Kelling, N.J. and Kelling, A.S. (2022). A Case Study Integrating Edutainment to Enhance Student Engagement and Satisfaction in an Online Graduate Psychology course. *Intersection: A Journal at the Intersection of Assessment and Learning, 3*(2).

A Case Study Integrating Edutainment to Enhance Student Engagement and Satisfaction in an Online Graduate Psychology Course

Nicholas J. Kelling, Ph.D., Angela S. Kelling, Ph.D.

Author Note

Nicholas J. Kelling, 0000-0002-1802-7418

Angela S. Kelling, 0000-0002-5035-9607

We have no conflicts of interest to disclose.

Intersection: A Journal at the Intersection of Assessment and Learning

Vol 3, Issue 2

Abstract: The coronavirus pandemic contributed to significant life changes, which likely diminished student engagement in coursework. With this challenge in mind, a graduate course was redesigned using edutainment as a model to enhance student engagement and learning in an online environment and delivered during the pandemic. The course redesign intentionally included components of humor and entertainment to enhance the delivery of the subject matter and student engagement. Student perceptions of the course were analyzed and indicate high levels of satisfaction. Course performance was also examined, however, a clear relationship between course satisfaction and performance could not be established. The course design may also have contributed to higher levels of student retention.

Keywords: *COVID-19, graduate online course design, edutainment, student engagement, student satisfaction, asynchronous delivery*

With the sudden cancellation of in-person teaching nationwide in the Spring of 2020, higher education was under many pressures as faculty attempted to deliver course material during a pandemic. For many instructors, transitioning to an online course had to occur almost instantaneously. For many, even those experienced in teaching online, this transition was disconcerting, given that the careful and thoughtful design of online courses was trampled by in the immediacy of the transformation. Some instructors attempted to recreate the connection and engagement found in an in-person environment online through synchronous teaching (an online instructional delivery occurring in real-time using online tools) while others leveraged the flexibility of asynchronous teaching (an online instructional delivery occurring in non-real time using accessible instructional materials).

As faculty scrambled to redesign courses, students' lives were also disrupted. All of the life changes, especially required lockdowns, altered mental health (Odriozola-González et al., 2020) and motivation (Serhan, 2020; Tan, 2020), created a situation in which engaging in coursework was likely more demanding. For college students, the pandemic may have resulted in their first foray into fully online courses, but even for those more versed in this pedagogy, the nature of day-to-day life still resulted in changes to the normal operation of these courses. With factors such as "pandemic burnout" and "Zoom fatigue" setting in (Wiederhold, 2020) a potential opportunity arose during this

difficult time to meet the challenge of transitioning a course to an online format while actually increasing the level of student engagement by utilizing principle of edutainment.

Edutainment as a Model for Designing Engaging Lectures

Edutainment has been used to describe the integration of entertainment in educational delivery (Addis, 2005). Although usage of this term has changed recently, many of the applications share common elements including the effort to attract learner's attention, utilizing multimedia, and a desire to integrate fun into the learning process (Aksakal, 2015). The use of edutainment has been shown to increase motivation by making the experience entertaining and engaging, resulting in an enriching learning experience learning (Okan, 2003). An enthusiastic tone and speaking manner can also impact engagement (Guo et al, 2014). Condensing class material into mini lectures with activities or some other sort of way to change up the flow has also been found to enhance engagement and learning (Goldberg & Ingram, 2011). Edutainment may also improve the emotional and mental states of students to the benefit of the learning experience (Bertacchini, et. al, 2012). When appropriately used, humor and fun activities can be engaging and enhance learning (Baid & Lambert, 2010; Lesser et al., 2016). Engaging lectures have been found to enhance student perceptions of the course and exam performance (Miller et al., 2013).

As the defined purpose of utilizing edutainment is the enhancement of teaching effectiveness (Aksakal, 2015), any attempt to assess the effectiveness of edutainment would need to use metrics that aim at determining a difference in the learning environment and attempt to correlate differences to course performance and student learning. These metrics could include examining student satisfaction of learning environment, retention, and student engagement, which were all examined in this case study. For the purposes of this paper, "engagement may most succinctly be conceptualized as a student's connection to learning and the learning environment which incorporates behavioral, emotional, and cognitive aspects" (Marx et al., 2016, p. 212) and was examined based on student perceptions of the course (IRB Approval Protocol Number 22-056).

Using Edutainment to Design and Deliver Engaging Asynchronous Lectures

The graduate course entitled Sensation & Perception was traditionally taught in a 3 credit, 8-week face-to-face format using discussions, assignments, assessments, labs, and other similar hands-on learning experiences. However, with the closure of the physical campus in Summer 2020, such teaching methods were not possible and a larger percentage of learning was shifted to lectures. Additionally, as the University of Houston-Clear Lake is a regional university with many non-traditional students who likely were also experiencing the challenge of increased hours of caretaking responsibilities, greatly reducing time flexibility. This timing issue in combination with the known challenges of online synchronous lectures (Peper et al., 2021) and the shortened summer term (8 weeks rather than 15 weeks), resulted in the choice to utilize an asynchronous lecture style. This choice also allowed for a significant opportunity to use edutainment to counter some of the Covid-19 learning difficulties and create lectures that remained focused on deeper and meaningful learning (Okan, 2003).

As the successful implementation of edutainment requires the use of engaging multimedia content to maximize the engagement and attention of students, these asynchronous lectures needed

to use a multitude of learning pathways while also being fun. Rather than simply relying on a narrated PowerPoint or the slightly more advanced PowerPoint slide with the addition of a professor camera feed, the lectures were designed more to mimic the popular YouTube educational series such as *Because Science, Crash Course*, or *Kurzgesagt – In a Nutshell*. The lecture videos included an upper body, full screen view of the instructor along with overlaid PowerPoint slides. Additionally, a lightboard was used to provide additional descriptive content via the instructor drawing or writing seemingly in midair (Kelling, 2020; Kelling 2021a; Kelling, 2021b). The lightboard provided a means to simulate a whiteboard without having to block the view of the instructor or the PowerPoint slides. Videos were integrated into lectures to provide another learning opportunity.

The length of videos was also considered, since many students will cease watching a video after only a few minutes (Guo et al., 2014). Choe et al. (2019) tested the effectiveness of six lecture recording styles using various types of technology to teach physiology. They found nearly equal learning outcomes, but a reported preference for the lightboard style video and overall higher ratings for the videos rated as more personal and engaging, which might help the course meet student expectations and enhance student success. The lectures were also designed to elicit a more conversational element. However, as these were to be viewed asynchronously, it would not be possible to include student interaction. Instead, a level of conversational interaction was simulated. Using digital video editing and green screen based special effects, an animatronic bear was used as a synthetic co-instructor. In this case, the talking bear toy, Teddy Ruxpin (1985 Worlds of Wonder ™) was used as a means of integrating edutainment in the course design and delivery. Teddy Ruxpin was one of the first educational interactive toys created and was popular in the mid 1980's (Jones & Meurer, 2016). Although educational interactive toys are often used to enhance learning engagement, the Teddy Ruxpins used in the video were not used in their standard set-up, but modified to be puppeteered. In some situations, the main instructor lectured. In others, Teddy Ruxpin lectured and in many both "instructors" interacted with each other. Most lectures were a combination of all three situations. The goal of this unique dynamic was to create fun, humorous, and stimulating lectures. The utilization of Teddy Ruxpin throughout the course fell into two categories. The first was the use of Teddy Ruxpin as a conduit to present course content in a similar vein as the human instructor. The second centered around Teddy Ruxpin's use as comic relief. In these instances, the use of this synthetic instructor was to break the potential monotony of the lecture and hopefully re-engage students' focus. However, as the focus of these videos was to promote learning of the content, the vast majority of the time the lectures utilized the human instructor (Kelling, 2020; Kelling 2021a; Kelling, 2021b).

Student engagement and satisfaction were examined using an end-of-term questionnaire with 14 questions designed to assess student opinions of the course administered using Qualtrics. Of these questions, 13 are directly tied to engagement and were used for analysis. As to not solely focus on the use of Teddy Ruxpin and potentially over focus on the novelty, questions ranged from asking about general perceptions of the course and specific perceptions of the Teddy Ruxpin inclusive videos to specific course opinions unrelated to the videos, such as the usefulness of the textbook. Twenty-one of the twenty-five graduate students (response rate 84%), enrolled in a graduate psychology course offered in the Summer 2020 or 2021, completed the questionnaire and contributed data to this study. The student population was mostly female (66.7%) with a mean age of 30.2 years (SD = 8.64). A

relatively diverse sample was obtained with 33.3% identifying as Hispanic, 28.6% as Black, and 38.1% as White. As a graduate course, the required grade to pass the course was a B minus utilizing the standardized institutional grading scale. Of the 21 survey participants, 85.7% of students met this requirement. No students withdrew during the Summer 2021 term. However, three withdraws occurred during the Summer 2020 term (two administrative withdrawals occurring in the first week and one student-initiated withdrawal during the term).

High levels of Student Satisfaction and Retention

Overall student satisfaction and engagement of the inclusion of edutainment were positive (**Table 1**). When examining viewing patterns, a large percentage of students watched one or more videos in a single viewing session (multiple videos 38.10%, complete video 38.10%, partial video 23.81%, data not shown). Of additional note, students related the ability to see their instructor in the videos to their success in the course (66.67% of students reported this to be extremely important or very important; **Table 1**). Students reported that their level of distraction was low when watching the videos (61.90% of students reported never doing other tasks unrelated to the class while watching the videos; **Table 1**). The relationship between student satisfaction and course performance was also examined given its previously reported interaction (Aksakal, 2015). However, Spearman correlation testing was not able to confirm the presence of this relationship within our sample (data not shown).

Course retention was observably higher in summer 2021 course as compared to the overall retention rate (i.e. 100% course retention rate and 93% overall retention rate; data not shown). A significant increase was evident in the second offering as no drops nor failures occurred for the Summer 2021 course. However, the effects of the pandemic have made assessment of retention characteristics more challenging. While the second offering of the course in Summer of 2021 demonstrated retention performance above the university norms, a full understanding is difficult as the standard deviations of pass, fail, and drops were high even during this semester. When looking at the Summer 2020 data, the view becomes even more cloudy. As Summer 2020 was the first semester online after the rapid transition half-way through the Spring term, for some students this semester was the first full term online. Additionally, these challenges extended to the faculty with many having to teach a full term online for the first time. Considering that course retention in the Summer 2020 was 67% (overall retention rate was 92%; data not shown), it may be possible that the relative recency of the start pandemic resulted in greater hardship for students. When life within the pandemic became more normalized, it is possible that the course design countered the remaining level of hardship resulting in improved retention. However, further investigation will be required to determine the environmental effects of the pandemic.

Of 21 students, three declined to mention any top two moments of Teddy Ruxpin. Of the remaining 18, three made only general comments, two made general comments with one specific moment, one gave only one specific moment, nine gave two specific moments, and one gave three specific moments. The general comments were usually along the lines of “anytime he was lippy” or “I liked Teddy's general attitude and sass throughout.” Five students mentioned the same incident, when Teddy appeared to catch himself on fire, a very humorous point in the lecture. Two of the comments contained the sentiment that they appreciated the addition, but it was not a focal point for them. For example, one said, “I didn't really remember the bear much, honestly, but I'm not sure that's a bad

thing. I thought he was cute, I enjoyed those moments, and it broke up the lecture format with something amusing and different without being distracting for me." The other indicated that although over the semester the novelty wore off some they "appreciated the creativity and dad jokes, especially during the first half. To me, he made the process of taking an applied class online a little less daunting and intimidating." Five students emphasized the humor. For instance, one mentioned their top moment and added, "I lost it I was laughing so hard."

Table 1: *Levels of Student Satisfaction and Engagement (in percentages) on the Integration of Edutainment*

Student Satisfaction or Engagement Statement	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
I found the video lectures from the class enjoyable.	76.19%	23.81%			
I found the video lectures from the class entertaining.	66.67%	28.57%		4.76%	
I found the video lectures from the class informative.	71.43%	28.57%			
The addition of Teddy Ruxpin made the video lectures more enjoyable.	57.14%	33.33%		4.76%	4.76%
The addition of Teddy Ruxpin made the video lectures more entertaining.	61.90%	28.57%		4.76%	4.76%
The addition of Teddy Ruxpin made the video lectures more informative.	28.57%	28.57%	23.81%	14.29%	4.76%
I would have preferred if the instructor used narrated PowerPoints.			19.05%	28.57%	52.38%
I preferred these videos compared to video lectures used in other courses.	76.19%	4.76%	19.05%		

Note: Levels of student satisfaction and engagement (in percentages) on the integration of edutainment were aggregated for Sensation and Perception graduate classes offered in the Summer 2020 and Spring 2021. The aggregated level of survey participation was 84% (n=25).

Conclusion

The overall satisfaction of the course indicates that the diverse body of graduate students in the Sensation & Perception course found the lecture videos very entertaining and enjoyable, and appreciated the integration of edutainment. The high survey response rate (84%) can also be seen as a measure of student engagement. Factors that contributed to student engagement and connection to the course included the integration of humor in the lecture videos as well as seeing the instructor. The

relatively high levels of student engagement did not have a measurable impact on course performance, and is similar to the findings seen in Choe et al. (2019). It seems that the lecture style afforded some additional engagement qualities as a significant number of students indicated they were less distracted and more engaged with the video content. This effect is possibly supported by the high percentage of individuals who watched one or more videos in a single viewing session (76.20%). While the average video length was only 32.3 minutes, maintaining an engaged focus for this duration can be quite challenging (Guo et al., 2014) with students often objecting to videos over 20 minutes (Long et al., 2016). An alternative explanation is that students who procrastinated might have also watched multiple videos in one sitting, however viewing habits were monitored and most students watched shortly after the video was available. Therefore, it does seem likely that the entertaining format allowed for a more focused consumption of the videos and supported graduate student retention While the conclusions from the current case study are limited since it focuses on one course at one university with a relatively small number of graduate students offered during the pandemic, it confirms findings from previous studies establishing a relationship between highly rated videos and course engagement and learning (Kizilcec et al., 2014; Seli et al., 2016; Ryan and Reid, 2016; Zureick et al., 2018). This study also clarifies the role that an edutainment model can play in structuring an engaged online learning environment for students. Future work should compare videos like the ones used in this study to traditional recorded PowerPoints to determine if there is a student preference or performance difference.

Considerations for Utilizing Edutainment to Enhance Engagement of Instructional Materials

For those interested in utilizing a similar edutainment approach to the one in this study, a few items are worth mentioning. When considering the integration of edutainment in course design and delivery, this should be guided by the course material and pedagogy. Overall, course delivery, including technology tool selection, should be guided by the course material and pedagogy (Barker, 2003; Okan, 2003; Darby & Lang, 2019). In many cases, the state-of-the-art tool may not be the best fit for a course or discipline. The production time for these types of videos was significantly higher than either a classroom lecture recording or a narrated PowerPoint. On average, every hour of video content required approximately an additional 5-6 hours of creation between recording multiple takes of both the instructor and Teddy Ruxpin portions to ensure an acceptable merged sequence and video editing. Additional time is needed in the script creation process as this method requires the instructor to determine how and when best to include the more humorous interactions (Kelling, 2021b). Considering that for many instructors the skill sets required to manage green screening and general video editing are not traditionally taught along with general teaching pedagogy, this type of undertaking could be out of reach of many instructors. When evaluating the current content creators of popular videos series such as *CrashCourse*, *Because Science*, or *Kurzgesagt*, it is worth noting that these productions employ a sizable team of actors, script writers, video producers, and editors and therefore consist of a team far more capable than a singular instructor with a traditional level of university support. When integrating edutainment in course design and delivery, course assessment should include the effectiveness of delivering content in this manner. It may also be worthwhile to also compare the relative levels of student achievement of learning outcomes in an edutainment-infused course to a traditionally delivered course, if possible.

References

Addis, M. (2005). New technologies and cultural consumption – edutainment is born! *European Journal of Marketing*, 39(7/8), 729–736. https://doi.org/10.1108/03090560510601734

Aksakal, N. (2015). Theoretical View to The Approach of The Edutainment. *Procedia - Social and Behavioral Sciences*, 186, 1232–1239. https://doi.org/10.1016/j.sbspro.2015.04.081

Baid, H., & Lambert, N. (2010). Enjoyable learning: The role of humour, games, and fun activities in nursing and midwifery education. *Nurse Education Today*, 30(6), 548–552. https://doi.org/10.1016/j.nedt.2009.11.007

Barker, A. (2003). Faculty Development for Teaching Online: Educational and Technological Issues. The *Journal of Continuing Education in Nursing*, 34(6), 273–278. https://doi.org/10.3928/0022-0124-20031101-10

Bertacchini, F., Bilotta, E., Pantano, P., & Tavernise, A. (2012). Motivating the learning of science topics in secondary school: A constructivist edutainment setting for studying Chaos. *Computers & Education*, 59(4), 1377–1386. https://doi.org/10.1016/j.compedu.2012.05.001

Choe, R. C., Scuric, Z., Eshkol, E., Cruser, S., Arndt, A., Cox, R., Toma, S. P., Shapiro, C., Levis-Fitzgerald, M., Barnes, G., & Crosbie, R. H. (2019). Student Satisfaction and Learning Outcomes in Asynchronous Online Lecture Videos. *CBE—Life Sciences Education*, 18(4), ar55. https://doi.org/10.1187/cbe.18-08-0171

Darby, F., & Lang, J. M. (2019). *Small Teaching Online: Applying Learning Science in Online Classes*. John Wiley & Sons.

Goldberg, N. A., & Ingram, K. W. (2011). Improving student engagement in a lower-division botany course. *Journal of the Scholarship of Teaching and Learning*, 11(2), 15.

Guo, P. J., Kim, J., & Rubin, R. (2014). How video production affects student engagement: An empirical study of MOOC videos. *Proceedings of the First ACM Conference on Learning @ Scale Conference*, 41–50. https://doi.org/10.1145/2556325.2566239

Jones, M. L., & Meurer, K. (2016). Can (and should) Hello Barbie keep a secret? *2016 IEEE International Symposium on Ethics in Engineering, Science and Technology (ETHICS)*, 1–6. https://doi.org/10.1109/ETHICS.2016.7560047

Kelling, N. (2020, June 8). *PSYC 6030 – Psychophysics* [Video]. YouTube. https://www.youtube.com/watch?v=WMjIsplDyZ8

Kelling, N. (2021, July 4). *PSYC 6030 - Audition Basics and Sound Localization* [Video]. YouTube. https://www.youtube.com/watch?v=ND9HDxSvouc

Kelling, N. (2021, July 31). *Making of Full Video* [Video]. YouTube. https://www.youtube.com/watch?v=1_5T3wpjRhA

Kizilcec, R. F., Papadopoulos, K., & Sritanyaratana, L. (2014). Showing face in video instruction: Effects on information retention, visual attention, and affect. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 2095–2102. https://doi.org/10.1145/2556288.2557207

Lesser, L. M., Pearl, D. K., & Weber, J. J. (2016). Assessing Fun Items' Effectiveness in Increasing Learning of College Introductory Statistics Students: Results of a Randomized Experiment. *Journal of Statistics Education*, 24(2), 54–62. https://doi.org/10.1080/10691898.2016.1190190

Long, T., Logan, J., & Waugh, M. (2016). Students' Perceptions of the Value of Using Videos as a Pre-class Learning Experience in the Flipped Classroom. *TechTrends*, 60(3), 245–252. https://doi.org/10.1007/s11528-016-0045-4

Marx, A., Simonsen, J., & Kitchel, T. (2016). Undergraduate Student Course Engagement and the Influence of Student, Contextual, and Teacher Variables. *Journal of Agricultural Education*, 57(1), 212–228. https://doi.org/10.5032/jae.2016.01212

Miller, C. J., McNear, J., & Metz, M. J. (2013). A comparison of traditional and engaging lecture methods in a large, professional-level course. *Advances in Physiology Education*, 37(4), 347–355. https://doi.org/10.1152/advan.00050.2013

Odriozola-González, P., Planchuelo-Gómez, Á., Irurtia, M. J., & de Luis-García, R. (2020). Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. *Psychiatry Research*, 290, 113108. https://doi.org/10.1016/j.psychres.2020.113108

Okan, Z. (2003). Edutainment: Is learning at risk?: Edutainment: is learning at risk? *British Journal of Educational Technology*, 34(3), 255–264. https://doi.org/10.1111/1467-8535.00325

Peper, E., Wilson, V., Martin, M., Rosegard, E., & Harvey, R. (2021). Avoid Zoom Fatigue, Be Present and Learn. *NeuroRegulation*, 8(1), 47–47. https://doi.org/10.15540/nr.8.1.47

Ryan, M. D., & Reid, S. A. (2016). Impact of the Flipped Classroom on Student Performance and Retention: A Parallel Controlled Study in General Chemistry. *Journal of Chemical Education*, 93(1), 13–23. https://doi.org/10.1021/acs.jchemed.5b00717

Seli, P., Wammes, J. D., Risko, E. F., & Smilek, D. (2016). On the relation between motivation and retention in educational contexts: The role of intentional and unintentional mind wandering. *Psychonomic Bulletin & Review*, 23(4), 1280–1287. https://doi.org/10.3758/s13423-015-0979-0

Serhan, D. (2020). Transitioning from Face-to-Face to Remote Learning: Students' Attitudes and Perceptions of using Zoom during COVID-19 Pandemic. *International Journal of Technology in Education and Science*, 4(4), 335–342. https://doi.org/10.46328/ijtes.v4i4.148

Tan, C. (2020). The impact of COVID-19 on student motivation, community of inquiry and learning performance. *Asian Education and Development Studies*, 10(2), 308–321. https://doi.org/10.1108/AEDS-05-2020-0084

Wiederhold, B. K. (2020). Connecting Through Technology During the Coronavirus Disease 2019 Pandemic: Avoiding "Zoom Fatigue." *Cyberpsychology, Behavior, and Social Networking*, 23(7), 437–438. https://doi.org/10.1089/cyber.2020.29188.bkw

Zureick, A. H., Burk-Rafel, J., Purkiss, J. A., & Hortsch, M. (2018). The interrupted learner: How distractions during live and video lectures influence learning outcomes: Study Interruptions and Histology Performance. *Anatomical Sciences Education*, 11(4), 366–376. https://doi.org/10.1002/ase.1754

About the Authors

Nicholas J. Kelling, Associate Professor of Psychology, University of Houston-Clear Lake, kelling@uhcl.edu

Angela S. Kelling, Assistant Professor of Psychology, University of Houston-Clear Lake, KellingA@uhcl.edu