

RETHINKING THE ONE BUTTON STUDIO: AN ALTERNATIVE SOLUTION

Sarah McCorkle¹ & Jesse Strycker²

¹Texas A&M University; ²Ohio University

This design case focuses on the development of an alternative to Penn State's One Button Studio, but with a do-it-yourself mentality and a substantially smaller budget. The development of our one button video kiosk began as a class project but is part of a larger design-based research project. Video production is not something that all faculty, staff, or students are comfortable with. Our one button video kiosk is intended to minimize barriers and concerns with such productions by helping users produce video content as quickly and easily as possible. The case focuses on the design, development, and initial testing of the kiosk. By freely sharing these details, it is the hope of the authors that readers will join the conversation by sharing their revisions or new designs for such kiosks or alternative solutions.

Sarah McCorkle is a clinical assistant professor of Learning Design & Technology and director of instructional design for distance education in the Department of Educational Psychology of the College of Education & Human Development at Texas A&M University. Her research interests include Faculty Development, DIY Educational Technology Solutions, and Distance Teaching and Learning.

Jesse Strycker is an assistant professor of Innovative Learning Design & Technology in the Educational Studies department of the Gladys W. and David H. Patton College of Education at Ohio University. His research interests include Technology Integration, Virtual Learning Environments, and Innovative Pedagogies and Pedagogical Support Spaces.

Copyright © 2021 by the International Journal of Designs for Learning, a publication of the Association of Educational Communications and Technology. (AECT). Permission to make digital or hard copies of portions of this work for personal or classroom use is granted without fee provided that the copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page in print or the first screen in digital media. Copyrights for components of this work owned by others than IJDL or AECT must be honored. Abstracting with credit is permitted.

<https://doi.org/10.14434/ijdl.v12i3.30847>

INTRODUCTION

The One Button Studio (OBS) system was introduced by Penn State (The Pennsylvania State University) as an accessible method of recording video for faculty not accustomed to video production. The concept of the OBS is rooted in its simplicity of operation. When the presenter enters the OBS, they insert a flash drive into a console that turns on pre-set studio lighting and activates a professional-grade video camera. With the press of a single button, the presenter starts and stops video recording which is in turn saved to the flash drive. Although a "one-button" approach to video production provides a lower technical point of entry for faculty, staff, and students to produce quality media, the price tag of an OBS may prevent universities from building one of their own, as OBSs can cost upwards of \$7,000 (USD) (The Pennsylvania State University, 2013).

This design case explores the design of a one button video kiosk alternative, inspired by the design and function of Penn State's open-source design. The one button video kiosk does not rely on a professional video studio and associated equipment, but rather consumer-grade equipment for the production of web-quality video, suitable for online instruction. It is the authors' goal to document a design inspired by the OBS's ease of use, but with a focus on affordability, while still allowing faculty to produce videos of reasonable quality for online distribution to their students.

BACKGROUND

Beginning as an advanced seminar project, the one button video kiosk is the focus of an ongoing design-based research project. This design case addresses: 1) the motivation to construct the kiosk, 2) how the kiosk was constructed, 3) how the kiosk is used, and 4) initial usability testing results. It is hoped that other instructional designers and faculty will use this design case as inspiration to develop, refine, and report on their affordable one button alternative and minimalist video production solutions. The description of the design case may also be of interest to those who do not aim to develop video solutions.

Author 1 was a doctoral student when the idea for the one button video kiosk was brainstormed, designed, and developed. It was her final project for an advanced seminar that focused on design-based research projects. Instructional technology graduate students in the seminar and program provided early feedback on initial designs of the kiosk and were also some of the first people to try it out in early iterations. She had identified a need for low-barrier video production solutions after providing instructional design services to faculty designing online courses in the college. These faculty members were reliant upon the services of a multimedia development department on campus for the production of their online course videos. The timeline from recording to receiving a finished video from the multimedia development department was two weeks or more, which limits their use in intensive seminars or other limited meeting courses (e.g. minimesters). Author 1 had previously developed a low-cost, do-it-yourself (DIY) Lightboard design (McCorkle & Whitener, 2020) and continued this area of inquiry into the present design study. Her interest in supporting faculty development and providing affordable solutions to schools were also driving factors in the kiosk's design and development.

Author 2 was the faculty member leading the advanced seminar where Author 1 first conceived of the one button video kiosk. Through the use of his own professional development funds, he was able to help support the development of the kiosk into a more complete prototype. He is leading more of the long-term, design-based research project. Author 2 also has a history of DIY solutions to support K-12 teacher and faculty development.

College of Education faculty and staff were passive stakeholders in that they saw some demonstrations of the kiosk during presentations on the use of video to support teaching and learning. The kiosk had not been fully advertised to faculty prior to the campus shutting down due to the COVID-19 pandemic.

NEED FOR A SIMPLISTIC SOLUTION

Although not everyone can commit to the capital investment associated with an OBS, the use of video in teaching and learning does have its merits, and seeking solutions to faculty barriers to video production is an important aspect of supporting online students.

The slow adoption of faculty video production was observed by Baltimore (2017) despite the availability of consumer-grade solutions for producing videos in one's home or office. Suggesting a dedicated video studio as the solution to this problem, Baltimore described efforts for providing space and staffing, as well as faculty development opportunities, in the production of online faculty videos. Although a suite of video production services and support staff do, as was also noted by Baltimore, have better production value

than the typical "talking head" style associated with webcam video, a studio-based solution requires additional equipment and human resources to maintain. Though the faculty development efforts described by Baltimore are admirable, such initiatives target the most motivated faculty and those with the technology self-efficacy to undertake the task of video production completely on their own or with minimal instructional support staff intervention.

Angolia and Pagliari (2016) position faculty video production as an important factor in developing an online course. Popular software used to produce online videos can require a significant time investment in learning how to use the software, producing the video content, and maintaining the video collection over time as the course content is revised. Faculty may have neither the time nor the ability to produce video content with such software, and instead seek "less time-intensive approaches" (Angolia & Pagliari, 2016, p. 8) such as classroom video capture which produces a video with a run-time equal to the duration of a class period. Angolia and Pagliari, much like Guo, Kim, and Rubin (2014), acknowledge empirical evidence which demonstrates clear, concise videos of shorter duration are more effective for student learning.

In the search for less formal solutions, participants in Newton, Tucker, Dawson, and Currie (2014) utilized the classroom capture style of video production as a less sophisticated, yet more approachable method for producing online faculty videos. In their case study, faculty participants explored combinations of video equipment and software to capture their classroom lectures with the goal of convenient video production. Although enterprise solutions for campus-wide lecture capture video production were available on the authors' campus, they elected to explore and construct portable, do-it-yourself solutions. Challenges identified by the authors included opportunities for error when using capture software due to the number of configuration options available, high definition video requiring compression hardware or software, and time for video preparation and file transfer tasks.

CHALLENGES TO IMPLEMENTATION

The One Button Studio, introduced by Penn State, has been adopted in 36 countries as an accessible method of faculty video production without the steep learning curve often associated with other software (Smerker & Berg, 2017). A full description of the OBS is available on the One Button Studio website (<https://onebutton.psu.edu>). The OBS was identified by Schuck, Wainscott, Church-Duran, and Del Bosque (2017) as a solution to fulfill recommendations from a faculty technology advisory committee, which had identified a lack of faculty video production support on their campus. The OBS was also employed by Girven (2016) to support faculty and students in a university library. Although the OBS provides a

low technology barrier for the faculty and students utilizing the equipment, Girven notes that experienced technology staff members were required to set up the OBS equipment.

Technical expertise is required to deploy an OBS, following the instructions provided in Penn State's open-source *One Button Studio Setup Guide* (The Pennsylvania State University, 2018). An online community, sponsored by Penn State's Advanced Learning Projects, provides a space for discussion on OBS topics as well as tips for troubleshooting equipment (www.yammer.com/onebuttonstudio). Smerker and Berg (2017) have shared a support model for sustaining OBS and maintaining their associated equipment. Although the OBS open-source setup guide and community of support are commendable, the cost of the OBS and the technical expertise required for setup and maintenance may be unattainable for some educational institutions, colleges, and K-12 schools.

Although the OBS design allows some modifications to hardware selection and cost, the open-source OBS software was programmed for specific models of video and lighting equipment. For example, the Blackmagic video encoder retails for approximately \$400 and the Indigo lighting software retails for approximately \$150. In addition to the video and studio equipment, a dedicated space to house the OBS may require renovation and electrical modifications to campus buildings. The *OBS Studio Equipment Guide* provides a total cost of \$7,220 for lighting, camera, audio, computer, and associated mounting and presentation equipment. (The Pennsylvania State University, 2013).

"ONE BUTTON" VIDEO KIOSK

The design of a one button video kiosk (see Figure 1), inspired by Penn State's OBS, relies on consumer-grade equipment and a do-it-yourself approach, rather than professional-quality video equipment. Penn State's open-source software was written specifically for the Blackmagic Video Encoder it makes use of, which is an expensive piece of hardware. For this reason, Penn State's open-source software was not used in this design, but rather the design is intended to mimic the functionality and ease of use of the OBS system.

The kiosk's design and development aim to meet two goals: 1) Deploy a system in line with the authors' technical abilities and limited funding; and 2) Increase the college faculty's autonomy in the production of online course videos, while decreasing their reliance upon the university's multimedia development department.

Kiosk Enclosure

The enclosure selected for this design was a repurposed classroom multimedia cabinet with a locking door. Casters were added to the bottom of the cabinet for easy transport.



FIGURE 1. The complete one button video kiosk prototype being tested in our experimental technology lab.

The monitor and attached three-point lighting are mounted to the top of the cabinet, as is the "one-button" television remote and USB enclosure. Although the laptop and cables are hidden inside of the locked cabinet, a bottom drawer remains unlocked for storage of the foot pedal during transport. With the kiosk being repurposed from university surplus, the cost was zero. The casters were purchased in a set for \$16.99.

Lights

The design uses a three-point lighting scheme, common in video production. In a three-point lighting scheme, lights are placed on each side of the subject, illuminating the left and right sides of the face. A third light is positioned above the subject to illuminate the top of their head and face.

When appropriately positioned, three-point lighting should prevent shadows from being cast across the face and around the subject's eyes, nose, and chin, resulting in a more natural and attractive appearance in the video recording.

The lights selected for this project were USB-powered LED light bars often used to illuminate closets and cabinetry in one's home (see Figure 2). Each light is connected to an un-powered USB hub to facilitate connecting to the television's

single USB port (see Figure 3). Because the one button video kiosk is recording a subject standing within proximity of the camera, traditional studio lights for videography are not required. Further, traditional studio lights require an AC plug drawing power from an electric receptacle whereas the LED lights we selected are powered by USB to complement the “one-button” design scheme. It should be noted that, when selecting USB-powered LED lights, the lights should power down once power is lost. Rechargeable LED lights with a battery backup should be avoided to maintain a “one-button” design. The LED lights should have a manual, binary switch for turning the lights on and off, rather than a remote control or keypad. A light ring was also tested in early mockups of the kiosk, but the ring could not be set to power on at the same time as the other LED lights. While this additional click was not overly cumbersome, it kept the kiosk from being a single button and was thus removed. The three sets of lights cost a total of \$47.94.



FIGURE 2. An example of one of the three USB lights used with the kiosk, selected for this project based on the binary switch. The switch remains in the “on” position at all times, allowing the lights to be powered down when power to the kiosk is lost.

Monitor

The monitor serves three purposes: powering the LED lights, serving as a “confidence monitor” and visual reference as to where the subject should stand and position themselves in front of the camera, and providing a user-interface to the one button video kiosk system (see Figure 4). Priority should be focused on how the LED lights function when selecting a monitor. LED lights should illuminate when the monitor is turned on and stop illuminating when the monitor is turned off, in line with the goal of a one-button interface.

A computer monitor was initially used for the kiosk, but we found the LED lights remained illuminated when the monitor was turned off. After finding it difficult to locate a computer monitor which did not continuously carry power to the USB when the monitor was turned off, we began experimenting with modern flat-panel televisions, which only power USB ports when the television is on. Another difficulty experienced in the selection of a monitor was finding a television that carried sufficient power to the USB to illuminate the LED lights. We tried plugging the LED lights



FIGURE 3. The use of an unpowered USB hub was necessary to connect all three USB lights to the single USB port on the back of the television. The lights are powered down when power to the kiosk is lost.

into the USB ports on three older, inexpensive television models (Emerson, Sanyo, and Toshiba). When powering the televisions on, the LED lights would illuminate briefly, then fail. We eventually located a newer, better-quality television model (Sony) which performed consistently in powering the LED lights off and on, in sync with the television's screen. The television used was an extra one borrowed from the first author's home, keeping the cost at zero.

One Button and Flash Drive

The television remote control serves as the "one-button" in our one button video kiosk design, as pressing the power button will illuminate the three-point lighting and power the monitor to provide a user-interface to the kiosk. The television remote control is encased in a plastic shell and provides user access to only the power button on the remote. This limits the opportunity for other buttons to be pushed and further emphasizes the "one-button" nature of the kiosk. A USB extender cable is plugged into a computer housed inside of the kiosk. The female end of the cable was also added to the plastic shell encasing the television remote. Instructions are affixed to the kiosk indicating that the user should insert a flash drive to save their recordings.

For cost-effectiveness, two small office supply bins similar in size to the remote were used in our design with the remote sandwiched in between them. A small hole was drilled in the corner of the plastic bin, with a thumbtack wedged between the top bin and the remote. Pressing down on the thumbtack makes contact with the remote's power button, starting the one button video kiosk interface and three-point lighting (see Figure 5). The remote control came with the television. The two plastic storage enclosures cost \$1.00. The USB extender cable was purchased for \$6.95. The thumbtack was one that was available on hand (see Figure 6).

Computer

While the one button video kiosk may eventually receive a permanent home in our video studio, the kiosk has been mobile during the demo and pilot periods (see Figure 7). A laptop computer was selected in this design as the laptop would remain powered on during transport to a faculty's office, conference room, or demonstration space. Once the kiosk arrives at its location, the kiosk is plugged into an electric receptacle. The laptop and rechargeable battery complement the simplicity of the design, as the laptop computer inside of the kiosk remains on and does not require any additional maintenance once it arrives at a new location.

The computer has no login or password required and all software necessary to run the peripheral equipment (such as the web camera) are programmed to run on startup. Screensavers, sleep mode, and power-saving options have been disabled. It should be noted that in the event of long

periods of non-use, such as during semester breaks, the one button video kiosk should be turned off in its entirety by shutting down the laptop to conserve energy. The laptop was owned by the first author, so the cost was zero. It will later be replaced by a computer saved from going to university surplus, thus the cost will remain zero.

Camera and Software

The camera selected for our design, for both its cost-effectiveness and quality, was a Logitech C920 Pro high definition web camera with a built-in microphone mounted to a flexible tripod (see Figure 8). Logitech Capture, the software used in this design, is also compatible with several higher-quality Logitech web cameras. The Logitech Capture software was selected for its ability to remember the custom software preferences each time the computer restarts. For example, our design adds a new folder to an inserted flash drive named *_One_Button_Video_* for convenience and simplicity in locating video files on the user's flash drive. Logitech Capture remembers this file path preference each time the computer is restarted. If a user forgets to insert their flash drive into the kiosk, the Logitech Capture software presents an error and will not record, thus preventing the user's footage from being saved to the computer's hard drive.

The Logitech Capture software has programmable keyboard shortcuts for common tasks, such as starting or stopping the video. In this design, we designated "r" as the keyboard shortcut for starting/stopping video recording. The web camera was purchased on sale for \$34.99 and the flexible mount for \$19.98.

Foot Pedal

The one button video kiosk design includes a USB foot pedal plugged into the computer which, when pressed, starts or stops the video recording (see Figure 9). Foot pedals are often used by those who play video games or provide transcription services, as the foot pedal can be programmed to a frequently used keyboard shortcut (such as "pause"). In our design, the USB foot pedal is programmed to the shortcut "r" to pair with the Logitech Capture software's command to start or stop video recording.

In contrast to the OBS design, the foot pedal provides a subtle method for stopping the video. While both the OBS and one button video kiosk provide a count-down on-screen before video recording, the OBS requires the subject to walk out of the frame during recording and press a button to stop the video. The foot pedal design of the one button video kiosk allows the subject to remain in place as they discreetly tap the pedal with their foot.

Our initial plan was to purchase the same programmable USB button listed in the OBS Equipment Guide (The Pennsylvania State University, 2013). This exact button was



FIGURE 4. The television used with the kiosk, showing the attached LED lights and its orientation at the top of the kiosk.



FIGURE 5. The television remote enclosure disassembled.



FIGURE 6. The remote control enclosure as it appears when ready for use, showing both directions and easy access for users to plug in their flash drives.



FIGURE 7. A look at the laptop currently powering the kiosk. As can be seen, there is space for placement of a regular desktop computer in later iterations of the design.

listed as out of stock at our retailer, as it was considered an older model. The in-stock model was a wireless USB version with no cord. We weighed the pros and cons of a wireless button. The presenter could remain on screen and untethered from the kiosk as they pressed the button to stop recording, however, there was a chance that a forgetful presenter could leave the room with the button at the end of their session. As we shopped for other corded button options, we continued to think through our design and the presenter's on-screen presence. A pedal controlled by one's foot would go unnoticed on screen, and a wireless button would have to be held in one's hand for the duration of the recording. Placing the wireless button in a pocket could also restrict the movement of a presenter by keeping one hand in a pocket or lead to an unusual ending to the presentation and the presenter reached for the button. For these reasons, we selected the foot pedal interface. The foot pedal was purchased for \$23.99.

USER INTERFACE DESCRIPTION

The user approaches the one button video kiosk with their flash drive. By pressing the *power button*, the one button video kiosk is activated: the three-point lighting is illuminated, and the monitor powers on. The user *inserts their flash drive* in the USB port, located directly next to the power button.

With the flash drive inserted and the kiosk powered on, the user is ready to record their video. The monitor provides a real-time view of their on-camera presence. The user can move towards or away from the kiosk, or side to side, as they position themselves for recording. Once satisfied with their on-camera presence, the user *taps the foot pedal* to begin recording. The monitor provides a count-down on screen, 3...2...1... and the recording is saved directly to the flash drive. Once the user has finished recording, they will *tap the foot pedal* to stop the recording. The user then *removes the flash drive* and presses the *power button* to turn off the kiosk. The video can be retrieved from the flash drive by navigating to a folder labeled *_One_Button_Video_*.

A USB extender cable is used to extend the length of the foot pedal so it may also be pressed with one's hand from a seated position. This consideration is provided for both the subject's preference (standing or seated behind a desk) or for those of different mobility needs (range of ability in one's foot or hand). The flexible mount used with the camera can be re-positioned based on the subject's standing or seated height.

DESIGN TESTING

Design testing was obtained through observation of users interacting with the one button video kiosk. Users were observed through direct observation and by answering

questions from those who visited a technology exhibit in the college.

Foot Pedal

Those who approached the one button video kiosk were informed through signage and verbal introduction to tap the foot pedal once to start the video. Despite these instructions, some participants instinctively held down on the foot pedal, much like one would do when driving a vehicle. It may be assumed that most participants interpret a foot pedal as an interface that requires constant contact pressure, based on prior experiences from driving a vehicle or playing a driving-related video game. Foot pedal interfaces are also used for: transcribing audio where the transcriptionist would tap the foot pedal to pause the audio being transcribed; playing guitar and pressing a pedal to change an effect; gamers program foot pedals to a frequently used shortcut that can be tapped for quicker reaction time and convenience.

When the foot pedal is held down on the one button video kiosk, the system interprets this as multiple start/stops and the software will continuously loop between these functions, resulting in dozens of one-second-long videos being saved to the flash drive. This action may also result in the system crashing, requiring an intervention from support staff to restart the system. Although the foot pedal presents an advantage over the original design of the OBS—the subtlety of pressing a button with one's foot to start and stop recording while on camera—the inclination to hold down on the foot pedal presented a user interface challenge that requires address through additional signage and instruction.

Lighting

There is an unfortunate history of “whiteness” surrounding photography in both analog and digital equipment. As point and shoot photography was becoming more accessible to consumers, the film was chemically optimized to produce consistent results when submitted to drug and department stores for processing. Kodak, the most notable consumer photography company associated with this phenomenon, produced “Shirly Cards” to be used for equipment calibration when processing film. Named after the original studio model Shirly Page, Shirly Cards featured pale, white women and were used as the standard to optimize both the chemical composition for developing film and recalibration of the equipment used for processing (del Barco, 2014). Assuming white skin as the standard in optimizing equipment has continued into the digital age. A popular YouTube video brought this issue to the national conversation in 2009 when two co-workers, one black and one white, demonstrated an HP web camera's inability to recognize a person with darker skin (HP Webcam Can't Recognize African-American Faces, 2010). Contemporary issues in Artificial Intelligence and facial recognition continue to highlight these problems brought about by a default assumption of whiteness in photography,



FIGURE 8. The web camera used for the kiosk. While it is currently positioned directly above the television, its flexible mount allows for its position to be moved in a variety of other orientations

as databases used to teach A.I. may not have a representative range of skin tones, but rather one saturated with data representing white skin (Lohr, 2018). Time investment in working around these rampant equipment constraints is a frustrating aspect of these DIY projects, but certainly worthy of the time required to get the project right.

The use of a single button to power the lights off and on was tested successfully. The positioning of the lighting, hue of the lighting, and brightness of the lighting was not successful. The space hosting the technology exhibit area was not uniformly lit, presenting sub-optimal performance conditions. The kiosk was located next to a wall mostly made up of windows. Approximately half of the participants who interacted with the one button video kiosk were people of color with a range of dark skin and hair tones. The consumer-grade web camera performed poorly under the exhibit area's lighting conditions in illuminating the person on camera. Further testing of lighting position, hue, and brightness was needed to accommodate a realistic range of skin and hair tones. Although the kiosk's camera performs well in a typical classroom or office environment, the poor performance in an ununiformly lit space demonstrated a limitation of the kiosk. However, this limitation is not discouraging as the



FIGURE 9. The kiosk's USB foot pedal partially extended from the kiosk. It can extend approximately six feet from the kiosk but can be extended farther through the use of USB extender cables.

kiosk is intended for use inside of a classroom or in a faculty member's office area.

CONCEPT AND FEASIBILITY TESTING

Online faculty and instructional designers associated with the college of education were invited to participate in an IRB approved study on the exploration of the one button video kiosk for recording short instructional videos. The participants in the study found the one button video kiosk to be a viable and useful solution to recording short, one-take videos for their courses. Some of their additional thoughts are shared below.

Video Quality

Initial participants found their videos to be satisfactory for online instruction. Video and audio quality were both clear. The video lighting was found to be sufficient, and the participants in the study represented a range of hair and skin tones. The initial testing, which had occurred in a space surrounded by a wall of windows, produced unsuitable video lighting conditions. Participants for the study used the one button video kiosk in a typical office environment with both

natural and fluorescent lighting. The one button video kiosk performed much better in a typical office environment, and participants responded favorably to the three-point lighting provided by the kiosk.

Ease of Use

Initial faculty participants found the one button video kiosk was easy to use and expressed interest in returning to record videos for other online courses. One participant, an instructional designer who often works with faculty teaching fully online courses, was confident that his faculty could record their videos on the one button video kiosk without his assistance. Another participant, a faculty member who typically relies on video production services provided by a multimedia development department on campus, described the system as both fun and easy to use. Faculty autonomy in the production of video, without the need to directly interface with computer software, is the benefit of this design.

Time Commitment

In addition to ease of use, the participants expressed time was another benefit to the one button video kiosk. Faculty who are teaching online in the college of education may choose to produce videos themselves or work with the university's multimedia development department. Multimedia staff schedule a day and time for faculty video production, record the faculty's video, edit the video, and upload the finished video into the faculty's online course. Due to the workload of the university's multimedia development department, this process can take approximately two weeks from start to finish. If faculty are unhappy with their on-camera presence, made a mistake, or dislike their video, they must schedule a new video shoot with multimedia staff. This timeline also impacts the ability of some faculty members to produce spontaneous videos for just-in-time instruction. The one button video kiosk provides a video file that can be reviewed by faculty immediately. If the faculty member is unhappy with their video, they can record a new one. Because the multimedia production unit on campus required a turn-around time of two weeks or more from the day of a faculty's video shoot through delivery of finished video footage, the participants found the video kiosk to be a better solution to their video needs.

NEXT STEPS

The one button video kiosk is stored in a conference room and faculty are welcome to reserve the equipment at any time. The equipment has not been advertised widely during phase one, and knowledge of its availability has been distributed through word of mouth by study participants.

The next phase of this design will implement the lessons learned concerning lighting (the kiosk should be used in a typical office environment with a combination of natural and

fluorescent lighting) and user interface (tapping the foot pedal rather than holding it down). The equipment's availability will be advertised throughout the college of education for further design testing and feedback collection. We hope to see evidence that suggests the kiosk brings our faculty greater autonomy in the production of online course videos and less reliance on the multimedia development department.

Having faculty members attempt to record themselves while working on a whiteboard or with other manipulatives will also be attempted. This will help us to understand how well the system records audio when participants are not always facing the camera. We will also learn more about the quality of the camera to provide a clear focus on both the presenter and other materials/information in the environment. We also anticipate learning more about the impact of reflective surfaces on recordings, as some whiteboards may produce a glare and some manipulatives may produce distracting reflections.

Additional areas of exploration will involve the combining of this project with past projects of both authors. One exploration will be to see if the kiosk can be used in conjunction with either an early prototype of Author 1's DIY lightboard (McCorkle & Whitener, 2020) or a new DIY lightboard version to promote the use of lightboards in future video production by faculty. Another exploration will be to see if the kiosk can be used in conjunction with Author 2's DIY wireless interaction kiosk (Strycker, 2021). The main purpose of Author 2's interaction kiosk is to demystify the use of certain technologies and make them accessible when the lab housing them is locked or otherwise not accessible.

CONCLUSION

The one button video kiosk appears to be a feasible design in replicating the functionality of Penn State's OBS but at a significantly reduced cost. The authors hope this design case serves to inspire others to produce kiosks or similar do-it-yourself solutions to expensive learning technology equipment. As the authors have done, by sharing information and details about their kiosks so that it can be freely replicated or modified (see Table 1), we hope that others will share their work to further inspire others to develop and/or refine their own freely shared solutions.

Initial results suggest the potential for faculty autonomy in video production. Faculty were pleased with videos produced on the kiosk and felt the quality was suitable for delivering content to their students. Future research will explore whether or not faculty who use the kiosk are less reliant on multimedia staff. We also believe a self-serve option such as a video kiosk has the potential to reduce the amount of time dedicated to video production in the college.

Although this project was developed before the COVID-19 pandemic, it has proven to be timely in its development.

MATERIALS	COST
Monitor / Television	\$0
Laptop	\$0
Kiosk Enclosure / Cabinet	\$0
Casters (4)	\$16.99
Lighting (3)	\$47.94
Unpowered USB Hub	\$6.48
Camera	\$34.99
Flexible Camera Mount	\$19.98
Foot Pedal	\$23.99
Button / TV Remote	\$0
USB Extender (2)	\$13.90

TABLE 1. Cost break-down for this iteration of the one button video kiosk.

As more instructors face a new reality of needing to teach online or at least in a greater hybrid capacity, there will be a need to increase instructor autonomy, such as reducing barriers to the production of instructional videos.

REFERENCES

- Angolia, M. G., & Pagliari, L. R. (2016). Factors for successful evolution and sustainability of quality distance education. *Online Journal of Distance Learning Administration*, 19(3), 1-19.
- Baltimore, M. L. (2017). Broadcasting education in the age of new media: Building multimedia products from the academy. *Research in Higher Education Journal*, 33, 1-11.
- del Barco, M. (2014, November 14). *How Kodak's Shirley cards set photography's skin-tone standard*. National Public Radio. <https://www.npr.org/2014/11/13/363517842/for-decades-kodak-s-shirley-cards-set-photography-s-skin-tone-standard>
- Girven, W. J. (2016). Special academic libraries and the millennial patron. *Journal of Library Administration*, 56(8), 1007-1017. <https://doi.org/10.1080/01930826.2016.1231551>
- Guo, P. J., Kim, J., & Rubin, R. (2014). How video production affects student engagement: An empirical study of MOOC videos. In *Proceedings of the First ACM Conference on Learning @ Scale* (pp. 41-50). Atlanta, GA. March 4-5, 2014. <https://doi.org/10.1145/2556325.2566237>
- HP webcam can't recognize African-American faces, users claim. (2010, March 18). Huffington Post. https://www.huffpost.com/entry/hp-webcam-cant-recognize_n_399221
- Lohr, S. (2018, June 8). *Facial recognition is accurate, if you're a white guy*. The New York Times. <https://www.nytimes.com/2018/02/09/technology/facial-recognition-race-artificial-intelligence.html>
- McCorkle, S., & Whitener, P. (2020). The lightboard: Expectations and experiences. *International Journal of Designs for Learning*, 11(1), 75-84. <https://doi.org/10.14434/ijdl.v11i1.24642>
- Newton, G., Tucker, T., Dawson, J., & Currie, E. (2014). Use of lecture capture in higher education: Lessons from the trenches. *TechTrends*, 58(2), 32-45. <https://doi.org/10.1007/s11528-014-0735-8>
- Schuck, B., Wainscott, S. B., Church-Duran, J., & Del Bosque, D. (2017). Creating a virtuous circle of student engagement with the tech corner. *Journal of Library Administration*, 57(5), 517-547. <https://doi.org/10.1080/01930826.2017.1326264>
- Smerker, N., & Berg, G. (2017). More than one button: Creating a successful and sustainable support model for the One Button Studio. In J. P. Johnston (Ed.), *Proceedings of EdMedia + Innovate Learning 2017* (pp. 350-355). <https://www.learnedtechlib.org/p/178483>
- Strycker, J. (2021). When the experimental lab is itself the experiment: Making someone else's design work. *International Journal of Designs for Learning*, 12(2), 59-78. <https://doi.org/10.14434/ijdl.v12i2.29132>
- The Pennsylvania State University. (2013). One Button Studio equipment guide. <http://onebutton.psu.edu/wp-content/uploads/sites/1698/2013/11/OBS-Equipment-Guide.pdf>
- The Pennsylvania State University. (2018). One Button Studio setup guide. Retrieved from <https://onebutton.psu.edu/setup/>