CS 6460 Qualifer Question

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1 INTRODUCTION

For my project, I selected the content track with my mind set on creating educational YouTube videos focused around providing hands-on tutorials for data analysis and supplementing with videos to explain underlying concepts in an easy to understand fashion.

My desire to create these videos stemmed from a wish to give back to the learning community, add to topics which I felt the available materials could be doing a better job at explaining, and provide the knowledge to empower someone from any background to obtain skills for a better job.

My mentor, Cody Oliver, provided me with the following question for this assignment:

1.1 Question

You have discussed your interest in distributed video content for audiences of various educational backgrounds as well as variable commitment levels.

1. *How do you increase viewer retention in video based platforms?*
2. *What pedagogies are involved in online video production?*
3. *What challenges are involved when working in this format?*
4. *How can these challenges be overcome?*
5. *What factors could produce the greatest outcome for both active and casual learning?*

2 RESPONSE

In the sections below, I will be addressing and answering each part of the question within its own respective section.

2.1 How do you increase viewer retention in video based platforms?

The key metric that is used to measure viewer retention is the video dropout rate, which is when a user navigates away from a video before its completion. (Kizilcec, Piech, and Schneider, 2013)

There is a high percentage of dropout that occurs within the first 15 seconds of

every video. The theory behind this is that maybe the viewer navigated to the wrong video, they opened the video for later viewing but autoplay resulted in them having to pause or navigate away, or the autoplay feature was running to automatically pick another video which the user did not have an interest in viewing. (Kim et al., 2014)

Because of this, it is widely accepted that dropout rate prior to the 15 second mark can be discarded for video dropout and user engagement analysis.

Research done on MOOC classes and recorded student actions such as playing, pausing, and rewinding have provided insight in terms of areas where high video dropout occurs, and areas where high playback, otherwise known as points of interest occur. (Kim et al., 2014)

A breakdown of the key points I found in my research can be laid out in the following framework:

2.1.1 *Impact of video length*

Based on studying channel analytics from YouTube and MOOC courses, it was found that the dropout rate was significantly higher for videos spanning beyond 6 minutes versus ones that were shorter. (Khan, 2017) (Kim et al., 2014)

Using the results from studies, I will be structuring my lessons in bite-sized snippets of no more than 6 minutes each, and when videos span above 6 minutes, I will revisit the pre-production step and lesson plan in order to refit the information into the time frame or split the lesson into two or more videos.

2.1.2 *Incorporating a personal touch*

Videos in which you are able to see the person talking behind the screen demonstrated a higher engagement level than videos which did not. (Jordan, 2014)

The reasoning behind this is that showing the instructor builds a level of connection with the student, allows them to become familiar and anchor themselves to the course, and breaks the monotony of sticking to one teaching method. (Guo, Kim, and Rubin, 2014)

Switching between cameras or interspersing a web cam feed into the videos is going to be challenging work, so I plan to only incorporate this method for a select number of videos to analyze the engagement levels of those videos in

comparison with my other ones to verify the research claims.

There was no research that showed any relation to engagement with the amount of investment made into the production studio so it could be assumed that the learning audience does not have a preference for incorporating the instructor in a green-screen studio setting versus seeing them through a webcam interface.

2.1.3 *Khan-style tablet drawing tutorials are more engaging than PowerPoints or code screencasts*

Tutorial-style videos where the instructor created hand-written notes or drawings to explain concepts had a higher retention rate than videos in which the creator was talking through PowerPoint slides, or casting their screen to show code snippets.

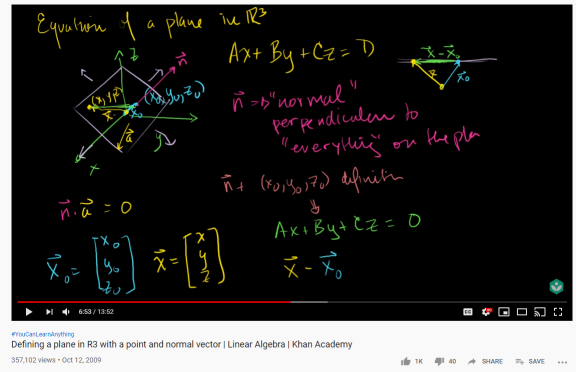

Figure 1—An example of the tablet-style video tutorials that were popularized by Khan Academy

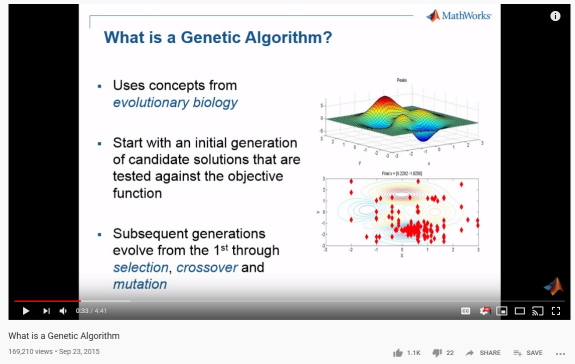

Figure 2—An example of the PowerPoint, or screen cast type of presentation format

There is an obvious problem in using the hand-written approach when handling

technical tutorials where the instructor is trying to teach the viewer how to navigate through a program's user interface, or examine data, so the approach I've decided to use based on similar research (Cross et al., 2013), is to try a hybrid method where I incorporate hand-writing on PowerPoint slides and screen casts in order to walk through sections of information, problem examples, and stepping through code.

2.1.4 *Instructor engagement with the viewer leads to better engagement*

Utilizing data from distance learning courses and online classes, it was found that classes which have high instructor participation correlated with a higher student retention and participation rate. (Zhao et al., 2005)

In addition to having higher retention rates, student surveyed as enjoying the class material more (Houston et al., 2017) and courses with high instructor engagement also corresponded with higher student performance in terms of course completion and passing grades (Ralston-Berg and Nath, 2008)

2.2 What pedagogies are involved in online video production?

Video production for online education can be simplified into the following areas:

- Presentation Style: Computer Generated such as PowerPoint or Screen Cast versus Hand-written slides/notes. (Kim et al., 2014)
- Video Style: Lecture recording, studio recording, or web-cam at home/office. (Guo, Kim, and Rubin, 2014)
- Video Pace: Fast-talking, and short, highly edited videos versus slower speaking and unedited lectures. (Guo, Kim, and Rubin, 2014)
- Personalization: Talking while facing the camera and addressing the viewers with questions versus not showing your face and not addressing viewers for feedback. (Kim et al., 2014)

2.3 What challenges are involved when working in this format?

Key challenges that MOOCs and producing video content can be listed as follows:

- Learner response and feedback is difficult to gather because of a lack of direct contact between the instructor and student. (Hew and Cheung, 2014)
- Lack of immediate critique when creating materials makes it difficult to determine how effective the material is, and if there are areas of confusion that cause

high playback. (Hew and Cheung, 2014)

- There is heavier time and monetary cost to create video lessons that incorporate the features mentioned in Section 2.1 versus less effective teaching methods like recording lectures. (Hew and Cheung, 2014)
- It is difficult to evaluate students' learning directly. (Chen et al., 2019)
- Using an open platform like YouTube puts the content creator at the mercy of YouTube policies and can potentially have the entire course removed due to a copyright infringement claim. (Jones and Cuthrell, 2011)

2.4 How can these challenges be overcome?

Here is my plan for tackling the following topics:

2.4.1 *Collecting viewer feedback and measuring engagement/learning*

Beginning and end of video highlights encouraging viewer engagement either through a survey, question, or problem have proven to lead to higher audience feedback and engagement (Hone and Said, 2016) (Guo, Kim, and Rubin, 2014)

Every video, I will make a highlighted comment discussing a point in the lesson, and encouraging people to leave a comment to share their thoughts or if they have any areas of confusion.

In addition to the comment, I will try to begin and end every video similarly mentioning the comment and to try to lead the viewer into becoming familiar with the video structure so that they feel comfortable with engaging.

2.4.2 *Time demands for pre-production lesson planning and post-production editing*

I am not an expert nor very experienced with video editing, and after doing research and seeing all of the features that need to be incorporated to produce the high quality content I set out to create, a compromise I've reached is to compress the amount of material I will produce by providing a bare-bones 'boot camp' style framework where I jump right into showing how to accomplish a task, and then follow it up with explanation videos at a later time.

I decided to hand-pick the topics which I believe will be the most popular and easiest to cover. The reason for this is that by picking topics which I feel have a higher potential audience, it will increase the likelihood that the video will get more views which will allow me to have data to examine sooner.

After the data has been collected and based on feedback I received, I will try to create modular videos which can be linked or attached to the existing ones that provide a higher level of detail for concepts regarding math, computer science, and statistics.

2.5 What factors could produce the greatest outcome for both active and casual learning?

The amount of time and effort placed into pre-production planning, post-production editing, and lesson planning to effectively structure how and in what order the information is presented and being consistent in the format will produce the best outcomes for active learners and casual learners because:

- Casual learners will be able to pop their head in and know how to easily identify and find the 'how-to' videos they are looking for to complete their project or task so their traffic won't mix with active learners with appropriate lesson structuring and video splitting. (Henderikx, Kreijns, and Kalz, 2017)
- Active learners will be familiar with the video structure and know what resources are available to help them find more information and get help to understand concepts. (Hew and Cheung, 2014)
- Both groups will benefit from being presented with content produced with a focus on implementing features backed by research shown to produce a high level of engagement and effectiveness in teaching. (Guo, Kim, and Rubin, 2014) (Kim et al., 2014) (Jones and Cuthrell, 2011) (Chen et al., 2019)
- Thoroughly planning and editing will ensure that the content produced can be utilized by a wide audience by avoiding region-specific or western-oriented jargon, unlike other educational videos such as recorded lectures where a wider audience is usually not being considered at the time of recording. (Tackett et al., 2018)

3 CONCLUSION

Based on my research, I was able to find key features of classes and videos which result in high viewer retention, engagement of students to improve learning, and dealing with past challenges of online education.

I highlighted the key points from my research from papers which I felt did the best research and provided the most thorough analysis of extensive data that I'd like to incorporate into my own lesson planning and production.

Due to the fact that I am unable to obtain immediate feedback from students after I've completed a video, I've decided to run a mix of methods while also examining the feedback being received from past videos in order to determine the best format that works for me, in terms of time and effort needed to produce content, and the learners, with respect to their levels of engagement and feedback from how effectively the content passes down information.

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