**The AOM IM Division Teaching Committee How to Produce Different Types of Cases Series Presents:**

**Creating an Interactive Multimedia Case Study: Cushy Armchair[1]**
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With the rise of online programs and the recent increase in online courses due to COVID, the potential demand for interactive multimedia cases is large. Research shows that well-produced interactive learning media enhances experiential learning. Most standard business cases are print-based, linear documents and, as a result, they have less experiential educational value compared to well-designed, well-produced, interactive cases. One of the problems with traditional linear, two dimensional cases is that they can be seemingly stale, especially the students who are Millennials and Gen Z who have grown up with multimedia content, such as video games and animation.

Interactive multimedia business cases tell the narrative of the traditional case in a non-linear, media-based context. By interactive, we mean that the user engages with the content and has control of their pace moving through the content. In addition, the user can input data into the narrative, which, in turn, can reveal outcomes that are dependent upon the user's input. Just-in-time feedback based upon user input and the ability of the user to move forward or backward (or just jump around) through the case allows for enhanced learning in a fun and engaging environment. In some learning communities, this type of environment may be referred to as "gamification". The "media" that gets developed within a case can be an animation, video, image, hypertext, or sound. Such an interactive media case could be delivered via the Internet on a variety of platforms, including laptops and mobile devices.

In creating this case, we used a process that engaged a class. One of us taught the paper-based case in a traditional in-person format while the other videotaped the class session. Students went through all the options and potential decisions that we normally go through in class. We then used this to recreate that class as a multimedia interactive experience with the options becoming nodes in the decision tree and the decisions becoming the pathways.

The first step is to break down a case into small narrative chunks, and imagine various methods for telling its story using animation, drawing, visualization, time-based media, sound and gaming. Also remember that people have different learning preferences such as auditory, visual and kinesthetic so also consider the VARK model of educational psychology:

V: Use charts, graphs and other visual aids where possible.
A: Many people learn best when information is spoken
R(W): Written words on the screen still work.

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[1] Based on the Cushy Armchair case, 9B01C019, © Ivey Business School, Western University, London, Ontario, Canada, N6G 0N1. Multimedia Version created by Northeastern University, Boston MA

K: Involve the students by providing choices and decision points that they respond to with clicks. Try to make it a personal experience.

We utilized a software program called "The Brain" (https://www.thebrain.com/), to develop a "decision tree" network of possible decision points (and corresponding paths) that the user may take. During the course of working on the case, the user will be prompted to make recommendations for courses of action; responses will be multimedia-media based feedback that, in turn, may require follow-on actions.

One of the really important things when you are designing these types of case studies is that you cannot just read the material into a slideshow format. You have to find ways to integrate the background information into the narrative in a way that is interesting. It is like when you create a movie from a book there is a lot more adaptation that's required. Some examples:

- At the beginning of the case. There are people visiting the company headquarters with a tour guide explaining a bit of the background of the company.
- When Alison finds out that she's promoted to be President of the company headquartered in Hong Kong, she gets an email from one of her colleagues congratulating her that says, "You know, here's a video that I found on YouTube that talks about Cushy Armchair. I thought you might find it interesting." Then the video plays with some background on the Cushy Armchair itself from the written case.
- There's dialogue that's created which makes it a lot more interesting for students than just reading the background information. For example, the CEO of Cabletronica, the parent company of World Furniture and Cushy Armchair, calls Alison into his office to explain what needs to be done and he also uses charts as part of the discussion.

It is important to make sure that the students have time to interact with the content. For example, before the student clicks on the hyperlink for the short video mentioned above, there should be time to read the email before they click on the link.

It is also important to integrate sounds. Background sound and music make it much more interesting. Harrigan et al. (2010) explain why casual video games and slot machines are so compelling. "They require little or no training or previous experience; require little time commitment although players can continue to play for hours; are quick and easy to play [and] offer instant rewards for play in terms of feedback (whether financial, through points, or audio and video rewards)." They also found that music and other auditory stimuli were underused in casual video games. "We feel that sound in casual games is particularly overlooked, and could be one significant yet simple avenue for making games more attractive." One reason that music games have been successful is that they excel in these areas. For example, when players hit the correct notes they are rewarded with visual and auditory cues. Therefore, even if the player fails to complete the level, enough positive feedback is given to keep the player from giving up. Slot machine manufacturers use these "reinforcement cues" to disguise losses as wins. "The research is clear that players physiologically experience [losses disguised as wins] and regular wins identically. Thus, even while taking money from the gambler, the slot machine game designers have figured out how to reward the player."[2]

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[2] Harrigan, K. A., Collins, K., Dixon, M. J., & Fugelsang, J. (2010, May). Addictive gameplay: What casual game designers can learn from slot machine research. In Proceedings of the international academic conference on the future of game design and technology (pp. 127-133).

For these reasons, we prioritized creative visuals and sound to provide better feedback to students, from something as basic as playing a chime when a student clicks "send" on an email to street noises when one of the characters is talking on his cellular phone while walking down the street in Hong Kong. The scenes are colorful and use some of the tools of "motion comics" to provide the illusion of movement in a still scene. During select transition scenes, appropriate music was licensed from the Creative Commons.

Matching the correct sounds and music to key scenes is critical to achieving the necessary reinforcement cues to make the experience more enjoyable. We find that students spend more time interacting with the case than required, trying different scenarios from the path originally chosen. Negative cues are also important, notes Harrigan, because they "provide enough of a frustrative value to make the game interesting for longer periods of time," but are not so frequent as to negatively impact the player's self-esteem. On the other hand, even students who achieve the best outcome on the first try often try other scenarios to see what might have happened.

The process of creating this prototype helped establish important guidelines and precedents for future projects of this nature. Hiring outside contractors proved efficient and cost effective. Contracting services allows vendors to bid on services and provide the best value for the money. In the end, it contributed significantly to the production cost savings and helped ensure that deadlines were met. Furthermore, we leveraged the Internet to seek out the best talent worldwide. Although art, animation and voice talent were supplied locally, video editing and software development were done in New Jersey and South Africa, respectively. Based on this experience, we believe that centrally managed, but geographically distributed production can be more efficient and cost effective. It did create some communications and logistical challenges ranging from time zone differences that prevent real-time communication to international contracting issues. However, these were all resolved successfully.

Since this case was to be used primarily in an online MBA class, it meant that it had to be available on multiple devices to accommodate students who might be traveling. The final software was presented in several versions, including for web, LMS (such as Blackboard or Canvas), mobile app and self-executable (PC and Mac). It includes some tracking of student progress, but tracking was not a priority and could be improved in future iterations. Another consideration that was not included in this project is accessibility. Closed captioning and descriptive services were not implemented, but could likely be added without incurring significant additional costs.

An approximate budget breakdown:

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| Art and Animation Consultant: | $4800 |
| Voice Talent Consultant: | $4900 |
| Video Editing Consultant: | $2,000 |
| Programming and Instructional Design Consultant | $5,500 |
| Total | $17,200 |

One important question that looms over online courses and education is whether the pedagogy and materials used in traditional courses can be transferred to an online format? Our answer, to paraphrase Boromir from Lord of the Rings, is that "One does not simply move a course online". A faculty member's job is changed from teaching the course to organizing the learning in the course. Work is shifted to the start-up, planning and preparation of the course. Make it as

asynchronous as possible to make it accessible to all and equitable. This is particularly important if you have students in different time zones.

Interactive, multi-media case studies are particularly suited for online or hybrid courses. They can be delivered asynchronously to provide high quality, engaging experiential classes. They are highly contextual and have a problem-solving focus that allow traditional linear narratives to be retold in a non-linear media- based context. Unlike complex business simulations, they can be used in a single class session, replacing a traditional paper-based case study with an immersive environment that appeals to modern highly mobile students who are comfortable using technology-based learning systems.