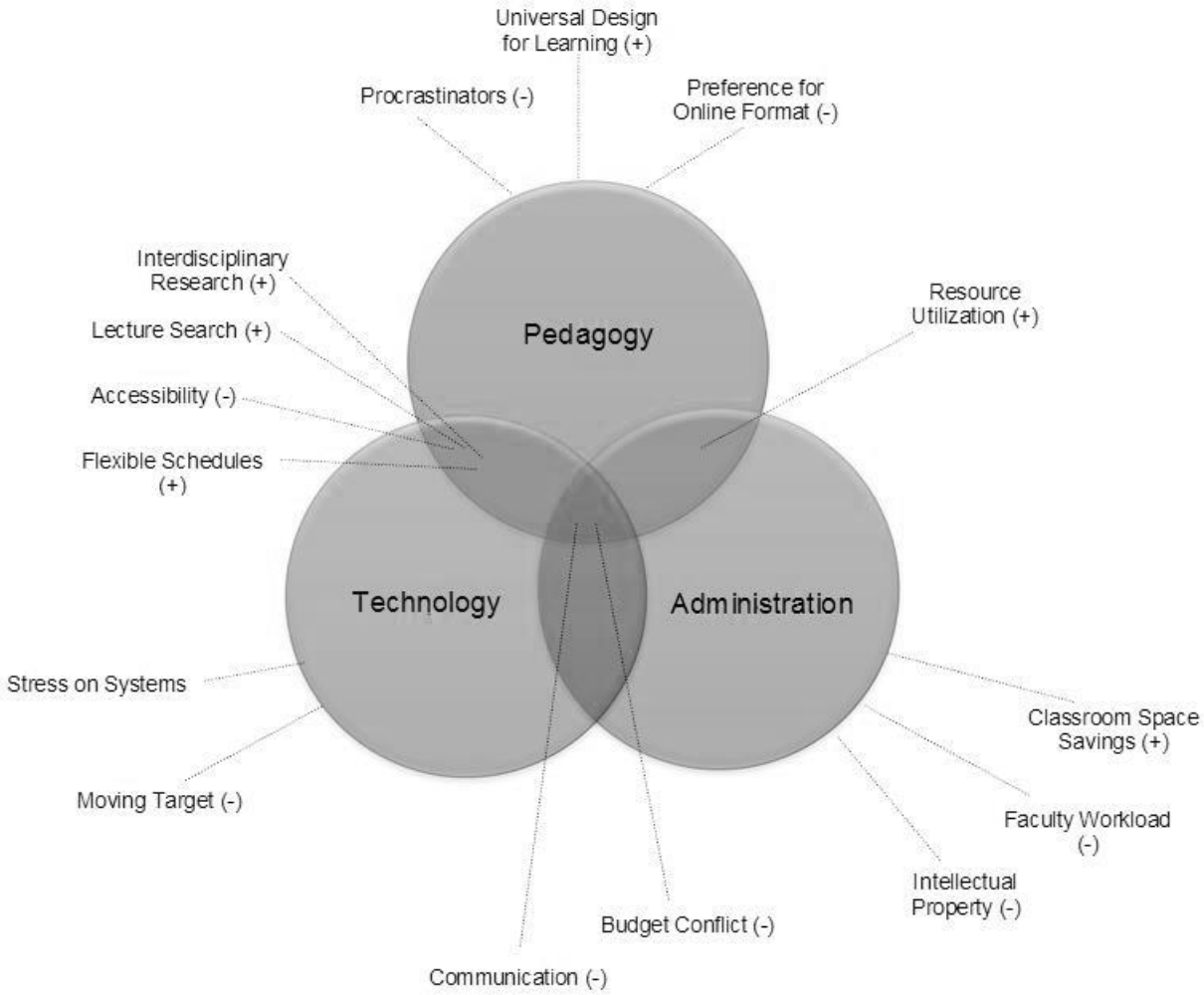

Figure 1. Conceptual Map of Class Issues

Lesson 2: This Will Always Be an Experimental Class

Technology itself is *a moving target (-)*, which negatively impacts everyone involved. Hardware improvements have ranged from camera equipment used to record the lectures to servers used to support the online activities. Behind the scenes, new browser versions such as Internet Explorer 10, and security updates to QuickTime have required a great deal of work to keep the streaming media working properly. Some of these changes happen overnight, giving the campus little time to react and increasing the costs to technology units who have to respond to these updates. Moodle, an open source software platform issues two major releases each year and a series of smaller bug fixes and security releases. Before moving to Moodle version 2 in Fall 2012, the technology unit spent two years testing and piloting the new version before deploying it campus wide.

As the class has become more accepted, the load associated with the class has increased proportionately. Students' tendency to *procrastinate* (-) exacerbates the *stress on the systems (-)*. The University's authentication server, used to log in to almost every online

service for the campus, including the learning management system, has experienced its own load-related issues. New server hardware was introduced to resolve the problem. To keep up with this class and with other large classes as this course design gains acceptance for other applications, the campus academic technology unit has had to constantly update its capacity.

This constant change limits the impact of learning curve effects. Each iteration of the class requires a complete review of all systems for updates and compatibility issues, and the need to remain vigilant for changes to the status quo over the course of the semester.

Lesson 3: Plan in Advance and Have Contingency Plans

The sheer size of the class exacerbates the need for good planning in advance and contingency plans for each foreseeable problem. For example, should *stress on the systems (-)* cause the LMS to fail during final exams, the instructor would need to schedule as many as a thousand make-up exams over the break. As a contingency, a backup supply of paper and pencil versions of the exam is available to be deployed during an emergency. There are enough paper exams in stock to carry through two hours of testing and department staff are on call to make more copies on demand if the contingency plan is deployed.

A problem with any of the hardware or software needed to operate the class could lead to the loss of a class session. As a contingency, plan on losing at least one session during the course of each semester. Should a problem occur, the content structure of the course is intact. If there are no problems, students will have an extra day to prepare for the final exam. In cases where problems caused the loss of more than one class session, the technology unit has been able to restore the comparable lecture from the previous semester.

Our University does not yet have a clear *intellectual property policy (-)* covering online classes. In general, faculty own intellectual property that was created without extraordinary support from the University. It is a good idea for the instructor of a very large section class to grant the department a limited license to use the materials prepared for the class in the event the instructor becomes incapacitated.

Lesson 4: It is Easier to Share the Work than it is to Share the Budget

While operating a very large section Principles of Marketing class requires a team effort, the costs and the benefits of participating in the class are spread unevenly. Because College and Department budgets are related to enrollment there are gains from the high enrollment associated with the class. The *resources generated can be utilized* (+) on higher value classes.

The administration benefits because teaching 1,000 students or more out of a 150 seat classroom greatly reduces the strain on the physical plant through *classroom space savings (+)*. It would require 20 sections of a traditional class to replace the mega section. Operating such a class increases *faculty workloads (-)*. As with any large-section format, designing the

class and developing instructional materials requires significant effort. However, the classroom portion of the class is only part of what is required to operate the class. Much of the instructor's time is spent on administrative issues and issues tangential to the class such as dealing with student technology problems or enrollment issues.

There needs to be open channels of *communication (-)* between personnel at all levels in each of the three units. Because instructional departments, academic technology units and the University's administrative structure are highly compartmentalized; communication within the unit is easier than communication between units. Many of the growing pains associated with the class were resolved through better communication between units. Instructors of large-section classes apprise the technology unit of test deadlines to avoid overloading the servers. The technology unit has created a user group with instructors to better understand their needs and to keep them aware of pending changes to the system. One benefit of improved communication is to stimulate *collaborative interdisciplinary research (+)*. Instructional faculty are made aware of the possibilities technology has for improving pedagogy and technical staff are made aware of the implications of technology on the student experience.

Because the costs associated with operating the hybrid class are distributed unevenly, there is *conflict about which budget (-)* should be tapped to cover the expenses. While it is easy to share work across boundaries, it is less easy to share budget across boundaries. This conflict is felt most keenly among front-line personnel where the instructor feels exposed and unsupported, technology support people feel overworked and unappreciated, and administrators are reluctant to jeopardize the cost savings associated with the class.

Next Steps

In his book *Megatrends*, futurist John Naisbitt describes three phases to the diffusion of a new technology. In the first phase, the technology is created to solve a specific problem. In the second phase, once the technology has been created, people will find ways to use it to make existing practices faster and more efficient. In the third phase, when enough people have become familiar with the technology, people will use the technology in ways that couldn't be foreseen at the time of its creation (Naisbitt, 1982).

This paper has described the development of a hybrid Principles of Marketing class as a solution to a specific problem: how to manage a large-section class without a large-section classroom. As the class gained traction and the hybrid approach gained acceptance, enabling technologies were developed to help make existing classes more efficient. Looking to the future, we see a cadre of faculty and staff familiar with these technologies begin to deploy them in innovative ways. One such novel approach is to use technology to create a "flipped" classroom - delivering lectures, course materials and instruction online; while using in-person class-time for more discussion, group work and active, project based learning[2]. At a higher level, the content associated with the course-based website can become a building block for an integrated web-based learning ecosystem or LECOS (Raska et al., 2012).

[2] http://at.sfsu.edu/strategies/using_coursestream_to_create_a_flipped_classroom

As universities begin to deal with the concept of MOOCs and what role they may play in the overall curriculum, they will need to deal with issues such as the scalability of campus systems and the interrelationships between teaching, technology, and administrative personnel in making these kinds of initiatives successful. Because the Principles of Marketing class is a high-demand course on campuses with a Business College, and because marketing concepts are of interest to students in programs outside of the College of Business; the Principles class is a logical point of entry for innovative approaches and scalable technology. There is enough demand for the course to justify the initial investments and enough latent demand to support growth as the technology gains acceptance.

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