

Experimental Use of Multimedia in an MBA Core Course: Mgt501

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This report briefly summarizes an experiment in multimedia course content, carried out during the summer term 2010 in the four sections of MGT501. There has been considerable interest on the part of the faculty in restoring some of the multimedia features of TUIU courses that were characteristic of the early days of the University; specifically, making available short video clips prepared by the professor in order to impart a personal touch and relatively informal content delivery to what are frequently relatively dry and impersonal teaching processes. However, there has been no consensus on whether or not such video material ought to be made available, and certainly no resources allocated to its preparation or delivery. Understandably, both faculty and administration attention has been focused primarily on the new organizational arrangements and the WASC review, and thus consideration of new multimedia course material has received little to no emphasis thus far.

However, it seemed that pending a full consideration of restoration of multimedia, it should be possible to conduct one or more small experiments to inform the discussions when they would take place. Preparation and distribution of short video clips has become vastly easier and more manageable since the early days of the program, and there are no real technical barriers at this point to their implementation. Accordingly, a small field experiment to explore the effects of making video material available was designed and implemented during the summer term 2010. One course was selected -- MGT501, management and organizational behavior -- one of the core courses in the MBA program. This course typically has had between 150 and 250 enrollees in any one major term, and is typically divided into 4-7 sections of approximately 40 students each. These sections are quite self-contained, with their own professor and threaded discussions; there is generally very little interaction between students in different sections. The course is typically taken relatively early in the student's program, and thus may suffer less from established expectations than courses typically taken later in the program.

About three years ago, this course was redesigned around a framework based on the metaphor centered approach developed originally by Gareth Morgan in the 1970s. Here is how this change was described to the core faculty teaching it at the time:

"There are of course many different perspectives from which the field can and has been taught. I'm sure that most of you have experienced more than one of these perspectives over the course of your teaching experience. Having taught basic management at both undergraduate and graduate levels at six different universities starting in 1976, I've been exposed to numerous management teaching philosophies, frameworks, and techniques, and had a chance to experiment with a range of possibilities. I have learned that there is no magic bullet in this field, no one guaranteed approach that meets all needs for all groups. I've also learned that one

has to pick something as a starting point, and that some starting points work better than others.

The starting point that I have implemented for this class beginning this winter term is based on Gareth Morgan's classic book, *Images of Organization*. You may be familiar with this work; if you aren't, or even if you are, you might find it interesting to visit Morgan's website, <http://www.imaginiz.com/>, and see what his way of thinking entails. Basically, this book presents a series of eight fundamental metaphors for thinking about organizations. Each metaphor emphasizes certain kinds of activities and approaches, while deemphasizing others. No one metaphor is complete or adequate for all purposes; each is helpful in its own way in understanding the multiple levels of complexity that make up organizations. For purposes of organizing this course, I am selecting five of these metaphors, with the idea of emphasizing one of these for each module."

While the course has had its share of problems, it has been clear early on from ratings, reflective essays, and other student feedback that the basic approach of the course is understandable, the assignments manageable, and the overall content is valuable and well received. Small but steady improvements have been made to the course each term, in the interests of refreshing the material and keeping the course current. Overall, the course has been generally successful in filling its niche in the MBA program. However, any course, no matter how generally successful, can always be improved upon. This seemed to be a course well-designed to try the video material experiment, given the generally separately focused (although in overall terms cumulative) course material, the general unfamiliarity on the part of the students with the metaphor-centered approach to management and thus the potential for value-added through short video introductions, and the division into essentially separate sections to facilitate the experimental design.

The actual design of the experiment was relatively simple. For the course overall and for each of the five modules, I prepared a short (5-8 minute) talking-heads-type video clip, discussing the issues in the course or the module, why it seemed appropriate to concentrate on these issues, connections that might be drawn to previous material, and in general, the theoretical and structural viewpoints that I hoped the students would be able to apply to the module material. These videos were prepared using a simple WebCam and/or an inexpensive digital video recorder, edited using AVS4YOU Video Editor (an inexpensive and relatively easy to use piece of software) to trim extraneous material and add headers and tails and transfer them into a .AVI format that seems to be an effective compromise between file size and picture quality. Two of the videos required also fairly extensive audio editing due to background noise during the recording process, editing that was unfortunately not completely successful. The videos were then uploaded to a private channel maintained by me on YouTube.com, where they could be accessed by anyone having the appropriate URL but would not be subject to retrieval by casual search. To accommodate some students who had difficulty accessing YouTube because of field limitations, alternative versions of the videos in .SWF flash video format were also uploaded to my personal website, and the students provided with the address and passwords

necessary to access them. These videos were essentially an unpretentious and quite personal window into how the coordinating Professor saw the course, analogous to what might be provided in introductory lectures in a traditional face-to-face class.

The field experiment aspect of this project was based on the four sections of the course during that term. A random number process was used to select sections 1 and 3 as the experimental group, leaving sections 2 and 4 as the control group. The project and design were explained to the core faculty before the start of the term. For the experimental sections, the availability of the video material was explained in the original course welcomes, and each module had a separate short e-mail introduction and invitation to view the video at the start of the module (the videos were made available one at a time rather than all simultaneously, but once introduced, remained available for viewing throughout the course.) For the control sections, introductory materials simply omitted any discussion of the video material. While at first glance this might seem to create a disadvantage for the control sections, the basic structure is no different from the standard clinical trial in which the control condition is defined as "the usual standard of care". There was some initial concern that the availability of the course "watercooler" portion of the threaded discussions, which was shared equally by all four sections, might lead to a compromise of the experimental design through making the videos known to the students in the control sections. However, these discussions were monitored and no evidence of cross-contamination of this type seems to have emerged.

Overall, there were 97 students in the experimental sections and 67 students in the control sections (section 4 was somewhat smaller than the other three). Most of the student access was through the YouTube site; the actual numbers of viewings of each of the videos were as follows:

Overall course video:	61
Module 1:	67
Module 2:	50
Module 3:	50
Module 4:	28
Module 5:	25

The numbers of students accessing through the private website could not be easily ascertained, but there were certainly some. On the one hand, the declining viewing statistics during the course of the term might be interpreted as increasing student disenchantment with the video mechanism; on the other hand, it could be interpreted simply as course material fatigue and increasing pressure combined with reduced time. Obviously, it would have been better for the experiment if a higher proportion of the students in the experimental condition had actually experienced that condition; on the other hand, the numbers are quite respectable, particularly in the earlier modules, and that is

after all the charm and beauty of field experiments: nothing is ever quite predictable and nothing certainly ever goes as planned.

Quantitative course performance indicators

No attempt was made during the course of the term to measure any outcomes or consequences of the video viewing, other than to track actual views. However, at the end of the term, the course records containing student grades were downloaded for analysis and comparison between the conditions. In the analytical data sets, the student names and ID numbers were removed to avoid any potential exposure of confidential material, although obviously membership in the sections in question was retained.

The first analysis compared the performance of students in the experimental and control conditions in terms of final course grades. For the first comparison, students who had either drop the course or opted to take an extension were removed from the analysis group. An independent samples t-test was used to compare the average final grade of students in the two conditions. The students in the experimental sections had a slightly higher average grade (3.46, $s=.91$, $N=67$) than did those in the control sections (3.14, $s=1.4$, $N=47$), but this difference was not statistically significant ($t=-1.38$, $df=72.6$, $p=.17$; the test using equal variances not assumed was employed – Levene’s Test $F=14.7$, $p=.00$).

However, a second, somewhat more sensitive test produced a more interesting result. The four core professors involved in these sections all had a multi-term history of teaching this course, and over time, it was clear that there were small but possibly determining differences in the overall grading behavior of the four. Accordingly, the final grades were adjusted based on the long-term grading behavior of the professors. Table 1 shows the overall average grades given by the four professors across several previous terms; Professor 2 averaged the highest grading, while Professor 4 averaged the lowest.

Table 1

FIN_GRD			
PROF	Mean	N	Std. Deviation
1	3.47	115	1.06
2	3.96	263	1.02
3	3.58	252	1.25
4	3.34	129	1.16

There is no reason to suppose that these variations reflected anything other than the personal grading standards and preferences of the professors themselves, given that these averages were collected over several terms. These averages were then used to create a re-centered final grade for each student by subtracting from his actual final grade in the

summer term course the average grade given by his/her professor across terms in the past. It was judged that this adjusted version of the final grade would provide a more accurate test of the actual experimental condition without the confound of differences in professor behavior.

A second independent samples t-test was used to compare the adjusted average final grades of students in the two conditions. Again, the students in the experimental sections had a higher average grade ($-.06$, $s=.90$, $N=67$) than did those in the control sections ($-.59$, $s=1.4$, $N=47$); this difference was in fact statistically significant ($t=-2.24$, $df=71.6$, $p=.03$; the test using equal variances not assumed was employed – Levene’s Test $F=13.7$, $p=.00$). **Using the adjusted measure, the students in the sections exposed to the video treatment averaged more than half a grade-point better performance than did the students in the control, usual-care, condition.**

Two other criterion variables were also assessed in terms of their relationship to the experiment. First, the percentage of students in the two groups who applied for extensions was compared, again using an independent samples t-test (for purposes of this analysis, the overall exclusion criteria were modified to include only students who had actually dropped the course.) Again, the advantage went to the students in the experimental sections, with a slightly higher percentage of non-extending students ($.73$, $s=.45$, $N=92$) than the control sections ($.69$, $s=.47$, $N=69$), but this difference was not statistically significant ($t=-.65$, $df=1596$, $p=.52$; equal variances were assumed - Levene’s Test $F=1.62$, $p=.20$).

However, another test based on the average total number of assignments (out of 16) completed by the students was more clear-cut (here, the students receiving extensions were returned to the excluded category). The students in the experimental group completed an average of 14.8 assignments ($s= 3.6$, $N=67$), while those in the control group completed an average of 12.8 assignments ($s=5.64$, $N=47$); the difference was statistically significant ($t=-2.28$, $df=71.6$, $p=.04$; the test using equal variances not assumed was employed - Levene’s Test $F=16.2$, $p=.00$).

To sum up the quantitative analysis of the experiment, it seems clear that the students in the two sections that were part of the experimental condition (i.e., having access to the instructor's videos) had some advantage that allowed them to outperform their counterparts in the control (usual care) sections on all four measures of course accomplishment, two of them by statistically significant ($p<.05$) margins.

Threaded Discussions

Analysis of participation in the threaded discussions is always problematical, because so many different factors potentially contribute to it. However, a brief look at the TD’s

generally reinforces the observed pattern. Table 2 shows the overall postings per module by instructor (experimental sections in green, control in red). The experimental group has a slightly higher per capita TD posting rate than does the control group; however, no

Table 2

Prof	M1	M2	M3	M4	M5	total	in class	partic
1	101	87	79	92	81	440	47	9.36
2	75	63	57	60	49	304	40	7.60
3	79	71	75	74	70	369	45	8.20
4	49	49	47	46	38	229	28	8.18
WC	148	12	28	0	0			

statistical tests were performed here. Table 3 shows the rates of participation in the Module 6 TD; a special summary process. As in other areas, the experimental group showed

Table 3

	posts	indiv	class	posts/ind	pct posters
1	39	28	47	0.83	0.60
2	27	19	40	0.68	0.48
3	43	28	45	0.96	0.62
4	27	16	28	0.96	0.57

more overall activity, although it is hard to make meaningful statistical comparisons in this area.

Student satisfaction

The only current measures of student satisfaction with courses are obtained through the course and faculty assessment survey that is administered at the end of each term. It is widely recognized that this survey is not particularly effective and needs significant improvement; however, it is what we have and therefore it is appropriate to compare the experimental and control groups on the CAFA scores. These include an overall total across all 30 or so items, and five separate subscales presumably assessing satisfaction with the substance of the course, the professor, the materials provided, the learning objectives, and an overall summary. Table 4 shows the comparison of the experimental and control groups across these items. The first two (yellow) columns represent the overall average scores by category; the third and fourth (green) columns show the same data adjusted for the professor's overall score. The latter is a rather imperfect adjustment based on the fact that some instructors generate overall higher scores than others; it allows us to look at the subscales in terms of their variation from the overall norm.

Table 4

	exp	cont	exp	cont
total	4.55	4.68	0.00	0.00
course	4.45	4.63	-0.13	-0.07
professor	4.56	4.76	-0.04	0.10
materials	4.50	4.68	-0.06	-0.06
objectives	4.19	4.36	-0.35	-0.34
summary	4.57	4.71	-0.02	-0.01

Essentially, the CAFA score analysis shows virtually no difference between the experimental and control groups on any of the items. Whatever effect the videos may have had, it did not show up in the CAFA results. Of course, nothing in these items dealt specifically with video or the lack thereof. And the overall tendency of the CAFA scores to be highly skewed toward the positive, with relatively little variation, makes this whole assessment somewhat suspect. If it is intended to continue the use of video, some consideration should be given to placing one or more items in the CAFA relating to this specifically for the future.

Reflective Essays

The final source of information regarding the impact of the videos is found in the reflective essays that students complete at the end of each term. The set of reflective essays prepared by students in the two experimental groups sections were reviewed for any comments relating to the video aspects of the course or their impact (the essays from the control group were not examined in the same way, since they would of course had no basis for comment. Overall, 43 reflective essays were reviewed. Of these, only nine (21%) contained any reference to the video material (the actual text of these students' comments can be found in appendix A). Of the nine, one can be characterized as generally cool to the idea (based essentially on lack of accessibility to the material); the other eight ranged from supportive of the idea but registering a few concerns about implementation to extremely enthusiastic. Generally the comments were in the form of a couple of sentences, although two students did write more extensive reviews. Overall, the analysis of the reflective essays suggests that the videos were not enormously memorable for many students (obviously not memorable at all for those who did not use them) but for at least a few students, they contributed a considerable amount to the perceived quality of the course. Given the relatively informal and optional quality of the videos and their place as side options rather than part of the core material, this is certainly all that could have been expected in terms of student reactions.

Summary and conclusions

This relatively limited and small-scale informal experiment seems to have been largely successful. Students exposed to the videos did in fact view them in varying degrees, and a number of them found them interesting and memorable enough as course resources to mention them in their reflective essays without being prompted to do so. Students in the experimental (video) sections did significantly although marginally better in overall course performance, completion of the course on time, and total amount of work completed. The videos did not, however, appear to have any effect on overall student satisfaction with the course as measured by the CAFA, or on participation in the Threaded Discussions. The effort required to implement this video condition was relatively small, being carried out by the instructor in the evenings, with seldom more than an hour of effort per video. The quality of each could clearly be improved, particularly in terms of audio quality but also the focus and effectiveness of the commentary; however, they could also simply be reused at no cost whatever. They certainly met the first condition for any treatment -- that is, "Do no harm" -- and they appear to have done at least some good at relatively limited cost.

The results of this informal experiment suggest that it might be helpful to allow professors the option of including short video clips in their courses, if they felt it was worth their time and might be useful to the students. There would seem to be relatively little downside to this option as long as it was maintained as purely voluntary for both students and faculty. Further experimental analysis of the effect of video and multimedia additions to courses should be planned and carried out in a somewhat more systematic fashion than this experiment entailed. However, this study also shows that reasonably good experimental analyses of course options such as this can be planned and implemented at small to no cost, provided the interest and enthusiasm are there to support it.

Further information regarding this study can be obtained from Dr. JD Eveland, Professor of Business Administration and Information Systems, TUI University.

Appendix A

Text of reflective essay comments re: videos

...the video introductions by Dr. Eveland provided a welcome change to course presentation that the standard power point slides we are normally accustomed to viewing. His videos introduced the module and made it interesting because of the way he laid out each of the concepts in relation to the world around us.

Video lectures are a must! I felt the video clips prior to each module were very helpful introducing the modules content and setting up the lesson. I hope these continue during future courses.

The UTUBE lectures were very helpful also, though could probably be a little longer in going over the subject matter with more descriptive models of the concepts.

The videos for each module were the closest thing to interaction with the professor.

I found the videos to be most helpful. Dr. Eveland gave a good introduction into what we would be seeing in the module and it certainly helped me to understand it better. It also gave somewhat more personal feel to each module, because you as professors are somewhat virtual, since to do not interact with you on a routine basis in a live classroom. This can sometime be a little trying for a visual learner, but not insurmountable.

What also made this class such as great course was the instructor's ability to reach the class abroad. Using YouTube was a great source for the instructor to reach the class as a whole. If TUI University were to "Highly- Suggest" all instructors to perform teaching on YouTube or create their own portal this would put the University ahead of all other online Universities.

I found the videos to be most helpful. Dr. Eveland gave a good introduction into what we would be seeing in the module and it certainly helped me to understand it better. It also gave somewhat more personal feel to each module, because you as professors are somewhat virtual, since to do not interact with you on a routine basis in a live classroom. This can sometime be a little trying for a visual learner, but not insurmountable.

Let us first acknowledge the extreme usefulness of these online lectures. They enhanced the course materials greatly and should be incorporated into other TUI courses. However, as a learning point, they could have been more professionally presented if their links had been initially accurate and their audio had less background noise. Updates were issued to mend the broken hyperlinks, which mitigated this issue, but it could still be improved for next term. As for the audio, there were several videos in which the background noise level was obtrusively loud when contrast with the professor. Re-recording of these videos with a better sound quality would provide students with a more easily digestible format for the

material. Again, these videos are definitely a positive addition to the courseware, but minor improvements could greatly enhance their overall appeal.

Appendix B

Viewing locations for the six videos in question

Intro: <http://www.youtube.com/watch?v=t5QQxo6F0GM>

Module 1: <http://www.youtube.com/watch?v=vSBauzkmvac>

Module 2: <http://www.youtube.com/watch?v=r-pkEOypdIc>

Module 3: <http://www.youtube.com/watch?v=NK4yEatvgQY>

Module 4: <http://www.youtube.com/watch?v=b71FtCKOZ7o>

Module 5: http://www.youtube.com/watch?v=qHxeo3dn_QA