Common Practices in the Creation of Educational Videos

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Abstract

Goal: To present an analysis of production and common uses of educational video in online higher education courses.

Method: This research followed a qualitative inquiry approach, and data came from three sources: secondary data from communication logs during faculty training; analysis of 320 videos in business education and their course designs, and literature review.

Results: The use of videos for education, also known as video-lectures, started to be widely used for online and hybrid university classes in the last 10 years. The practice grew with the appearance of the Massive Open Online Course (MOOC) movement in the early 2010s, and became normal during the pandemic in 2020, when some classes incorporated the use of mini lectures together with, or instead of, synchronous online classes. The use of pre-recorded video is not new, but it is definitely a practice for which none or very few instructors received training as they were preparing to become university professors.

Contribution: This article aims to demystify the creation of educational videos by sharing what are common practices in the creation of video-lectures, and how to prepare for a successful "on-camera" experience.

Keywords: video, video-lectures, online video, educational video

Introduction

Starting with the Khan's Academy model of *home-made* videos for educational purposes in 2006, more people became aware of the usefulness of instructional videos, and the inclination to create or select a video to *teach* something expanded. With an abundance of cellphones including high quality cameras, and an easier use of the technology, video capture became ubiquitous, and the practice of creating video to teach something exploded. Today we can find how-to videos on every topic that you can think of: cooking, investing, workouts, car repair, finance, and so on. You name it and YouTube has it.

In higher education, the use of pre-recorded videos, or video-lectures, grew especially with the appearance of the Massive Open Online Course (MOOC) in the early 2010s. This practice became usual in 2020 to replace class meetings given the suspension of face-to-face classes in response to the Covid-19 pandemic. The use of pre-recorded video is not new, but it is definitely a practice for which none or very few instructors received training as they were preparing to become university professors. Today, instructors, administrators and students in higher education are impacted by the use of video. Professors are trying to better understand how they go from classroom teaching to teaching on screen, and also how much effort it takes to produce good videos for their teaching. Administrators want to know how many resources are needed to develop quality videos in teaching. Additionally, students are hoping that they video quality is good, and that video-lectures can be accessed in their mobile phones as well.

Methodology

This article focuses on an analysis of the top questions that instructors' have when they plan to use video in their teaching, and find answers to them in reports of best practices in the literature and through our analysis. This research followed a qualitative inquiry approach, and data came from three sources: secondary data from communication logs during faculty training; analysis of course designs, and literature review. The survey of faculty training logs included communication with instructors where we identified and classified questions and requests regarding the use of video; the analysis of online course designs helped to identify video types and uses; and the review of current literature provided foundation to expand the analysis on the uses of video in education. The sources included over 320 educational videos in graduate courses in business.

The Questions that Instructors Have

The questions that instructors have before they start working on their courses can be categorized in three different areas: a) general knowledge; b) best practices; and c) implementation, see Table 1 for detailed questions.

Table 1

The most common questions that instructors had

Category	Question
General Knowledge	What is a video-lecture, mini lecture, video clip?
	How do you estimate the amount or length of video-lectures needed?
Best Practices	What are the types of educational videos?
	What are the most common uses of video-lectures in a class?
Implementation	Where do I (instructor) start?
	How do I build a story for this topic with video?
	Do I have to author all videos? Is it ok to use videos authored by others?

The Answers Based on Best Practices and Literature

General knowledge

What is a Mini-Lecture, Video-Lecture or a Video Clip?

Mini-lectures, video-lectures and video-clips are "videos purposefully created and fragmented" into meaningful chunks of information, and embedded in lessons and online modules (Scagnoli, et al, 2015). The lengths of videos take into account learners' factors such as attention span, and cognitive load, and infrastructure factors, such as learners' internet's speed and bandwidth to stream videos. Hence, when the instructor takes 30 or 40 minutes to explain a concept in a video, the recording will be chunked into meaningful 6-10 minutes clips or less, depending on the topic. The breaks between chunks of information will help the learner process, understand or apply (Costley & Lange, 2017). Learning can be reinforced by interspersing interaction with the content between the video clips (Rasi & Poikela, 2016). Carefully planned multiple-choice questions; prompts for in-depth reflections, problem-solving, or another type of activities connected to the videos will create engagement with the topic and the instructor (Geri, et. al, 2017; Guo, et.al, 2014; Zhang, et. al., 2006). The video-lectures give learners the ability to play them anytime, play them multiple times, and pause them to take notes, which are the most appealing aspects, since this is not something that they can do in an in-person lecture (Berg et.al., 2014).

How do you estimate the amount or length of video-lectures needed?

"Video length matters, especially as a consideration before the video is viewed" (Clossen, 2018). There are several factors that determine the number of video-lectures needed in a course, such as a) cognitive load theory (Clark et al, 2005); b) replication of face-to-face time in class; and c) contact hours required for credential or accreditation.

a. Considering cognitive load theory and theories of multimedia learning, the use of video enhances learning, and educational video needs to follow principles such as *segmenting*, or chunking the information into short clips, to enhance the level of cognitive activity necessary to reach the desired learning outcome (Geri, et. al., 2017; Mayer & Moreno, 2003).

b. Some instructors wonder if they need to replicate the duration of a regular face-to-face class. In such case it is important to consider which of the role that the lecture plays in the in-person meeting: is the lecture key to understand the topic, or is it a complement to other sources? If the lecture is the most important source of information, then the video-lecture has a key role, has to be carefully planned and prepared. When the key content or theories are already provided via textbook, readings or third-party videos, the instructor could focus on telling a story, engaging with the topic, or explaining the application of that content (Chowdhry, 2018; Scagnoli, et. al., 2018). A video-lecture that includes a story or application will achieve several things that benefit the learning process:

    ◦ Embed social and teaching presence for the class
    ◦ Engage learners with application of content that is unique to this class and instructor
    ◦ Provide opportunities for learners to go beyond core concept to critical thinking or transfer into specific application.

It is worth mentioning that presentations through video-lectures take less time to deliver than in-person lectures, because the presentation without an audience is more focused, there are no interruptions, or the small talk opportunities that happen in the classroom.

c. The length of the video-lectures may count as contact hours for credit units or accreditation (Adler, 2020). However, contact hours include lecture time as well as labs, field trips, and activities that imply interaction between learners and content, or learners and instructors, and learners and peers.

All in all, going back to the question of how much video, how long the videos have to be, the answer will rely on the above factors as well as on the number of class meetings required for a particular course; or how much of time of class is spent in lectures.

Best Practices

What are the types of educational videos?

Exploring over 320 video clips of different courses in business education, six most common types of videos were identified. Table 2 shows the type of videos, the infrastructure used to create them, their common uses, and the amount of preparation required to produce them.

Table 2
Type of videos according to the source of the videos

Type of video	Location	Quality	Common Use	Preparation
Studio-type Recordings	Studio setting or "on-location" set up for professional recording	High - Formal	Video lectures on key topics	Instructor preparation is high Script and visuals needed ahead of time
	Instructor and guest speaker or expert on site			Instructor may act as interviewer
Instructor's Self Recording	Instructor's office or space of his/her choice	Medium - Formal or informal	Video lecture Announcements Feedback to learners Instructions Informal discussion	Instructor needs training on how to create a quality video at home
	Zoom or other web-conference	Medium-Formal	Guest speaker	Training for both instructor and guest
(Instructor) Screencasts	Instructor or producer's computer	Medium-Low	To explain technical processes (i.e., How to use an app)	Familiarity with the capture tool. Familiarity with the app to be captured
(Instructor) Narrated presentation	Instructor or producer's computer	High-Medium	Presentation	Instructor needs training on how to create video narrated presentation
Third party (Curated) videos Publishers or public sites	n/a	n/a	All of above	Careful search and curation Permissions to use may be needed (even videos in public sites may have restrictions) Learner's may need pay/access
Learner's produced videos	Learner's studio or own space	n/a	Presentation of project or assignment	Assignment Training on creation of quality videos

What are the most common uses of educational videos?

The uses of educational video were analyzed based on well-known instructional design frameworks such as Gagne's *nine events of instruction* (Gagne et. al, 1992), and the *phases of instruction* (Alessi & Trollip, 2001). The uses identified in Table 3 were listed based on the phase of instruction when they are used, how they are used and what are the common types in each phase according to the types described in Table 2 before.

Table 3

The use, examples and types of videos in different phases of instruction

Phases of instruction	Use of video	Examples (Watch and ...)	Types of videos
Activation of previous knowledge	• To trigger recall • As prompt for discussion • Check level of understanding on a topic • Prepare for main topic • On demand / Just in time training	• Multiple Choice activity • Discuss or comment • Express opinion • Do and reflect • Remember how to ...	• Third party • (YouTube or Ted or Publisher's) • Instructor's formal or informal video
Connection with other sources for learning	• To introduce or enhance other source of information like a reading, simulation, game, or exercise	• Follow up with the reading • Start the simulation or game • Expand with X reading	• Instructor's formal or informal video
Present new knowledge	Introduce new concepts (these are usually class required)	• Short video lectures, very focused on specific topic	• Instructor in studio or informal • Instructor's narrated slides
Practice and Guidance	• As prompt for discussion • Check level of understanding on new topics • To provide demonstrations • Extra practice	• Multiple Choice activity • Discuss or comment • Do as in the video • Test your skills	• Instructor self-recording or screencasting • Third party practice
Demonstration and Assessment	• Instructions for assessment • Presentation of problems or cases • To provide feedback • Informal tips or help	• Follow instructions or examples • For further understanding • Receive feedback	• Instructor's studio, self-recording or screencasting
Application and Integration	• In depth presentation • Follow up on live or asynchronous discussions • Connection with world of work • Examples from real applications	• Do • Comment • Reflect or react	• Third party (YouTube or Ted or Publisher's) • Instructor's formal or informal video
Informational	• Update on course status • Modification in schedule or assignments • Inform about current events	No task attached	Instructor's self-recording or studio.

Implementation: Building Videos for a Class

Where to start

In building video assets for a course, it is important to identify the core content from what is temporary content that will only be used or mentioned in a term or with a particular cohort.

Core concept videos are those that refer to the core content of the module. This content is permanent, it is based on theoretical foundations that will not change frequently. For example, the principles of physics or math, the core tenets of chemistry, or history. This content will be recorded in a studio or in a more professional setting. They will have a longer *shelf life* and may become available in a library catalog of videos on a topic to be added to other courses and modules in the future.

Temporal references in videos will be limited by different factors, such as the *academic term* when the course is taught (*"this spring term we are going to …"*); the *audience* who will be taking the course this term, (i.e. *"When your parents say X to you" v. "when your supervisor says X to you"*); the *program* where this module or course is embedded in, (i.e., a same module about *Managing Conflict* can be part of a course on Organizational Behavior, or School Administration, or Human Resource Management). So temporary videos will need to be renewed probably every term the course is used.

How can a story for this topic be built with video?

Creating the roadmap for a course is like building a documentary on the topic of the course; or writing a book. Each module is an episode of that documentary, or a chapter of a book. To build a documentary with videos, instructors will focus on the core concepts that learners need to know to learn that topic. Here are some recommendations from the literature (Shieh, 2009), and practice of those who have created successful videos telling the story of a course:

When creating the story board or the roadmap for the course, follow these recommendations,

- List the key concepts, each topic is a module, or a chapter, and they will become the core of the video-lecture.
- Think of a metaphor, a background or a context that may add a meaningful context to the video-lecture.
- Identify activities and assignments that will reinforce the student's learning after they watch the video. Guiding questions, interactive elements, or associated homework assignments will enhance learning.
- When recording videos, these recommendations are key:
- Do not mention temporal references related to a particular course, such as a date, academic term, course name or number, or activities connected to the video, because all those temporal references may change in future offerings and by mentioning them in the video will invalidate its content.
- Keep the video-lectures brief and targeted on learning goals.
- Use audio and visual elements to convey appropriate parts of an explanation; make them complementary rather than redundant.
- Use signaling to highlight important ideas or concepts.
- Use a conversational, enthusiastic style to enhance engagement.

Do I have to author all videos? Is it ok to use videos authored by others?

The vast amount of video and multimedia resources on the Internet may seem overwhelming and instructors sometimes question if their video-lecture is needed or can be replaced by a video from another expert. It is possible that the content has already been created by others, but existence does not guarantee the trustworthiness of information. The video sources need to be checked and confirmed by the instructor, as well as the permission to use, or distribute through the learning management system. When using videos from publicly accessed social media sites such as YouTube, Facebook, LinkedIn, and others, instructors need to beware that these sites do not guarantee shelf life of the video on their site (Madathil, et. al., 2014). Content may disappear without further notice. At the same time, some videos may not be downloaded and distributed via our local servers, unless permission has been granted by explicit permission or licensing.

To evaluate the quality of video from the Internet, especially if it is not from a reliable source, such as a well-known author, an academic institution, a government unit, or a textbook publisher; we recommend to use the same system that is often used to evaluate any Internet resources: purpose and intended audience, authority and credibility, accuracy and reliability, currency and timeliness, and objectivity or bias of the source. This method follows the recommendations of what is known as "RADAR" (Relevance, Authority, Date of publication, Appearance, and Reason for the publication) (Mandalios, 2013). Focus in these elements has proven to be efficient in the assessment of public sites' content in text, multimedia or video formats.

Conclusion

The educational transformation that started several decades ago with broader access to technological tools and the Internet, has now brought the possibility of enhancing learners' engagement in online courses through the use of video. Research has shown the relevance of video-lectures in removing distance between students and instructors, students and content and among peers. Still, video production is a new frontier in the creation of educational materials, and instructors are trying to better understand new ways to create and use pre-recorded video in their teaching. This article aimed to demystify the use of educational videos by sharing our analysis of common practices in the creation of video-lectures. The multiple examples and tangible experiences that we observed in this study inspired us. We could witness a clear demonstration that the instructors who love their art make every effort possible to reach their learners over time and space, not only meeting their teaching goals, but also building that human connection that was very hard to achieve in earlier versions of online or distance education. We hope that this article has also inspired instructors and learning designers to continue innovating to improve contact, connections and learning overall.

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