Engaging Students with Instructional Videos – Perspectives from Faculty and Instructional Designers

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Abstract

Instructional video is a dynamic and important content-delivery tool in online courses. However, instructional designers, when providing support to faculty in the design of online instruction, may not accurately understand faculty’s expectations and perspectives. This study attempted to analyze the perspectives of the designer and those of the faculty to enhance mutual understanding between the two groups. From these two perspectives, we attempted to derive the best practices concerning the production and employment of instructional videos in online courses. Two surveys were administered to collect data for the study, one to the faculty and another to the instructional designers at a major eastern state university in the United States. Based on the survey results concerning the use of instructional videos in online education, faculty and instructional designers share similar views regarding best practices of using videos in online courses. However, differences exist in terms of the video styles, and the optimal video length.

Introduction

Video is a dynamic type of instructional material, as compared with many traditional materials. Research has shed light on the important role of videos for effective teaching. Berk (2009) discussed key advantages of instructional videos such as inspiring, engaging learners, and fostering deeper learning. Sablić et al. (2020) analyzed 39 peer-reviewed articles on video-based learning and supported positive effects of online instructional videos.

The widespread use of instructional videos in online courses brings immense benefits and challenges to both instructional designers and instructors in terms of effective incorporation of videos in online teaching. Research has indicated that using instructional videos alone in teaching does not necessarily improve learning. Zhang et al. (2006) stated that “simply incorporating video into e-learning environments may not always be sufficient to improve learning” (p. 11). Their study suggested that “interactivity can be a valuable means to improve learning effectiveness in an e-learning environment” (p. 11). Similar to Zhang et al.’s findings, simply including video lectures does not necessarily produce better learning outcomes (Evans & Cordova, 2015). If not well designed, lecture videos may not be superior to still slides and text.

The above research entails numerous questions concerning the effective use of videos for online instruction. This study answered the following research questions: 1) What best practices
are used by faculty in instructional video production to engage students? 2) What best practices
are used by instructional designers in instructional video production to engage students? 3) To
what extent do faculty use these practices in their online courses? 4) To what extent do
instructional designers/developers use these practices in their instructional design work
supporting faculty teaching online?

With those questions in mind, we designed and administered a survey to a group of
instructional designers and faculty in different departments of a large state university. By
exploring and analyzing the views of instructional designers and those of the faculty regarding
the uses of instructional videos in online courses, we attempted to find answers to the above-
mentioned research questions. Our findings support the statement that instructional videos in
online courses, only when effectively designed, developed and employed, can enhance student
engagement and effectively support students’ achievement of desired learning outcomes.

Theoretical Frameworks

Cognitive Load Theory

Learners process instructional information initially in working memory (Sweller, et al.,
2011) which is then stored semi-permanently in the long-term memory (Atkinson & Shiffrin,
1968; Tulving, 1972). However, there is a limit to the amount of new information a learner’s
working memory can process at one time. When information presented to a learner is
overloaded, the learner’s cognitive capability will be overwhelmed. Consequently, the learner’s
working memory cannot process the information effectively. The working memory load is
determined by two types of cognitive loads - the “intrinsic cognitive load” which is imposed by
the structure of the information and the “extraneous cognitive load” which is imposed by the
manner in which the information is presented (Sweller, et al., 2011). The extraneous cognitive
load can cause additional stress on the learner’s processing capability. High extraneous cognitive
burden would be generated on the mental process if improper use of instructional design is
employed in course design (Cierniak et al., 2009). When creating instructional videos, faculty
and video producers can incorporate certain strategies to avoid information overload so that
learners can process information efficiently.

Motivation Strategies

Keller (2009) described a model for designing the motivational aspects of learning
environments to stimulate and sustain students’ motivation. The model includes four categories
- attention, relevance, confidence, and satisfaction (ARCS model). Incorporating the elements in
each category can motivate students to learn the content. When creating instructional videos,
faculty and video producers can incorporate motivation strategies to encourage student
engagement in viewing videos.

Student Engagement

Student engagement has been defined as investment or commitment (Marks, 2000),
participation (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007), or effortful involvement in
learning (Pekrun & Linnenbrink-Garcia, 2012; Reschly & Christenson, 2012). Video
engagement is a metric regarding how a viewer watched a video, dropped the video in the middle
or watched until the end. This type of engagement time is used by both free video providers and
enterprise providers. However, this engagement metric suffers limitations regarding whether a
watcher is actively watching the video or merely playing it in the background while multitasking
(Guo et al., 2004). As indicated by the study of Guo and others on MOOC videos, shorter videos are much more engaging, videos under 3 minutes have the highest engagement level, and the median engagement time is at most 6 minutes, regardless of total video length. They provided seven recommendations on video lengths, style, etc. for instructors and video producers. The recommendations, in summary, include logical chunking of the video, appearance of instructor’s face at opportune moments, visual fluency, speaker spontaneity and dynamism, suitability for teaching platform, and supporting resources for tutorial videos.

Methods

This study examined best practices in the use of instructional videos in online courses from both the instructor’s and the instructional designers’ perspectives. Faculty members and instructional designers in a state university on the east coast were surveyed in 2020. Data were collected and analyzed to investigate best practices, and the differences and similarities among views of faculty and instructional designers. Descriptive analysis was utilized to identify best practices of instructional videos used by faculty members and instructional designers in online courses.

Research Sites and Participants

The participants of this study were faculty and instructional designers at a US university on the east coast. The university has strong instructional design and technical support to faculty in online course design and delivery. Two surveys were designed for the study, one for input from the faculty (37 participants) and another for input from the instructional designers (20 participants). Among the faculty respondents, 62.2% were female; 35.1%, male; and the rest, undisclosed. The faculty employment status included full-time (64.9%) and part-time (35.1%). All respondents had at least one-year online teaching experience with 22.2% of them having six or more years of online teaching experience. Among these faculty participants, 91.4% had used instructional videos in their courses. The faculty respondents had taught courses at all levels (undergraduate, graduate, and certificate) in varied disciplines (e.g., agricultural sciences, arts and humanities, business, engineering, health science, and medicine).

Among the instructional designers who responded, 56.3% were female, 12.5% male, 6.2% genderqueer, and 25% undisclosed. Their roles in online course design and development at the institution included designing online courses (50%), providing pedagogical support (68.8%), providing technical support (75%), developing online courses (25%), assembling courses in LMS (62.5%) and producing instructional/promotional videos (6.3%). The majority (81.3%) of the designers who responded had at least six years of experience.

Instrumentation

Based on the researchers’ experiences teaching online courses and supporting faculty members in course development with videos, two instruments were created to gain input from faculty members and instructional designers on best practices of using instructional videos in online courses. One instrument was designed for faculty and one for instructional designers due to the difference in their experiences in using instructional videos in online courses.

Both instruments included questions to gain their perspectives on using instructional videos in online courses, such as the length, type, style, time, number of video clips, strategies that motivate students to view videos, and the degree to which instructional videos contribute to
student-content interaction. Five questions regarding participants’ demographics were also included.

Data Collection and Analysis

The study was approved by the university’s IRB committee. The surveys were sent to 352 faculty members and 20 instructional designers in the university. Thirty-seven and 16 responses were collected respectively from each group with response rates of 10% for faculty and 80% for instructional designers. Data were downloaded and analyzed with Excel for descriptive statistics, responses to open-ended questions were coded to reveal themes on strategies in using instructional videos to promote student-content interaction.

Results

This study endeavored to answer the following central research questions: what best practices are used to what extent by faculty and instructional designers in their production and employment of instructional videos in online teaching? This section reports results from our surveys to answer the above research questions.

Optimal Video Length. Both faculty and instructional designers responded that shorter videos less than 10 minutes work the best. As illustrated in Fig. 1, only 13.50% of faculty indicated that the optimal length of videos is more than 15 minutes, while none of the designers agreed to this as the optimal video length. The most popular “optimal video length” seems to be 6 - 10 minutes (as perceived by 45.9% faculty and 68.8% instructional designers).

Fig. 1 Optimal Video Length

Types of Videos. Faculty reported that they have used varied types of videos to engage their students in their online courses. As illustrated in Fig. 2, the most widely used videos are voice-over of PPT slides (77.80%), and videos from YouTube or publishers (77.80%). The second widely used video is screencasts (38.90%), and the third group is guest speakers (27.80%), lecture captures (25%), and talking head (22.20%). Faculty also reported other types of videos such as clips from television news, write on blank ppt slides with stylus (mimic chalkboard), and videos created by students showcasing their work. Concerning the same
question, most instructional designers recommended videos of PPT slides with voice-over (80%) and screencasts (80%). They also recommended videos from YouTube or publishers (73.30%), guest speakers (73.30%), lecture captures (73.30%), and talking head (60%). Instructional designers also recommended lightboard video captures. Instructional designers indicated that the type of video used varies by the learning goals.

**Fig. 2 Types of Videos**

**Video Styles.** As illustrated in Fig. 3, faculty reported they used varied styles of videos in their online courses such as formal lectures (69.40%), informal dialogues (38.90%), guest interviews (22.20%), and some group conversations (11.10%). Faculty also reported that they have created entertaining lectures to engage their students. When asked what type of video styles they would recommend to faculty in their online courses, most of the designers recommended informal dialogues (50%), and formal lectures (14.30%). Instructional designers also recommended using a mix of video styles according to the learning goals and the nature of the content.

When asked about the rationales of their choices of video styles for *formal lectures*, faculty participants offered the following:
- Students will likely listen to a teacher with a strong online presence.
- The formal lecture presents content needed to fulfill course objectives. Other formats would be harder to do in a succinct way w/o watching multiple sources.
- Coronavirus didn't leave time to plan creative videos like guest interviews or conversations!
- One comment was, “I use this format to get the information across in a quick and easy manner. It is somewhat similar to how I would do it in the classroom for this specific course.”
- Another comment was, “I am trying to mimic what they would get in the classroom.”
When asked about the rationales of their choices of video styles for informal dialogues, faculty participants expressed the following rationales:

- Students are likely to listen to a teacher with a strong online presence.
- It's best to be personable when faculty are talking “one on one” with each student.
- These videos are easy to create and often help answer questions students would have asked during office hours. Verbal response will be more efficient in conversational dialogues.
- Informal dialogue creates more of a classroom, in-person scenario.

**Use of Captions and Transcripts.** Captions or transcripts in videos are helpful not only to screen-reader users, but also to students for whom English is not their native language. Although faculty believed that captions or transcriptions should be included in videos, only 36% of the faculty had sometimes, often, or always included captions or transcriptions to their videos, while the rest (64%) of them had not.

**Number of Videos in a Module.** Faculty also reported that the appropriate number of videos included in one learning module should be 1 to 2 (31.40%), 3 (17.10%) and more than 3 clips (8.60%), as presented in Fig. 5. However, the majority of faculty reported that all depends on varied factors such as the length of videos, the nature of the content, and the learning objectives.
Fig. 4 Use of Captions and Transcripts

Fig. 5 Number of Videos in a Module

**Strategies to Enhance Student-Content Interaction.** As presented in Fig. 6, faculty and instructional designers both reported that short instructional videos enhance student to content interaction to a great extent (46.80% and 67.70% respectively) or to some extent (51.40% and 31.30% respectively).
Strategies to enhance student-content interaction. Faculty also reported that they have employed varied strategies in their videos to enhance student to content interaction. These strategies include:

- Using humor, visually appealing, enthusiastic in tone, incorporating questions, drawing connections to class assignments, providing examples that they can follow along in their computers.
- Connecting videos with learning activities such as small group discussions, application activities, reflection papers, and Q&As.
- Making video lessons mandatory before coming to Zoom sessions.
- Connecting videos to high-stake assessment activities such as midterms and finals.

Instructional designers shared following strategies to enhance student to content interaction in videos.

- Making them interactive or adding a question set targeting the video info to follow up with assessments.
- Embed video quizzes.
- Make sure the video is necessary, make sure the video's purpose/relevance is clear, and provide an opportunity for action afterwards.
- To better engage students, keep each video focused around one main idea or topic.
- Flip the class and only discuss the most recent recorded lecture when interacting live.
- Students may not proceed until they have watched the videos, a short knowledge check / quiz based on the video (better if graded).

Faculty reported a number of challenges when creating their own instructional videos. The challenges include time, equipment, tech skills, quiet space, and resources such as pictures and cool effects.

Instructional designers also reported their challenges when supporting faculty in creating instructional videos. The challenges that designers reported echo those reported by faculty, such as time commitment, technical skills, learning curve, motivation to start early, resources, and equipment quality.
Discussion and Recommendations

**Produce short high-quality instructional videos.** The question is how short videos work best to motivate students to watch the video completely. Research (Guo, et al 2014) indicates videos of six minutes work best. According to their study, the median engagement time for videos less than six minutes long was close to 100%. In other words, students tended to watch the entire video without dropping out. The views of the faculty and instructional designers in our study tended to support this view that shorter videos less than 10 minutes work the best.

**Use the right type of videos.** Videos can be created in multiple ways, such as voice-over slides, screen-cast, Khan-style drawing tutorials or lightboard videos, talking-head with minimum slides, or a mixture of talking heads, relevant visuals, embedded skits, application story, ponding questions, pop quiz questions, etc. to make instructional videos interactive. Research (Guo, et al 2014) indicated mixing the instructor’s talking head with other visuals and materials at opportune times is more engaging than a single video format. The views of the faculty and instructional designers in our study also supported this view that varied types of videos be used according to the learning goals and the nature of the course content.

**Employ a style that fits your goal.** Usually, there are two styles to adopt for producing instructional videos: conversational and formal lecture. Research (Meyer, 2008) indicates that the use of conversational style rather than formal lecture showed a positive effect on students’ learning. The conversational style works better than the formal lecture style as the conversational style provides a personal touch on what the instructor presents and makes the student feel connected to the instructor and the topic. However, not all instructors are comfortable with the conversational style on campus, and not all videos should be produced in a conversational style. Decisions should be made according to the goals and the instructor’s teaching style.

**Tie assessments to your videos.** Students may take many courses and are involved in extracurricular activities simultaneously. If the videos are not tied to their learning assessments, it’s likely that some students will not watch those videos. Therefore, it is necessary to create online discussions, group work, reflection activities on the short videos and provide clear instructions on how students’ learnings from the videos will be assessed.

**Create an active learning activity based on the videos.** In addition to tying videos to assessments, creating an active learning activity based on the video is another option. For example, you can create a “Watch-Think-Write” activity to activate student learning (Serrato, 2016). Before students watch a video segment, provide several prompts, ask students to watch the videos with those questions in mind. Then ask the whole class or small groups to discuss the video. The last phase is to ask the students to reflect on what they have watched and answer the questions, and then pose new questions to their groups or the entire class.

**Include an appropriate number of videos per module and sequence videos properly in a module.** Research (Beatty et al, 2019) indicates that student video viewing was lower following the initial part of a muti-video sequence for a topic. They suggested frontloading important content of a topic at the beginning of a video sequence or subdividing units into smaller units to include fewer videos in a sequence.

Instructional video is a dynamic and important content-delivery tool in online courses. This study surveyed faculty and instructional designers at a major state university to understand experiences, expectations, and perspectives from both groups. The study intended to improve mutual understanding between the two groups and to derive best practices concerning the production and deployment of videos in online instructions.
One limitation of the current study is the lack of perspectives of students, who are the ultimate users of instructional videos and should thus be the ultimate judge of the effectiveness of instructional videos. Future studies may need to further investigate students’ perspectives to afford a more comprehensive and more useful understanding of the whys and hows of effective production and deployment of instructional videos.

References


