

Edutainment with Videos and its Positive Effect on Long Term Memory

Erin M. Steffes, Philippe Duverger

Purpose of the Study: Millennials, like many college students, watch more content, academic or not, on the Internet than on any other media source. The authors investigate how online content such as the videos on YouTube.com can be used as a tool to reach today's student, capture their attention and interest, and thereby increase the retention of academic content. The study is to extend the existing research on the use of video content in the classroom and introduces the concept of long-term retention of material.

Method/Design and Sample: Two studies were conducted. First, a random sample of undergraduate students participated in a controlled experiment utilizing a 2 X 2 design for the hedonic (humorous) and congruency variables. Five months after study 1, the same students were asked to recall the content learned in during the first study and these results were used to evaluate long term memory recall.

Results: The article demonstrates that hedonic (humorous) videos that are congruent with the subject matter more effectively reinforce the material and significantly increase retention in the short and long term.

Value to Marketing Educators: Marketing educators are uniquely positioned to take advantage of the wealth of video content available on the Internet, particularly on YouTube.com. Commercials, lectures, movie clips, and television clips often address key marketing concepts in a manner that is both engaging and humorous for the student audience. Suggestions on how to source and integrate videos in course content are offered.

Key Words: Attention, Retention, Long Term Memory, Video, Primer Effect

Erin M. Steffes (e-mail: esteffes@towson.edu), is Associate Professor of Marketing, Philippe Duverger (e-mail: pduverger@towson.edu) is Assistant Professor of Marketing, College of Business and Economics, Towson University.

Millennials, students born from the 1980s to the early 2000s, have expectations that the classroom experience will be more than just educational. Students today expect to be entertained as well as educated. With its roots in children's programming such as Sesame Street, edutainment combines entertainment with the delivery of lessons (Arnold, 2005). The application of edutainment and multimedia presentation is gaining momentum and popularity in many college classrooms across the globe (Berk, 2009). Examples of edutainment applications in the classroom include the use of television, movies, videos, museum exhibits, and computer programs not only to attract and maintain an audience through entertainment but also to deliver educational content.

The use of videos in the classroom is not a novel concept. Instructors have been utilizing 16mm projectors, VCR tapes, and DVDs to enhance the classroom experience for decades in classrooms ranging from kindergarten to graduate schools. What has changed is how easily videos can be integrated into the classroom of today. The Internet, supported by the growing popularity of Web 2.0 content, now provides instructors with access to millions of videos with the click of the mouse. Educators now have access to many types and genres of video content for little to no cost including both professionally created videos and user generated videos. Much of the content available is of particular value to marketing

educators since many of the videos on YouTube.com (YouTube) include television commercials, television shows, movies, and product testimonies. The questions facing educators today include "Should I integrate web video content into my classroom?" and "What benefits would integrating web video content afford my students?"

Strategies and rationales for integrating Web 2.0 content, including web videos, into the classroom have recently begun to receive attention in academic literature (Berk, 2009; Burke, Snyder, & Rager, 2009; Duffy, 2008; Sendall, Ceccucci, & Peslak, 2008). Kaplan (2010) links the related concepts of Web 2.0, user generated content, and social media by defining social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content". Proponents of the utilization of social medial applications in the classroom such as Facebook, YouTube, blogs, and Wikis suggest that these technologies can be used to increase levels of student engagement through visual stimulation (Burke, Snyder, & Rager, 2009). Berk (2009) investigates a number of theories of multimedia learning as related to videos and finds that the Net Generation's (which includes Millennials) learning styles and multiple intelligences makes this generation an excellent target for social media content and edutainment. Having grown up with digital technologies and the Internet, the Millennial student

comes primed for the use of technology in the classroom. Prensky (2004) characterizes the student of today as a “digital native” who operates at “twitch speed” expecting instant responses and feedback, an expectation readily met by many of the social media platforms. Our research furthers this line of research by investigating the effect of a positive mood stimulus on short and long term retention of content using YouTube videos.

The Use of Videos in Teaching

There is a large body of research on the brain that provides a theoretical framework for why videos can be used to impact classroom learning. Research into Gardner’s 8.5 multiple intelligences (Gardner, 2005) suggests that humans possess verbal/linguistic, visual/spatial, and musical/rhythmic intelligence among other intelligences. Students possess these intelligences to varying degrees as the intelligences manifest on an individual basis as strong or weak (Zull, 2002). To fully capture students’ attention and enhance learning and retention, faculty should consider efforts to engage multiple intelligences so that, on an individual level, weaker intelligences may be offset by stronger intelligences. Videos are a superior tool that can be used to engage verbal/linguistic, visual/spatial, and musical/rhythmic intelligences (Gardner, 2000; Vennema, & Gardner, 1996). Additional streams of research suggest that videos can be used to deepen learning by eliciting emotional responses tied to music and other emotional stimuli. (North & Hargreaves, 1997; Robazza, Macaluso, & D’Urso, 1994). Videos can also be used as a tool for engaging both hemispheres of the brain; the left logical/analytical brain and the right nonverbal/creative brain. Through dialogue, plot, visual images, sound and relationships, videos effectively stimulate the whole brain (Hebert & Peretz, 1997; Schlaug, Jancke, Haug, Staiger, & Steinmetz, 1995).

Complementary research into multimedia learning theory provides additional support for the use of videos in the classroom. Multimedia refers to the presentation of learning material in two forms including auditory/verbal and visual/pictorial (Mayer, 2001). A number of empirical studies across disciplines ranging from mental/physical health to management/leadership provide general evidence of the effectiveness of video use in the classroom (Berk, 2009). Nearly all of the empirical research supports the notion that dual coding of material is superior to single coding by demonstrating that multimedia presentations of material increases memory, comprehension, understanding, and learning when compared to verbal (audio-only) learning (Baddeley, 2003; Childers & Houston, 1984; Keller, 1987; Sirotin et al., 2005).

YouTube is particularly well suited for use in the classroom for a number of reasons. First, YouTube’s vast library of content provides instructors with an almost unlimited library from which to choose. In fact, 24 hours of video content are uploaded to YouTube every minute (Elliott, 2011). Second, YouTube videos

are available on many social networking sites that college students frequent, including Facebook, where 150 years of videos are viewed every day (ibid). YouTube videos are commonly tweeted about through the Twitter platform, in fact there are approximately 400 tweets a minute that contain YouTube links (ibid). Third, the demographics of YouTube users aligns with Millennial students quite well. 35% of YouTube users are between the ages of 18-34 which is the largest age concentration of any segment (Codemehanic, 2008). Therefore, students are likely to be familiar with and receptive to viewing YouTube videos. Fourth, as compared to VHS or DVDs, the convenience of having videos accessible online makes an instructor’s life much easier. There’s no media to remember and no chance of failure of the player. As long as your Internet connection is viable, your video is ready to be served.

Theoretical Background

YouTube videos can be used in the classroom for a number of educational and entertainment purposes (see Berk, 2009 for a review of generic techniques for the integration of video clips in the classroom). Berk suggests that while the use of videos as a teaching tool is not new, there are four fundamental changes impacting the use of video as a teaching tool. First, there is a wider variety of video formats available to instructors, second, the ease with which technology can facilitate video application in the classroom has increased, third, the number of video techniques an instructor can use has increased, and fourth, the body of academic literature providing theoretical and empirical support of the use of video as an effective teaching tool has increased. Berk compares three common sources for videos (DVD, Internet, and books with CD clips) and finds that Internet sources have many favorable attributes as compared to the alternate sources of video. Internet video tends to be free or cheap, with good to high quality, with moderate to high convenience, and very good availability of recent videos. Furthermore, many videos available on the Internet (including many available on YouTube) are PowerPoint compatible.

Two of the most commonly cited reasons educators today provide for their utilization of YouTube videos in the classroom are to (1) put the students in a “good mood” by showing a humorous video prior to a lecture and (2) use YouTube videos to present new material and concepts (Duverger & Steffes, 2011). While these motivations for the inclusion of YouTube videos may seem to be quite different, the ultimate goal is similar – to increase student retention and learning of material.

In this study, we suggest that YouTube videos can be used as mood primer, a content primer or both. In the case of a mood primer, the YouTube video chosen should be one that students find humorous or entertaining such that the resulting mood is positive (hedonic). Positive and negative moods have been shown to have an effect on student learning in a

number of studies (e.g. Abele, 1991; Pekrum, 1992; Schwartz & Bless, 1991). Empirical evidence from existing studies serves as the foundation for our hypothesis that mood can impact student learning. The effectiveness of imagery and music in arousal, eliciting schemas (mental connections between memorized objects providing meaning to a phenomenon), affecting judgment and increasing access to memory has also been researched extensively (Clore & Schnall, 2005; Knobloch et al., 2003; Knobloch & Zillmann, 2002). Consistent with this research, videos incorporating emotionally intense content such as music and imagery should promote dual coding; induce mood states and increase arousal and attention. Thus,

H₁: Viewing hedonic (humorous) YouTube videos induces a more positive mood than viewing utilitarian (not humorous) YouTube videos.

H₂: Hedonic (humorous) YouTube videos will have a positive impact on student short term retention as compared to Utilitarian (not humorous) YouTube videos.

We furthermore suggest that YouTube videos can be used as a content primer. In this case, the YouTube video chosen can either teach the material to be discussed in the classroom through an informative/educational video or the YouTube video can provide an example of the new material (content congruence). A key factor in learning is repetition as demonstrated by the use of YouTube videos as a content primer (Tulving et al., 1982). Millennials are capable of learning information quickly through images, audio, and text in part due to their ability to multi-task (Duffy, 2008). Student-centered learning practices suggest that educators should be in touch with the learning styles and needs of their students to increase students' perception of the learning environment and teaching quality (Kember, 2009)

H₃: Content congruent YouTube videos will have a positive impact on student short term retention as compared to Non-content congruent YouTube videos.

Our study intends to demonstrate an interaction effect between the YouTube video congruency to the material being taught and short-term retrieval, whereby hedonic (humorous) videos that are congruent with the material not only increase attention by affecting mood, but also increase encoding and retrieval in a significant manner.

H₄: Hedonic (humorous) and content congruent YouTube videos will have the largest positive impact on student short term retention as compared to other YouTube videos.

Finally, cognitive theory has shown that association between imagery, giving meaning to stimuli, improves

long term memory which ineluctably fades due to the mere passage of time (Atkinson & Shiffrin, 1968; Baddeley, 2003). However, dual-coding by association has been shown to improve long-term memory recall. Imagery, for instance, as a form of dual-coding mechanism, can aid the working memory to elaborate on the stimuli and give meaning to the associations, thus facilitating long term memory encoding and recall (Baddeley, 2003; Childers & Houston, 1984; Keller, 1987; Sirotin et al., 2005). Thus we will hypothesize that emotionally charged (hedonic) and content congruent videos will have a significant and positive impact on long term memory.

H₅: The long term effect of priming lessons with content congruent hedonic (humorous) YouTube videos will have a positive impact on student long term retention evidenced in a slower decay.

Study 1 focuses on these foundational predictions (H1 to H4), while study 2 focuses on the derivative prediction linking the priming effect to long term memory recall (H5).

METHOD

For study 1, we conducted controlled experiments in the form of exposing a random sample of undergraduate students to an emotionally-charged humorous video (hedonic stimuli) or a neutral video (utilitarian stimuli). The priming effect of the video is tested in the congruency manipulation-check whereby the content of the video is either congruent to the material taught or not (Gazzaniga, 2001; Nissen & Bullemer, 1987). For example a lesson's concept will be introduced by a video staging the concept in an emotionally-charged manner (i.e., humorous commercial related to the material), or by a video introducing the concept in a neutral manner (i.e., a person being interviewed about the material). The content is assessed using several different questions including multiple choice and open ended questions.

Five months after study 1, the same group of students was asked to participate in the follow-up study 2 in order to evaluate the long term retention of the content taught in study 1. The participants were tested on the same questions as in study 1 supplemented by the demographic and control information. The participants were asked to remember the video they had seen (i.e., aided recall) before answering the same questions as in study 1. We then compared the students' answers from study 1 to study 2.

Study 1. Pre Test of Mood Inducing Mechanism

Because some students might come to class in a good or bad mood, possibly due to their personal lives, we needed to make sure that all students start the experiment with the same mood level. For that we used a mood manipulation mechanism to allow for the control of mood state resulting from events prior to the

experiment. Using a first group of students (n=38, 54% male) we conducted a pretest in order to establish a baseline mood inducing mechanism. The group of participants was randomly assigned to one of two groups. The first group watched a neutral-mood-state inducing video containing a picture of a lake, relaxation music, and a text following the Velten's procedure (Jennings, McGinnis, Lovejoy, & Stirling, 2000). For example one statement would read: "The movie theatre was located downtown." As a control mechanism, the second group watched a positive-mood-state inducing video. This video had an exciting photo, energetic music, and the text based on the Velten's procedure (Jennings et al., 2000). For example one energetic statement would read: "I'm full of energy and ambition – I feel like I could go a long time without sleep." Mood state is subsequently confirmed using self-reporting measures (Kenealy, 1986; Peterson & Sauber, 1983). Significant differences between the baseline neutral mood inducing mechanism and the positive mood inducing mechanism would indicate the adequacy of the process to be used at the beginning of the experiment.

Pre Test of Videos

Using a different group of students (n=41; 48% male) we conducted a pre-experiment test using the hand-picked hedonic (humorous) or utilitarian (not-humorous) videos to measure the level of emotions induced by the videos, and the level of familiarity with the content (celebrity and brand). A t-test difference between the mean answers to the statement: "this video is funny" revealed that the hand-picked hedonic (humorous) videos were significantly more funny than the utilitarian ones ($p < .05$).

Design of the Experiment

The experiment was conducted via an online survey incorporating the necessary randomization of each condition (hedonic or utilitarian videos and congruent versus non-congruent video-teaching material). Students' mood were first induced to a mood-neutral level using the mechanism explained earlier, then they were shown a hedonic (utilitarian) video, leading them to view an online lesson congruent (non-congruent) with the content of the video. In our particular experiment the topic of the lesson was celebrity endorsements of brands or the balance theory effect. The balance theory is a motivational theory of attitude change. It explains how celebrity liked by consumers, help change the consumer's attitude toward the brand in a positive manner in order for them to keep a cognitive emotional balance (Fiske & Taylor, 1991). We showed a humorous video of Beyoncé in an American Express commercial featuring Ellen DeGeneres. This video possessed both elements we were interested in: increasing mood, and being congruent to the content. While one group of students saw the humorous Beyoncé-American Express video another group saw a Beyoncé-American Express video, but this time the video was more descriptive and

not humorous in its treatment. Hence, this video is congruent with content but should not affect mood significantly. A third group saw a humorous video involving babies (not congruent), and a final group saw a video showing how to use Excel (not humorous and not congruent). All students then watched a voice embedded PowerPoint presentation teaching balance theory. Finally participants were asked a battery of questions aimed at measuring their retention of the teaching material. The experiment ended with another hedonic (humorous) video in order to set the mood back to a positive state for all participants. Manipulation of mood in human experiments need to be done carefully and in accordance with Institutional Review Board (IRB, 2011) standards, and setting the mood back to a positive state insure that all participants leave the experiment in a proper state of mind.

Manipulation of Video

Participating students were randomly shown one of four videos: The hedonic-congruent video (Beyoncé-DeGeneres-American Express commercial), the utilitarian-congruent video (Beyoncé-American Express commercial), the hedonic -not congruent video (humorous baby videos), or the utilitarian-not-congruent one (a video on how to use Excel).

Measuring Academic Content Retention

A battery of multiple choice questions with two different levels of difficulty (using the Bloom's and the Association to Advance Collegiate Schools of Business criteria) in addition to an open ended question allowed for a scoring of each student's comprehension of the material (See Appendix A). The Association to Advance Collegiate Schools of Business (AACSB) is the international accreditation organization for business schools (<http://www.aacsb.edu>).

Pre-tests Results

We found that the mood-state of the participants was significantly affected in the right direction by the positive mood induction mechanism (mean difference between neutral and positive mood induction = .38, $t_{(36)} = 2.07$, $p = 0.045$), hence the neutral mood state induction could serve as a base line in our main experiment.

The results of the video pretest showed that the hedonic (humorous) videos were significantly affecting the mood-state of the participants in the right direction compared to the utilitarian (not-humorous) videos (mean difference between hedonic and utilitarian video = -.69, $t_{(39)} = 2.06$, $p = 0.046$), lending support to H1. Thus, hedonic (humorous) videos tend to increase the positive mood of students. As expected the hedonic (humorous) videos impacted positively the mood level of the students watching them (Mean mood_{hedonic} = 3.98, $sd = .55$, $n = 55$) compared to the student's mood watching the utilitarian videos (Mean

mood_{utilitarian}=3.61, sd=.61, n=51), Mean_{diff}=.36, se=.11, t₁₀₄=3.22, p<.05, supporting H1.

RESULTS

Results of Study 1

Students of a metropolitan university located in the central east cost of the US were invited to participate in the main experiment. We collected 284 usable responses out of 288 students surveyed in eight classes, a response rate of 99%. Students were given 5 points extra credit as a motivational mechanism to enter the experiment.

Interaction Effect of Video and Congruency on Retention

A 2 X 2 between subjects design using video (hedonic and utilitarian) and congruency (congruent and not

congruent) evaluated the degree to which undergraduate students retained online course material (See Table 1). The overall model is significant, $F_{(3,280)}=9.14$, $p<.001$, $\eta^2=.09$, and explains 9% of the variance in the dependent variable (retention). The effect size would be considered medium to large in the context of ANOVA studies (Cohen, 1988). While the main effect of congruency, $F_{(1,280)}=.09$, $p=.76$, $\eta^2=.00$, is not significant, the main effect of video, $F_{(1,280)}=5.97$, $p=.01$, $\eta^2=.02$ shows a significant small effect size. These effects are superseded by the significant video X congruency interaction, $F_{(1,280)}=18.0$, $p<.001$, $\eta^2=.06$ (a medium effect size). These results mean that an average student would increase his/her grade on a given test by 6% if the content would have been linked to a humorous introduction video (See Table 2).

Table 1: Mean Test Scores by Factorial Cells

Dependent Variable: Retention				
VIDEO	Congruency	Mean	Std. Deviation	N
HEDONIC	YES	3.01	.69	86
	NO	2.61	.79	64
	Total	2.84	.76	150
UTILITARIAN	YES	2.33	1.01	76
	NO	2.79	.89	58
	Total	2.53	.99	134
Total	YES	2.69	.92	162
	NO	2.70	.84	122
	Total	2.69	.89	284

The interaction is presented in Table 2. Simple effects tests were performed by using a Bonferroni adjustment to hold the alpha level at .05. This insures that the results are not significant due to the number of variables, but are germane to the effect under study. Students who watched the hedonic (humorous) video retained the material better when the video is congruent to the material being taught. On the other hand, students that watched the utilitarian video retained the material better when the video was not congruent to the material being taught.

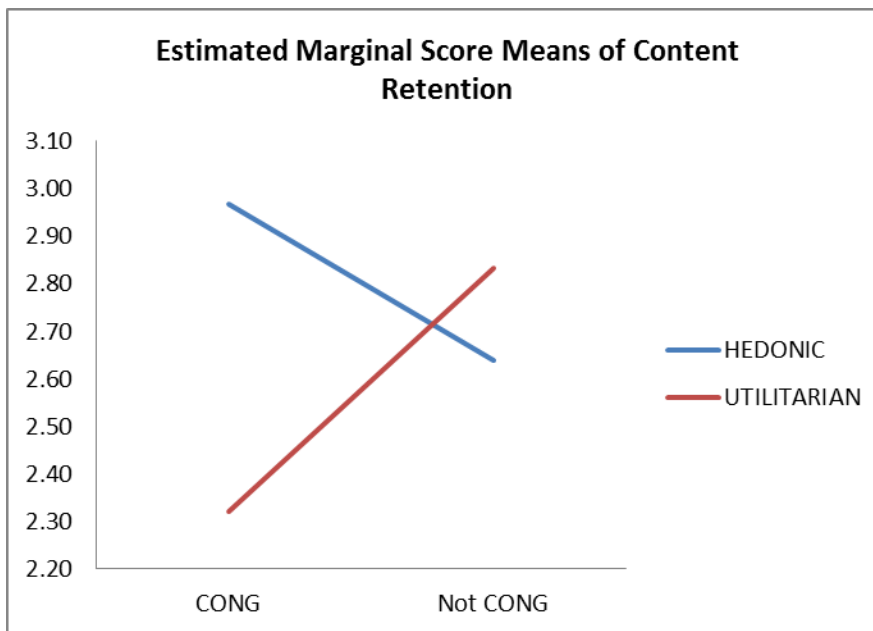
Furthermore, both groups showed significant differences. When subjected to a congruent video students that watched the hedonic (humorous) video displayed a higher level of retention (M=3.01, se=.09) than students subjected to the utilitarian video (M=2.33, se=.10) supporting H2. However, the effect is reversed to a lesser extend in the case of the not congruent video. Students that watched the hedonic (humorous) video displayed a marginally lower level of

retention (M=2.61, se=.11) than students subjected to the utilitarian video (M=2.79, se=.11). The interaction further demonstrates via its significance that a hedonic video will potentially distract the student and lower content retention, and that if an educator would rather show a utilitarian video than a hedonic (humorous) one, it might as well be not related to the content in order to achieve a slightly better test score. This counterintuitive effect could be possibly due to the attention required to understand such a video. However, and this is the focal point of our results in study 1, an educator that would strive for the highest score on a test, as indicative of teaching effectiveness, would be wise to show a hedonic (humorous) video related to the material in order to affect the mood of the audience positively while at the same time priming the subject matter, consequently increasing its retention.

Table 2: ANOVA summary table of between-subject effects

Dependent Variable: Material Retention					
Source	Type III Sum of Squares	df	Mean Square	F	p-value
Corrected Model	19.83	3	6.61	9.14	.000
Intercept	2001.89	1	2001.89	2767.82	.000
VIDEO	4.32	1	4.32	5.97	.015
CONG	.07	1	.07	.09	.762
VIDEO * CONG	13.02	1	13.02	18.00	.000
Error	202.52	280	.72		
Total	2283.00	284			
Corrected Total	222.35	283			

Figure 1. Interaction of Video and Congruency of Teaching Material



Note: the above figure shows the interaction between the effect of congruency and the effect of type of video (hedonic or utilitarian). If the effects did not interact, the lines would be parallel.

As can be seen in Figure 1 the score achieved on the test is greater for congruent-hedonic videos than for congruent utilitarian videos. Also, as videos shown are not congruent the hedonistic group retains less material (i.e., possibly due to diversion), while the utilitarian group retains more (i.e., possibly due to concentration).

A content congruent and hedonic (humorous) video will act as a primer to the concepts being taught, and will significantly increase retention of the course material evidenced by the significant mean difference

($m_{diff}=.25$, $p<.05$). Whether the video is hedonic (humorous) or not does not seem to change the effect on retention when the video is not congruent to the material ($m_{diff}= -.03$, $p=.76$), supporting H3 only in the context of an interaction, thus verifying H4. This means that potential videos that are only hedonic (humorous) or only congruent might not have any effect on retention, while combined together congruency and humor do have an effect on retention.

Effects of Controlling Variables

Several controlling variables were used in the study: gender, experience with the material (number of marketing classes taken), average overall GPA, and likability of the celebrities and brands used in the videos or material. None of these control variables showed a significant effect on the dependent variable in the study (retention). The independent t-test of retention mean between gender was non-significant ($p=.37$) and the F-test for the between groups' ANOVA of GPA, number of classes taken, and celebrity likability levels all were greater than .05. Therefore we feel that this reinforces the results shown above and demonstrate that retention is impacted by the priming effect of a content congruent and hedonic (humorous) video.

A post-check of the scores was done between the group of students that had little exposure to marketing material prior to the semester ($n= 106$), and those who had plenty, i.e., more than 4 classes ($n=178$). No significant difference was uncovered (mean difference=.06, $t_{(282)} = 0.11$, $p=0.27$), suggesting that the retention of the material was not better for the

group that had potential prior exposure compared to the group that did not.

Results of Study 2

Relatively few participants were reached in Study 2. A total of 99 completed surveys were collected over the course of two weeks, or 35% of the original pool. This represents a limitation and could introduce potential response bias. However, the fact that many students in study 1 were seniors at the time could explain the relatively high non-response rate.

A response bias check was conducted by comparing the demographic information of the non-respondents (based on study 1) to those who responded. No significant differences were found. Hence, we are confident that the students that participated in study 2 are representative of the student who participated in study 1 (Armstrong & Overton, 1977).

Table 3 presents the mean tests scores between study 1 and study 2 for each of the factorial cells. Not surprisingly study 2 test results are significantly lower than those of study 1.

Table 3: Study 1 versus Study 2 Mean Test Score

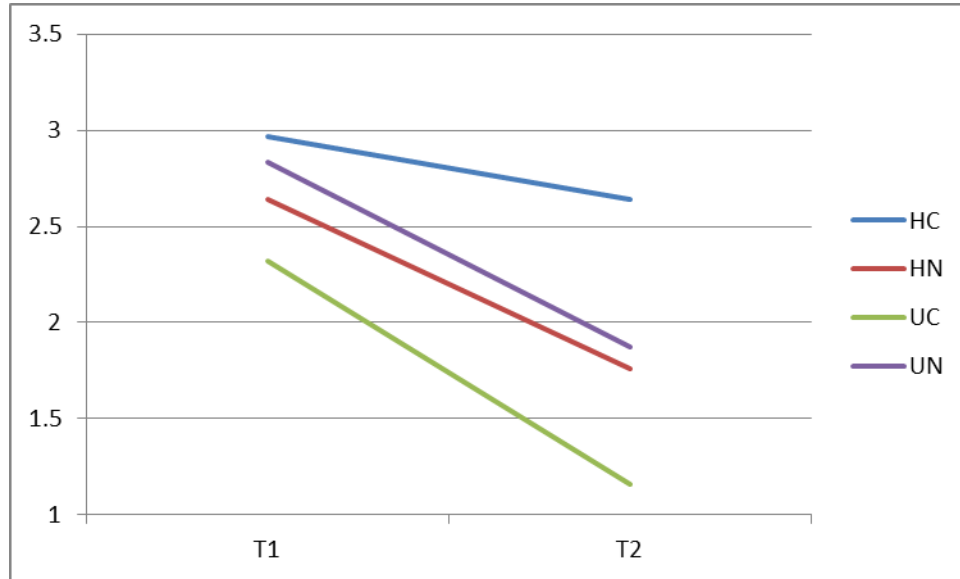
VIDEO	Congruency	N	Study 1		Study 2	
			Mean	Std. Deviation	Mean	Std. Deviation
HEDONIC	YES	29	2.97	0.71	2.64	0.73
	NO	21	2.64	0.76	1.76	0.69
	Total	50	2.82	0.74	2.27	0.71
UTILITARIAN	YES	25	2.32	0.98	1.16	0.72
	NO	24	2.83	0.82	1.87	0.66
	Total	49	2.56	0.94	1.51	0.69
Total	YES	50	2.66	0.90	1.95	0.85
	NO	49	2.74	0.78	1.82	0.79
Total		99	2.69	0.85	1.89	0.82

All four groups (i.e., based on the video exposition in study 1) present decay in recalling the proper answers. The difference in decay is larger for the student who could not recall the video they had seen in Study 1 (81% recall) than for those who could (71% recall). However the results are more interesting when observing the students on the basis of which video they were primed with in study 1 (Figure 2). As evidenced by Table 3 and shown graphically in Figure

3, students primed with the hedonic-congruent video tend to show less decay (89% recall) than any other group ranging from 50% to 67%. Thus, verifying H5.

We attribute the relative long term recall success to the strength of the dual-coding initiated during study 1 by the combination of mood state positive increase generated by the hedonic (humorous) video and the congruency primer of its content.

Figure 2. Mean Test Score Decay between Study 1 and Study 2



Note: HC=Hedonic-Congruent condition; HN=Hedonic-Non-congruent condition; UC=Utilitarian-Congruent condition; UN=Utilitarian-Noncongruent condition; T1= Study 1; T2=Study 2 done 5 month later.

DISCUSSION

Millennials have grown accustomed to being entertained 24-7, thus putting pressure on educators not only to educate but also to entertain in order to engage their students. Therefore, educators often find themselves acting in the role of edutainer. Fortunately, educators have now a wealth of materials at their fingertips via the Internet that can be used to bridge the gap between education and edutainment. As the body of Web 2.0 materials continues to grow, educators across all disciplines will have an increasingly diverse source of multimedia materials from which to choose, including YouTube videos, to help them engage and entertain their students.

As our research indicates, showing a hedonic (humorous) video at the beginning of class can be used to increase the positive mood state of the students. Videos can also increase retention significantly as long as the video is congruent to the material. A hedonic-congruent video has the potential to increase retention by an average of 6%, which for many students might correspond to half a grade increase. One of the challenges with integrating videos into the classroom is locating a congruent, hedonic (humorous) video since this combination has been shown to have the greatest impact on student retention of material. However showing a hedonic (humorous) video for the sake of it, although affecting mood state in a positive way, does not change retention in a significant manner and seems to marginally decrease retention.

Educator seeking hedonic (humorous) videos that are also content congruent should plan to spend some

time researching online, via Google-videos or directly into YouTube, by simply using key words related to the content in addition to words such as “funny” or “humor”. Careful preparation and embedding of the video within the flow of the content delivery is also important, because technological glitches could dampen the mood state in a negative way.

Directions for Future Research

Perhaps the reduced retention in the hedonic-non-congruent case can be attributed to an overall drop in attention to the material since the positive mood is transient given the lack of content congruence between the video and the material. Another possibility is that the hedonic (humorous) video set student expectations for the lecture to be hedonic in nature, and when students discovered no connection between the hedonic (humorous) video and the lecture, students stop listening. We leave this issue for future research.

While achieving short-term increased retention is good for test results, educators strive for a long-term effect and the shaping of students capacity to relate the content to real life situations. In that respect congruent and hedonic videos used as primer seem to aid recall of the material longer than any other priming video combination. Further research should also attempt to find a primer mechanism whereby unaided recall (i.e., a real life situation) would elicit the recall of the proper content.

Another possible avenue for future research would be to investigate the use of hedonic and utilitarian videos in the classroom to impact overall student

evaluation of classes, class satisfaction, and educator satisfaction.

Limitations

Our study utilized a single institution for the sample pool which may have affected our findings. Future research in this area should expand the sample beyond a single university to increase robustness of results. Additionally, increasing the response rate in the second stage of the data collection might be

beneficial since the second sample was relatively small. The current research also tested the retention of a single marketing theory, which may be a limitation of this study. We would suggest that future work in this area utilize multiple marketing theories in the testing of subject matter retention.

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Appendix A. Questions used to test content knowledge

1. Which theory's basic premise is that consumers are motivated to maintain perceived consistency in the relations found in mental systems?
 - a. balance theory
 - b. consistency theory
 - c. congruency theory
 - d. theory of reasoned action
 - e. elaboration likelihood theory

2. In balance theory, _____ relations are the relations between the observer (consumer) and the other elements in the system.
 - a. unit
 - b. consistent
 - c. primary
 - d. secondary
 - e. sentiment

3. Which theory of persuasion proposes that consumers compare incoming information to their existing attitudes about a particular object or issue?
 - a. elaboration likelihood theory
 - b. social judgment theory
 - c. mood-congruence theory
 - d. balance theory
 - e. comparison theory

4. Describe balance theory and how it can be used to explain the effectiveness of celebrity endorsers in changing consumers' attitudes.