HIGH VELOCITY VIDEOS: EXPLORING LIGHTBOARD TECHNOLOGY FOR ONLINE INSTRUCTION

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INTRODUCTION

You click “play” and a smiling librarian appears on your screen, facing you in front of a black background. As they explain how to narrow a research topic, the diagram they draw glows in neon colors, appearing mid-air in front of them. While it may seem like space-age technology, this “Lightboard” recording uses simple production methods to create a visually engaging instructional video. Although Lightboards were first designed for classroom faculty in STEM fields, librarians can take advantage of this tool to enhance their online teaching and connect with distance learners in a more engaging way.

WHAT IS A LIGHTBOARD?

Lightboards were first developed in 2011 by Professor Michael Peshkin of Northwestern University to provide an enhanced visual connection with engineering students watching his course videos. Rather than traditional instructional videos, which consist primarily of narrating slides or a screencast, Peshkin created a Lightboard to replicate his in-person chalkboard lectures for online learners (Peshkin, n.d.).

A Lightboard is a large piece of glass with LED lighting strips attached around the edges. In the recording studio, the Lightboard is mounted between an instructor and the video camera so that the instructor faces the camera directly, looking through the glass. Instructors use neon-colored dry-erase markers to write on the glass, as they would on a classroom whiteboard. LED lighting illuminates the writing, creating glowing colors that appear to float mid-air in front of the instructor. While the writing is initially backwards to a viewer, the text is flipped to the correct orientation by pointing a camera at a mirror or digitally flipping the image using video production software.
Figure 1: Using a Lightboard

Peshkin freely shared his Lightboard innovation online as open source hardware with detailed construction directions. Since then, instructors from around the world have created their own Lightboards, often modifying the technology for their own purposes. Based on Peshkin’s count, over 60 institutions, from research universities to community colleges, have adopted Lightboards (Peshkin, n.d.). At Grand Valley State University, Justin Melick, a Digital Media Developer, built a Lightboard for campus-wide use. Melick shared step-by-step directions on his website and detailed the costs involved, approximately $1,500 (Melick, 2017). While Melick’s Lightboard was first used by STEM faculty, Grand Valley librarians began experimenting with this technology in 2016. Currently, Melick records around 100 Lightboard videos per year, working with teaching faculty from 33 departments across campus.

As Lightboards become more common on campuses, librarians can take advantage of this technology for their instruction. Video tutorials are already a common tool for teaching librarians, whether for flipped classrooms or online courses (Obradovich, Canuel, & Duffy, 2015). Librarians use a range of production methods to create their videos, including screencasts, slidecasts, live action, and animation, with screencast videos being the most common (Martin & Martin, 2015). While screencasts can be effective for demonstrating process-based tasks, such as how to navigate a database interface, the instructor is limited in their ability to teach more in-depth concepts and personally connect to their viewers. Research has also shown that students perceive screencast videos as static and dull, and feel that they could have learned the material without watching the videos since the instructor was reading from a script or slides (Fung, 2017).

**Pedagogical Benefits**

Lightboard technology, compared to screencasting, allows for three key pedagogical benefits. First, the instructor appears on screen, much like an actual in-class experience. Particularly for distance students, being able to see their librarian helps to break down the barriers in online learning where “facelessness” can lead to disengagement (Marzelli & Dicker, 2005). When students are able to put a face with a name, they may be more likely to seek out library services and librarian assistance (Sachs, et al, 2013). Some screencasting software has attempted to mitigate this barrier by inserting a small video of the instructor narrating the content in the corner of the screen. However, studies have shown this format is problematic because it increases students' cognitive load as they try to simultaneously watch both the content of slides/screencast as well as the instructor’s face (Kizilcec, Bailenson & Gomez, 2015).

The second pedagogical benefit of Lightboard videos is that the instructor personally appears on the screen, and is able to teach naturally, using their hands to gesture and their facial expressions to convey emotion and meaning. Research shows that videos are more effective and engaging when viewers can see the facial expressions and body language of the lecturer (Guo, Kim, & Rubin, 2014). Pointing to the writing on the board, using hand motions to describe a concept, and smiling at the camera cues the viewer that the topic is interesting to the presenter. Next to words, facial expressions and vocal intonation are the primary sources of information when communicating with someone (Miller, 2005). Further, for hearing-impaired students, seeing the face of the instructor allows them to lip-read in addition to closed-captioning. While many of these advantages would be true of standard recorded lectures, Lightboard videos enable the presenter to face the camera with a chalkboard directly in front of them, rather than turning their back to the audience to use the board.
Finally, Lightboard videos are ideal for teaching more conceptual knowledge because this format allows the instructor to explain interrelated ideas and abstract concepts using visual representation and natural conversation. The Lightboard is one tool librarians can use to illuminate core concepts with an authentic performance and a unique delivery. For instance, librarians can use Lightboard videos to explain threshold concepts such as those in the Framework for Information Literacy for Higher Education (Association of College and Research Libraries, 2015).

In addition to pedagogical benefits, Lightboard videos also offer a technological advantage over screencasting in that recordings are quick to shoot and do not require much post-production editing. Creating original Lightboard videos also alleviates any licensing, copyright, and access issues that come with streaming videos in the classroom. To ensure a consistent and effective Lightboard video, some best practices are outlined below.

LIGHTBOARD BEST PRACTICES

Before recording a Lightboard video, plan what to say and what to show. Pre-production planning has been shown to be the most impactful step in creating an instructional video (Guo, Kim, & Rubin, 2014). The more time devoted to planning results in a more natural presentation with clear objectives. However, avoid striving for perfection when recording and allow for digressions, throat-clearing, eyebrow raising, eye contact, etc. Small idiosyncrasies are part of being human, so make instructional videos with this same natural approach; strive for authenticity and enthusiasm. Be sure to include an auditory narration for anything drawn on the Lightboard glass, in order to support learners who are visually impaired.

Another important tip is to keep the recording between five and seven minutes. If you need more time, try segmenting videos into shorter, five-minute clips. Engagement drops sharply after six minutes, so plan ahead to discuss only the most important concepts (Peshkin, n.d). Look directly into the camera and when writing on the board, look at what you are writing. This helps the viewer feel the instructor is speaking directly to them and is genuinely interested in their message.

Erasing is slow and laborious on the Lightboard, and writing can also be time-consuming; so it is best to minimize the amount of it that you do. Write some information on the board before recording and plan ahead for erasing. Dry-erase markers can squeak on the glass surface of the Lightboard, so use a light touch and fresh markers to avoid these distracting sounds or try liquid chalk markers instead. Darker clothing works best in order for Lightboard writing to appear brightest, although completely black clothing may make you appear to be a floating head in front of the black background. Avoid text and logos on clothing, as this will appear backwards—the mirroring function only re-orient the text on the Lightboard glass.

CONCLUSION

As online and blended learning continues to increase and the flipped classroom model becomes practically ubiquitous, instruction librarians need be aware of all the tools available to help effectively teach in this digital environment. For those fortunate to have a Lightboard available on their campus, do not assume this technology is for STEM instructors only. Lightboard videos provide a visually engaging and pedagogically sound method of teaching students higher level information literacy concepts that students can view, whenever and wherever is most convenient. Consider taking advantage of this technology to connect with distance learners in a more meaningful way.

REFERENCES


