A Teaching Note on the Role of Distance Learning in Case Instruction: The Course in Sustainability Management at Columbia University

By Steve Cohen, Alison Miller, and Janelle Sommerville

1. Introduction

This paper describes the role of online instruction in one traditional case-based course at Columbia University. We first discuss the benefits of online instruction, then detail the experience within one course, Sustainability Management, which experimented with incorporating elements of online learning into its traditional face-to-face instruction, and then analyze our experience with this innovation. The purpose of this paper is primarily descriptive: to provide a summary of the methods by which online education can be formatted within the context of case-based in-person courses to help other universities that may be planning similar courses of study.

As discussions of online and distance learning are gaining in intensity, the sophistication of the discussion is growing as well. Distance learning is most often presented as a low cost way to disseminate information around the globe in the form of Massive Open Online Courses (MOOCs). MOOCs are being developed by leading institutions, Stanford and Massachusetts Institute of Technology, among others. Columbia University has also begun to develop these courses. Their growth over the last year has been impressive and MOOCs have an important role to play in our high-tech brain-based global economy. They are a way to introduce some of the world's best minds to some of the world's most enthusiastic learners. Instructors are drawn to MOOCs to reach new, active audiences. In many popular MOOCs, online forums generate hundreds to thousands of comments within a few hours of posting material. Mitch Duneier, a Princeton sociology professor, wrote an essay in The Chronicle of Higher Education in fall 2012 about his experience teaching a class through Coursera: 'Within three weeks I had received more feedback on my sociological ideas than I had in a career of teaching, which significantly influenced each of my subsequent lectures and seminars.'"[1] But it's critical to remember that there are many different types of learning and many different media that can be used to teach different types of lessons.

The idea that on-line instruction will replace in-person education is absurd. Our view is that all forms of education will increase to meet the needs of an increasingly technological and creative economy. As more and more manual labor is performed by machines, the definition of work itself is changing and the need for life-long learning to support changing work patterns will increase the need for all forms of teaching and learning in our society. Put another way, take-out and delivery of meals is not a threat to in

---

[1] Friedman, Thomas L. "Revolution Hits the Universities." The New York Times. 26 Jan 2013. Web. 28 Feb 2013.

person restaurant dining, but simply another method of doing business. Human beings are social and not solitary creatures. We like to eat together, hang out together and yes, even learn together.

Nevertheless, incorporating methods of online instruction into traditional in-person courses is increasingly viewed as necessary in a technology-driven world. This can be done in various ways, and this paper will discuss one way that online programming is being developed within the context of in-person programs - in a case-teaching core management class for graduate students at Columbia University.

2. Sustainability Management

2.1 Overview of the Course

Sustainability Management is a core required course in a number of environmental policy and management masters programs at Columbia University. It lays the foundation for sustainability policy and management in the Environmental Science and Policy Master of Public Administration program (full-time), the concentration in Environmental Policy and Sustainability Management for the Executive Master of Public Administration program (part-time), as well as the Sustainability Management Master of Science program (part- or full-time). These programs are shaped by the idea that policymakers and managers must understand fundamental ecological interactions to maintain the health of Earth's interconnected environmental, institutional, economic, and social systems. These programs in public management and policy analysis emphasize practical analytic skills and is enriched by ecological and earth systems science.

The course emphasizes integrating the physical dimensions of environmental sustainability into traditional policy and management curriculum. The course begins by defining what sustainability management is and determining if a sustainable economy is actually feasible. Students learn to connect environmental protection and environmental policy to organizational management by exploring the technical, financial, managerial, and political challenges of effectively managing a sustainable environment and economy.

This course is designed to introduce students to the field of sustainability management in practice. It is not an academic course that reviews the literature of the field and discusses how scholars think about

the management of organizations that are environmentally sound. It is a practical course organized around the core concepts of sustainability. This course is taught in a case-based format and seeks to help students learn the basics of management, policy and politics, centered on the core theme of environmental sustainability.

The course meets once a week for two hours and incorporates lectures, instruction, and discussion into each session. Following a brief introduction by the instructor, each class begins with class discussion of that week's case(s), led by the instructor. There are two types of case exercises in the class. One is a case where individual students analyze a case and write a two page memo to decision makers to address a set of specific management issues raised by the case. The second type of case is one where two groups are formed and assigned to address case issues from different perspectives. In those discussions, the class identifies the similarities and differences the groups' approaches to the case. Further, students debate how they might have responded themselves. If there was an individual case memo due that week, that case is also discussed and debated.   Following a short break, the instructor then presents a lecture on a specific management theme and concludes the class with questions and discussion on the material.

In the first year the course was offered, enrollment reached 114 students, in the second year it had over 160 students, over 150 in its third year, and this year, fall 2013, the course has about 175 students. In a number of ways the style of instruction differs from a smaller seminar or workshop class. Given the large class size, instruction using the case method is modified to accommodate such a large group. This is done primarily by assigning most of the cases as group projects.

2.2 Method of Instruction: Case Method

In the Sustainability Management course, students are projected into a wide variety of organizational settings and environments and asked to address discrete management problems. The case method involves presenting students with a real life management challenge and providing background details including relevant stakeholders, events, data, and other pertinent information. This method of instruction puts the students in the role of a key advisor to a decision-maker, allowing them to apply the skills and knowledge they have learned in the course to the specific problem presented in the case. The course uses a total of 17 cases (4 individual and 13 group-based) throughout the semester to demonstrate course topics, elicit discussion and debate, and provide material for group work. In order to address the issues presented in the cases, students read several basic management books, including

The Effective Public Manager and Sustainability Management. These books provide perspective and instruction on the management and sustainability concepts needed to address the issues presented in the cases. Exhibit 1 shows the Case Studies used in fall 2012.

Exhibit 1: Sustainability Management Cases Fall 2012

Week 2	Individual Case 1:"The Problem of Tom"
Week 2	Group Case 1: "Maintaining New York City's Parks in the Face of Budget Cuts"
Week 3	Group Case 2: "Congestion Pricing in New York City"
Week 4	Group Case 3: "Hydrofracking in New York State"
Week 5	Individual Case 2: "The Business of Sustainability: What It Means to Managers Now"
Week 5	Group Case 4: "Wal-Mart's Sustainability Strategy"
Week 6	Group Case 5: "Nuclear Power and the Japanese Earthquake of 2011"
Week 6	Group Case 6: "BP Oil Spill Aftermath: Restructuring for Management, Oversight and Enforcement"
Week 7	Group Case 7: "Mexico City: Opportunities and Challenges for Sustainable Management of Urban Water Resources"
Week 8	Individual Case 3: "Nestlé: Sustainable Agriculture Initiative"
Week 8	Group Case 8: "Waste Concern: Turning a Problem into a Resource"
Week 9	Group Case 9: "The Greening of DUMBO"
Week 10	Group Case 10: "Driving Sustainability at Bloomberg"
Week 11	Individual Case 4: "Competitive Environmental Strategies: When Does It Pay To Be Green?"
Week 11	Group Case 11: "Bike Lanes in New York City"
Week 12	Group Case 12: "When Contracting Really Doesn't Work: Atlanta's Water Contract"
Week 13	Group Case 13: "An Uncertain Outlook for the Path to a Sustainable Planet"

Every student is required to read all the cases, those assigned to groups and those that must be read and analyzed in a memo format. Students analyze four "individual" cases, for which they write a two page memo addressing the management challenges raised in the case. They are expected to draw upon readings, lectures, and material presented in the case to answer questions posed by the instructor. This allows students to apply theory and practical knowledge in management, public policy and sustainability to the real-world situations presented in the cases. Students receive instruction at the first class session on professional communication including memos, work emails, and oral briefings.

2.3 Group Cases

To facilitate instruction of a 150+ class while still teaching all 13 cases, most of the case work is distributed into groups. In addition to the four individual memos, each student must participate in one group case. Each of the 13 group cases illustrate a different lecture topic including Strategy, Communication, and Information; the Centrality of Energy; and Sustainable Water. Each group case is assigned to two student groups, for a total of 26 groups. Prior to the first class meeting, each student is emailed the course syllabus which lists and describes all of the case studies. Students indicate their case preferences and the instructor and teaching assistants assign each student into a group and assign a project manager for each group. Each group consists of five to six students and is led by a group manager. The manager is responsible for coordinating the group's work as well as developing and submitting a work plan which details responsibilities, outputs and schedules. In addition, there is a presentation team that develops presentation materials and the briefing, and a written memo team that outlines and writes the required memo. The groups divide their own members into these two teams.

Group work on case analysis serves a number of pedagogic objectives in the Sustainability Management course. It ensures that students develop management skills as they self-manage their own groups. More importantly, it allows students to apply their group process, communication and conflict management skills as they manage group dynamics. Students must manage their own work and time, develop effective group processes and deal with group or individual problems. It also ensures that there are student discussion leaders during the large class session. The students who have worked in the groups presenting cases have conducted an in-depth case analysis and are often very active participants in class case discussions.

2.4 Changes in Case Method Instruction

This course has been taught three times, fall 2010, fall 2011, and fall 2012. Fall 2012 marked a new method of teaching the group cases. In the first two years, the student groups presented the group case briefings in front of the class during class time, and were given a time limit of 10 minutes each. Following the presentations, the instructor moderated a discussion with the entire class. Naturally, this was always the first time the whole class would see the group presentations and hear their analysis and recommendations. While the opportunity to present an oral briefing in front of a live audience is valuable for those students who served as briefers, the quality of the presentations varied fairly significantly, sometimes missing the mark, leading to a discussion that at times failed to fully delve into

the conceptual and factual issues of the case. The case presentation and discussion took up significant class time – anywhere from 35 to 60 minutes, depending on the class session. Moreover, it became clear that the students whose groups presented that week carried the discussion, leading the instructor and teaching assistants to presume that much of the rest of the class did not read the case study or did not prepare adequately to participate in class.

With these observations in mind, the group case format was changed in fall 2012: students were instead instructed to pre-record shorter, 3-minute presentations using Adobe Connect software, and upload the presentation to the class website five days before class.

Another change was made in this year as well. The case questions were restructured so that each of the two student groups analyzing that week's case would take a different position. In previous years, both groups in a given week were asked the same questions and were not specifically asked to argue a set direction. Often, both groups presented very similar briefings in a single week, resulting in some redundancy of information, and some that was left out. In fall 2012, for each group case, the two groups took on contradictory arguments for or against a proposed action addressing the main question in the case. Because the two groups' briefings took opposing positions, the instructor could compare and contrast the recommended actions of each group and make the point that management is a craft and not a science. There is no right answer to the questions posed about the case, just a series of difficult trade-off choices.

To further encourage broad participation, and to enhance the quality of the full in-class discussion, all students in the class were then asked view the two presentations each week, vote for one of the two arguments, and comment on the cases using the online discussion board. The discussion board provided scores of interesting student comments that could be read and digested before the class. The instructor could focus the case discussion on the issues of greatest contention or curiosity. Students who might be shy, or not comfortable speaking in their second language had an opportunity to express themselves. The discussion board was not anonymous, and each comment was "signed" by a student.

3. Introduction of Online Learning Components

3.1 Adobe Connect Presentation Software

The Adobe website describes its Adobe Connect product as a "web conference platform for web meetings, eLearning, and webinars," which "enables you to provide rich multimedia experiences for participants, with integrated audio and video conferencing." [2] In the revised format for the class group presentations, each student group was instructed to use Adobe Connect to present their briefing. Using a computer equipped with a webcam and microphone, students filmed their oral briefing synced to their group's PowerPoint presentation. In the Adobe Connect meeting space, there are multiple modules or windows to view the presenter and the PowerPoint presentation simultaneously. Adobe Connect allows students to combine PowerPoint slideshow presentations with audio and video recording in which the speaker simulates giving an oral briefing to a hypothetical decision maker as they would in a real-world professional video conference. The following screenshot illustrates the use of video and PowerPoint combined in the Adobe Connect platform.

Exhibit 2: Screenshot of Adobe Connect

---

[2] http://www.adobe.com/products/adobeconnect/features.html
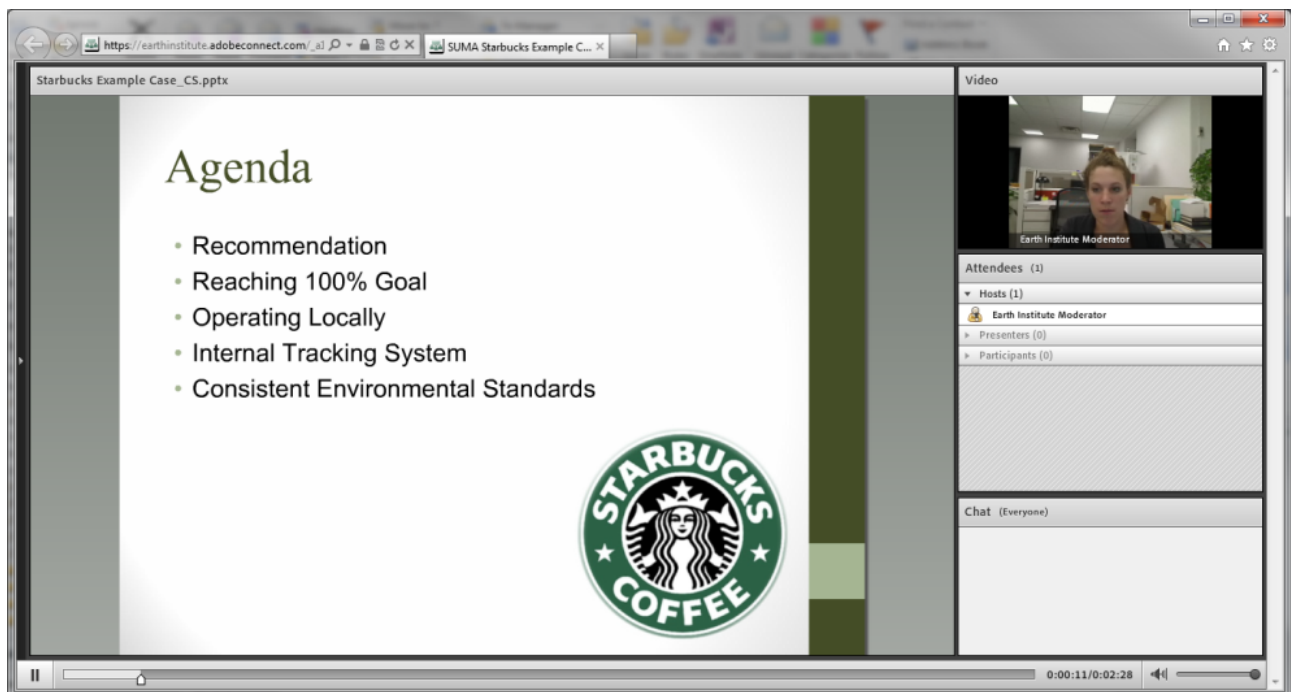
Students have the option to re-record the video if they are unsatisfied with the resulting video, ultimately leading to a series of high quality, content-rich presentations over the course of the semester. When they were satisfied with their recording of the briefing, the video would be made public, and the teaching assistant would post the link on the class website site, so the video can be easily accessed by the whole class.

3.2 Online Discussion Board

The discussion board tool on the class website was utilized on a weekly basis to stimulate discussion about the group case study of the week. Students were required to read the assigned case study, watch the group presentations online, and comment on the case itself or the briefing arguments on the discussion board. The weekly question for the discussion board asked students which group's position/course of action (A or B) would they choose if they were the decision maker in the case and why. They were asked to do this before 9am on the day of the class. The instructor then reviewed the posted comments as well as the student "vote" before class to inform how the in-class discussion would proceed. The discussion board provided great insight into student perspectives on the case and often identified issues that the faculty member would never have thought of without the board. It provided the faculty member with an enhanced ability to direct student discussion in class, by giving him time to think about the comments and its relevance to the case and the class readings. While a good instructor can also do this during live class discussion, having time to prepare made it possible to have a higher-level, better prepared discussion.

3.3 ITunes U Video

As a supplement to the regularly scheduled once weekly class sessions, students also had access to video recordings of the class lectures given in the second half of class sessions by the professor in Fall 2010, through iTunes U. Although these videos were accessible at any time to the students through the iTunes U store, the teaching assistant posted links to the video for that week's lecture the day following the class session. Students could watch and listen to the lecture for a refresher or if they had been unable to attend that week's class session. The lectures followed the case discussion and focused class readings and using those readings to understand the case material that had just been discussed.

4. Analysis

The limited use of distance learning components in this course proved a success, enriching the classroom experience for both the students and the instructor. Changing the format of the briefing from an in person brief to that of an online video conference has a number of advantages. Considering that business is increasingly conducted online through platforms like Adobe Connect and Skype, this exercise exposes students to the type of communication tools they are likely to use in the working world today. Also, since their briefings are recorded and not given live, they have the advantage of viewing themselves, providing an opportunity to fine tune their presentation style and content over multiple takes. When the students would give the brief live in front of the class, they would have been more dependent on rehearsals and feedback from group mates on their presentation style. By recording their brief, they have the opportunity to see their performance, and adjust and improve as needed. Because students record the presentation, and Adobe Connect hosts the presentation on a public URL, the recording can be viewed multiple times, not simply when the presentation is given live as in previous semesters. As part of the class participation grade, all students are required to watch the Adobe Connect video briefings for each week's group case studies and post to the weekly discussion board.

Posting to the discussion board allowed all students to voice their opinion on the case, discuss what they believe is the best option and why, and analyze the presentation styles of the two groups. In previous semesters, group presentations would take up nearly half of class time, including questions following each briefing, and additional time for collective discussion of the case. Using the discussion board tool allows that class time to be opened up for more in-depth discussion guided by topics, opinions, and online discussion brought to light by the students' online postings and conversations. The instructor and teaching assistants reviewed the full comments before class, allowing them to reflect on those comments and prepare in advance for the class discussion, selecting some of the most interesting analyses to pose to the class. Having an online discussion built before class time lays the groundwork for a more enriching, in-depth conversation in class between the students and with the instructor. Additionally, with the new format, students who were less comfortable speaking up in a 150+ lecture hall of their peers had an outlet to express their views and opinions on the case, adding often quite thoughtful analysis to a discussion that might have otherwise missed these insights.

4.1 Student Impression of Online Case Format

To better understand the student's impression of and reaction to the changes in the course format, students enrolled in the fall 2012 course were polled in August 2013. The online survey consisted of nine questions administered through SurveyMonkey.com. Out of 154 students who received the survey, we received 51 responses for a response rate of approximately 33.1%. The findings from this survey are summarized below and in Exhibit 3:

Students were asked how successful they would rate their group work/group process for their presentation. 51% (26 people) rated it "Very Successful," 45% (23 people) rated it "Moderately Successful," 4% rated it "Not Very Successful (2 people), and none rated it "Not Successful." When asked whether they thought that the Pro/Con presentation format and voting contributed to their analysis of the case, 94% (48 people) responded "Yes" and only 6% (3 people) said "No."

The survey then asked whether the respondents typically read the comments on the Discussion Board and if they read it did it enrich their understanding of the case. While 82% (42 people) responded "Yes" and none responded "No," 18% (9 people) said they "Didn't usually read it." The survey then asked how many of the videos the respondents watched: 90% (46 students) said "All of them" and 10% (5 people) responded "About 75%." No respondents chose the other two options: "About 50%" or "Less than 50%." So, while it appears that not all of the students read the online discussion board, most of the students did watch their fellow students' presentations. Question 6 asked "How many of the Discussion Board comments did you read each week?" Only 1 respondent, (2%) said "All of them" while 24% (12 people) said "75% of them," 37% (19 people) said "50% of them," and another 37% (19 people) said "Less than half." From these results, it would seem that while most people typically read the comments, and when they did read them, it enriched their understanding, but they did not comprehensively read all the over 100 comments logged in each week.

To better understand how it might compare to the previous methods, the survey briefly outlined the changes that the course underwent, describing the methods in fall 2010 and 2011. They were asked "Would you have preferred in-class presentations to the videos and chat board comments?" An overwhelming 92% (47 people) said "No," while only 8% (4 people) said "Yes." Students were then provided with an opportunity to provide general comments about the video presentation format. While a few had negative comments about the software, they primarily stemmed from the fact that the videos were not saved, as students were encouraged to use 1-month trial licenses of the software, and the

videos were only available during that time. In fall 2013, the program bought a license for the class, which all students can access, enabling the videos to be saved for the full semester and beyond. Other general comments included liking the efficiency of video presentations, and saving class time, and they liked the ability to rewind and re-watch to be able to take notes, and reconsider the arguments a few times before they made their vote. In general, the comments were very positive on the software, the experience, and many students specifically recommended that the video format be continued.

Exhibit 3: Online Student Survey Results

How successful would you rate your group work / group process for this presentation?

Answer Choices	Responses	
Very Successful	51%	26
Moderately Successful	45%	23
Not Very Successful	4%	2
Not Successful	0%	0

Did you think that the Pro / Con presentation format and voting contributed to your analysis of the case?

Answer Choices	Responses	
Yes	94%	48
No	6%	3

Did you typically read the comments on the Discussion Board and if you read it did it enrich your understanding of the case?

Answer Choices	Responses	
Yes	82%	42
No	0%	0
Didn't Usually Read It	18%	9

How many of the videos did you watch?

Answer Choices	Responses	
All of Them	90%	46
About 75%	10%	5
About 50%	0%	0
Less than 50%	0%	0

How many of the Discussion Board comments did you read each week?

Answer Choices	Responses	
All of Them	2%	1
About 75%	24%	12
About 50%	37%	19
Less than Half	37%	19
None	0%	0

Would you have preferred in-class presentations to the videos and chat board comments?

Answer Choices	Responses	
Yes	8%	4
No	92%	47

5. Conclusions

While we believe that there are clearly many advantages to online learning, the value of in-person learning remains high. The in-person interaction between student and instructor and amongst students is what draws in prospective students to top universities. The opposite of distance learning is proximate learning. That is the type of learning that requires that we are together in the same space. In our view, the most important form of proximate learning is experiential learning. Exposure to the real world and its context provides a type of deep learning that is both intellectual and emotional. It enables a student to develop a fuller understanding of the concept they are studying.

In our programs, experiential elements are incorporated throughout. When we teach water management, our students have been known to visit water treatment plants and go to nearby rivers to test water samples for purity. When we teach ecology, our students visit forests and other natural environments to see and touch the life forms they read about in their text book. When we teach green buildings, our students learn to conduct an energy audit of an actual building. When we teach financial analysis and auditing we expect our students to follow up their spread sheet work with in person audit inspections. Because the online format cannot perfectly replicate the proximate experiential learning experience, at this point its best use is to help facilitate the improvement of proximate learning.

One of the problems with on-line education is that when the lesson becomes uncomfortable or annoying the student can push the mute button or turn off the computer. It is too easy to walk away

and disengage.   We already see that the students who finish MOOCs are only a fraction of those who begin them. Experiential learning is the opposite. The student has invested time, effort and money to be in the learning environment they are experiencing. Leaving the learning site is far from cost free and so there is more incentive to see the situation through and learn despite discomfort or challenge. People raised in the internet age have many ways to communicate and receive messages. The technology can be liberating but can also constrain teaching, learning and social interaction.

Online instruction in credit-bearing courses and programs is still in its infancy. Columbia found success in incorporating tools of distance learning – video presentations using Adobe Connect, and online discussion boards – in one of its core courses, Sustainability Management. This format complemented case teaching, and enabled a strong discussion, with more engagement from students and a more comprehensive, informed discussion when the students were brought together in-class.

For educators, the key is to try hard to maintain and improve face to face or proximate education. We think the best way to do that is to learn how to use new communication technologies and integrate them into traditional teaching and learning. Distance learning has a role in face-to-face education. These technologies can increase interaction between and among teachers and students; enabling the time devoted to in person learning to be more efficient and effective. Our view is that distance learning technologies can and should augment but not replace in person education.