Distance Education in the Time of Coronavirus: Quick and Easy Strategies for Professors

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ABSTRACT: A worldwide pandemic is forcing schools to close their doors. Yet the need to teach students remains. How can faculty – especially those who are not trained in technology-mediated teaching – maintain educational continuity? This Essay provides some suggestions and relatively quick and easy strategies for distance education in this time of coronavirus. While it is written from the perspective of teaching law school, it can be applied to teaching other humanities such as philosophy, literature, religion, political theory, and other subjects that do not easily lend themselves to charts, graphs, figures, and diagrams. This Essay includes an introductory technology section for those techno-phobic faculty who are now being required to teach online, and it concludes with five straightforward steps to start teaching online quickly.

KEYWORDS: teaching, pedagogy, distance education, online learning, online instruction, technology-mediated education, technology-mediated instruction, synchronous, asynchronous, instructional video, virtual classroom, COVID-19, coronavirus

For a quick (13 minute) video summary of the main points in this Essay, go to https://youtu.be/vGT1E3gBJKg.

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I. Introduction

Distance Education, also known as online learning and technology-mediated instruction, is defined by the American Bar Association as any course in which students are separated from the faculty member or each other for more than one-third of the instruction and the instruction involves the use of technology to support regular and substantive interactions among the students and between the students and the faculty member. Faculty in my field of law and in many related fields are now being required to teach undergraduate and graduate courses via distance education, even though they may have little or no training in how to perform technology-mediated instruction. This Essay is meant to help such faculty quickly plan and deploy an online learning module.

While the relative merits of distance and traditional education are the subject of much discussion, online learning is rapidly becoming the only choice, as many schools are mandating online learning in all classes because of the SARS-CoV-2 novel coronavirus. Even campuses that have not seen any cases of COVID-19 (the disease that is caused by SARS-CoV-2) are prophylactically cancelling on-campus instructions. If you teach at one of the many colleges and universities that have cancelled on-campus classes and are requiring instruction to continue online, then distance education is not a consideration but a necessity. The question is not whether, but how, to do it – fast.

I am law professor and not an expert in online pedagogy, but I spent this past summer taking coursework, studying online learning, creating an online learning environment for teaching Corporations Law, and thinking critically about online pedagogy. I am currently teaching Corporations Law in a "hybrid" format (2/3 in person, 1/3 online) this semester (Spring 2020) and will transition it into a fully online format for the Fall 2020 semester. Over the summer I also developed a "casebookless" Contract Law class, in which all the students' materials are on Blackboard, a tool that allows faculty to add resources for students to access online. I learned what worked well and what did not. Since I found myself on the eve of the coronavirus pandemic well prepared to continue teaching online, I thought it would be beneficial to spend my time helping others teach online effectively and efficiently.

Not everything one reads about best practices in online education are applicable to teaching law courses and other humanities subjects like philosophy, literature, political theory and religion. When I was researching online pedagogy, I found that most materials applied to teaching sciences and engineering subjects that used diagrams and simple images to describe "how things work," whereas humanities subjects are more verbal and less visual. This Essay hopes to fill a bit of that gap by coming from the perspective of teaching law and other humanities online.

Moreover, achieving best practices in online education is time consuming and resource intensive. It takes hundreds of hours to properly design and implement an online course. You do not have hundreds of hours. A state of emergency has necessitated a quick response. Unapologetically, this Essay is not about doing things the "best" way, but rather creating the best student experience possible amid an incredibly turbulent time. In that vein, the shortest possible answer to the question of "how can I get my class online quickly?" is to do three things:

1. Subscribe to a video conferencing platform like Zoom, GoToMeeting, or WebEx (your institution might have a subscription already),
2. Schedule regular class meetings and email your students with instructions about how to log onto the virtual classroom and when live sessions will be held, and
3. Familiarize yourself with the tools of the video conferencing environment so you can: (a) ensure your audio works so students can hear you, (b) share your screen so students can see you or your presentation, and (c) chat with students online so you can address their questions.

For the truly techno phobic, Zoom and some other teleconference software can be installed and run from an iPhone or iPad very easily. This will produce the lowest quality result, but it should achieve the bare minimum necessary to talk with students online. For those who are OK with technology but need to get started on converting their in-person class to an online class straight away, the TL; DR is:

- You must choose a "synchronous" (live) or "asynchronous" (recorded) format.
- Synchronous distance education (e.g., virtual classrooms):
    - Requires a good microphone and webcam, high-speed internet access, and a subscription to a teleconferencing platform (e.g., Zoom),
    - Requires little new prep time, but must be scheduled periodically, and
    - Is more efficient for one-time online teaching, especially for small classes.
- Asynchronous distance education (e.g., videos):
    - Requires a computer (and an instructor) that is capable of video editing or access to cloud-based video editing and distribution software,
    - Requires substantial preparation time to create good content, and
    - Pays dividends over time and scales well for larger classes.
- The online learning environment (e.g., Blackboard, Canvas) should reflect the nature of the instructional delivery (live or videos):
    - Assignments should be due before live classes to ensure students are prepared to discuss the topic online, and
    - Active learning experiences (e.g., writing) should be required of students after receiving passive online content (e.g., videos) to improve understanding.

For more detail – especially for those who want to create videos for students to watch – read on. Part II discusses technology tools (hardware and software) that are necessary or helpful for online educators. This part is written to help the techno-novice get started and can be skimmed or skipped by some more tech-savvy readers. Part III focuses on how to create "passive" learning materials such as videos, and how to create a virtual classroom online. Part IV discusses how to deploy passive learning material in juxtaposition with active learning experiences in an online learning environment. Part V concludes with five straightforward steps on how to get online.

II. Prepping: Tools for Distance Educators

While many coronavirus preppers are stockpiling hand sanitizer, face masks, and even toilet paper, universities and law school professors might want to stock up on the critical tools for effective distance education. To teach online, you will need at least three things: a computer, a microphone, a webcam, and some software.

Note that you need more hardware and software to teach asynchronously (by creating videos) than by teaching synchronously (by hosting live virtual classes). The realities of your access to and comfort with using technology should inform whether you decide to teach synchronously or asynchronously.

A. Computer

Hopefully you already have access to a computer. If not, I suggest purchasing the least expensive Apple MacBook that is new in the box and of current model year. That will ensure you have the minimum hardware specifications to create the online learning materials discussed in the next section. Moreover, every new Apple computer comes with iMovie, which you can use to edit instructional videos. If you do not have an Apple computer, you may have to purchase video editing software, which is discussed in the Software section below.

If you have an older computer, you may need to upgrade it. Working with video content is computer-memory intensive, and older computers may not have enough working memory or long-term memory to handle streaming or editing videos.

An early warning sign that your computer does not have enough working memory is that it will hang, freeze, and stall when you have many web pages open at once. Fortunately, most computers are upgradable. Bring the computer to Best Buy and ask them to install more "RAM" (working memory). Video editing (for asynchronous content) requires about 16 GB of RAM, whereas video conferencing (for synchronous content) requires only about 4 GB. Expect to spend about $10 per GB of RAM that you have installed.

In addition to working memory, video editing also requires long-term memory. Video files are large, and you may have to purchase a new “hard drive” on which to store them. Adding long-term memory is even easier than adding working memory. You simply need to purchase an “external solid-state drive.” These external drives come in different sizes, and 250 GB is more than enough to get started with teaching online. There are many options, but my favorite is the Samsung MU-PA500B ($89).

Before you purchase an external drive, make sure that your computer has the correct connection ports. The two main types of ports for peripherals like external drives, microphones, and webcams are “USB-A,” which has and flat rectangular port, and “USB-C” ports, which are smaller and oval. Almost all desktops and older laptops have USB-A ports, but newer laptops (including all new MacBooks) have “USB-C” ports. If you have only USB-C ports, you will need a “dongle” or adapter. Apple sells a “USB-C to USB adapter” for $19. If you plan to plug in more than one device, you will need a “USB-C hub adapter,” such as the Anker 5-in-1 USB C Adapter ($45).

Figure . USB Connections. “Male” USB A on the left, “Male” USB C on the right, and “Female” USB port in the middle. Note that you would need an “USB-C to USB-A adapter” to plug the USB-A cable into this computer.

Laptops are especially useful for creating online content because they usually have a built-in microphone and webcam. If you have a desktop computer, you will need to purchase these items. Even if you have a built-in microphone and webcam, you may want to purchase stand-alone units because they offer greater quality and flexibility. I strongly recommend purchasing a stand-alone microphone, but the webcam is less vital.

B. Microphone

You will need a microphone to record audio. A microphone is the most important piece of hardware because your voice is your most powerful online education tool. It is more important for students to understand your words than to see your face. It is also much easier to create and edit audio content than video content.

Audio is so important that you may want to invest in a microphone even if you have a laptop with one built-in. In my experience, students are quickly annoyed and distracted by low quality audio, and the microphone built into many laptops is barely serviceable. Moreover, the audio quality is highly dependent on the position of the microphone relative to your mouth. You will get better results by positioning the microphone close to your mouth, something you cannot do with the built-in microphone in your laptop. However, your laptop microphone will work if that is all you have.

If you choose to get a microphone, your best bet is purchasing a "USB boom microphone headset," which has a mic on a stalk integrated with headphones, like what you see people in call centers using. A Google search for that term will reveal numerous suitable products at a variety of price points. You should not need to spend more than $40 for this hardware. I recommend the USB version because it will be easier to verify that it is properly connected to your computer via "control panel" (on Windows) or "system preferences" (on MacOS).

For those who are seeking a high-fidelity microphone, consider the Shure MOTIV series of USB-connected condenser microphones ($150+). These studio-quality mics capture surround sound audio at a wide range. They are suitable for capturing interviews and conference room discussions. Another good choice recording audio is the Blue Yeti USB microphone ($129-150). You may need to use a pop filter when speaking into a high-fidelity condenser microphone as it will pick up subtle nuances in sound.

Figure 1. Condenser microphone (left) and boom microphone headset (right).

C. Webcam

Webcams are essential for “synchronous” online teaching (where you are talking with students online in real time), but not essential for “asynchronous” online teaching (where you record videos for students to watch later). How can it be possible that you don’t need a camera to record a video?

You can record a video simply by speaking over your PowerPoint slides. This “voice-over-PowerPoint” method is surprising effective. As much as you might think capturing your face while giving a lecture aids student learning, it can actually cause “cognitive overload” when students are required to read text, hear spoken words, and see a face, especially when all three are communicating different information. That said, you will want to have a webcam turned on when hosting a “virtual class” on a platform like Zoom or GoToMeeting.

Most laptops and “all-in-one” desktop computers come with a built-in webcam, but you may want to purchase another one separately, so you have more flexibility with positioning it. If you use the webcam on your laptop, students will be staring up your nose unless you elevate your laptop on top of books.

Webcams can be purchased at many venues online and locally at stores like Best Buy, Staples and Walmart. I prefer the Logitech C920 ($50-75) in part because it has good video quality, decent audio quality, a built-in clip that allows it to be perched on top of your monitor (if you have a desktop), and a screw hole to mount it on a stand (if you have a laptop). You can purchase a cheaper webcam, but I recommend that you find one that has those features. Almost all webcams are “USB-A”– be sure you have the right ports or purchase an adapter.

D. Software

Many universities have licenses for video recording software. Consult your IT department first to see what is already available to you. However, even without the proper software or communication with IT, you can get started creating online content with software you already have. Your software options will be different depending on whether you have a Windows PC or an Apple computer running MacOS.

1. Windows

There are many versions of Windows, but the most recent and common is Windows 10. If you have that up-to-date version, you can use the Voice Recorder app. Try searching for the app by clicking the Windows icon in the lower left of your screen and typing in

"Voice Recorder." If it does not come up, go to the Microsoft Store and search for it there. The software is free, but you may have to create an account to download it.

Windows also has a built-in feature called "Game DVR" that allows you to record your screen and overlay your voice,[2] which can be useful if you want to show documents to your students. Windows does not have a built-in video recording software, but there are many free and paid versions online.

2. MacOS

MacOS comes with free software that makes recording audio easy. Keynote, Apple's free presentation software, allows you to "Record Slideshow," and QuickTime, another free Apple software that is bundled with MacOS, allows you to "Record New Audio." QuickTime also allows you to "Record New Video," so you can make a "talking head" video easily on MacOS using built-in software.

Once you have recorded audio or video on MacOS, you can easily edit it using other bundled software. GarageBand is designed for editing audio, and iMovie is for editing video.

3. PowerPoint

There is a vast array of downloadable (free and paid) and subscribe-able (software-as-a-service) options for interactive teaching. This Essay cannot canvas them all, but rather presumes that most teachers will use the most common presentation software: Microsoft PowerPoint.

The newer versions of PowerPoint for both MacOS and Windows allows you to "Record Slide Show." This is the easiest way to create voice-over-PowerPoint slides, and the process is detailed below. PowerPoint does not allow you to capture your screen or your face, but that may not be necessary or even helpful for your pedagogy.

There are many more software options and hardware setups, but they are beyond the scope of this Essay.

[2] See Kevin Stratvert, How to Record Your Computer Screen in Windows 10, YouTube (March 4, 2018), https://www.youtube.com/watch?v=TOxzIeIUKjY

Figure 2. Video recording setup: webcam, condenser microphone with pop filter, lighting, MacBook Pro and 4K display.

III. Creating Audio-Video Content

University faculty already know how to create written content for students, so this Essay will not discuss creating texts for students to read. However, teaching online "asynchronously" generally involves some video content. Having videos for your students to watch is a good way to keep them engaged and relatively connected with the class and the professor.

Whatever content you record, keep it short. Aim for 5-minute "chunks" of content and never go over 20 minutes. Before you record your content, think carefully about how you can break up the material into its smallest component parts. Student attention spans are shorter online than in person, and many faculty members overestimate students' attention spans generally. Moreover, as discussed in Part IV, faculty should try to deploy written and audio-video (which are "passive" learning modalities) juxtaposed with quizzes, journal entries, essays, discussion boards, and other "active learning" content. To do this effectively, content must be short and to the point.

The easiest way to create content is simply to record audio using a clear, direct, and active voice, speaking into your microphone. Test your audio levels before recording by reading aloud a short news article, then listen to yourself. Was the audio clear? If not,

move the microphone closer to you and try again, as the microphone can pick up echo distortion when it is too far away. Was the volume too loud or soft? Adjust the input volume via your recording software or the system interface.[3] If you are making a distracting "pop" noise when you say 'P' sounds, move the microphone a bit to the side of your mouth, or purchase a "pop filter." Audio recordings are an effective way to convey information to students, so long as they are short (about 5 minutes) and followed by active learning exercises that require students to take notes during the recording and/or recall and use the information immediately after listening.

Audio content is easier to edit than video because listeners will generally not notice if you cut or paste content in an audio file. Unless there is noticeable and consistent background noise (which would itself greatly diminish the efficacy of the audio recording), audio editing software makes it easy to remove segments of audio seamlessly. On video, however, such "jump cuts" are readily visible. Unless you deliberately use jump cuts for visual impact,[4] they are distracting to viewers.

There are two simple formats for creating video. The first, and recommended, format is Voice-over-PowerPoint. This is simply the instructor's voice plus PowerPoint slides. Instructors can the read text on slides, or (better) they can show visuals and images, or key words and short phrases while discussing related concepts. Avoid the temptation to put a lot of words on the slides unless you are going to read those exact words. It is confusing for students to see words while hearing others.

The second format is called the Talking Head. Generally, this format is easier to make but less effective for learning, True to its name, this is simply a video of someone talking. This approach is useful in limited contexts like introducing students to an online course, sharing a personal thought, and establishing credibility. But studies have shown that the Talking Head does not necessarily improve student learning vis-à-vis audio alone. Use Talking Head videos sparingly and consider creating audio-only content (also known as a "podcast") to transmit substantive information if you are not comfortable working with PowerPoint.

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[3] To adjust the volume input level, on a Windows computer, right-click the Sound icon in the taskbar (represented by a speaker icon), click "Sounds" (on Windows 10) or "Recording devices" (on earlier versions of Windows), navigate to the Recording tab, right-click on your USB microphone (which should have a green check mark next to it – if it does not, click "Set Default" before moving on), click "Properties," navigate to the "Levels" tab, and adjust the Microphone level as needed. See Kevin Arrows, How to Turn Up Mic Volume in Windows 10, APauls.com (March 2020), https://appuals.com/turn-mic-volume-windows-10/. On MacOS, open System Preferences (the gear icon), click "Sound," click "Input," ensure your USB microphone is selected, and adjust the input volume as needed. Once you have set the volume to the correct level, make a note of that level so you can record all your materials at the same volume level.

[4] For a masterclass in the use of jump cuts, see Jean-Luc Godard's class firm, Breathless.

In addition to creating new videos, you might be able to repurpose existing ones. Finally, you might decide that creating videos is too onerous and simply opt to host synchronous "Zoom" sessions instead.

A. Creating a Voice-Over-PowerPoint Video

Voice-Over-PowerPoint (or Keynote) videos can be very effective when made properly. This requires three steps. First, create PowerPoint slides that are suitable for online learning – they will generally be different from slides that are suitable for in-class presentation. Second, script or create notes on what the voice-over should say. Third, record, export, and upload the presentation to a learning management system. If done properly, the resulting file will not need further edits in post-production, so you do not have to learn how to edit videos if you select this method and use it correctly. For an example of a voice-over-PowerPoint presentation, visit https://youtu.be/buw4bV8bA8Y.

1. Creating the Slides

PowerPoint slides for online learning may be different from the slides used in class. Remember, avoid wordy slides unless you plan to read those words verbatim. If the words on the screen and the spoken words are different, this can lead to cognitive overload, where students are confused about which information to process.

The simplest, but least effective, way to avoid cognitive overload is to simply read the slides verbatim. This is similar to an audio recording, but also gives your students an additional visual tool. This technique is the least work for faculty because it collapses the steps of creating the slides and scripting the voice over into one step. Moreover, this method is inherently ADA compliant, so it is not a bad choice when pressed for time or resources. But, since you are not conveying any different information by integrating voice or video, consider it may be more efficient just to create an audio recording and provide a written transcript.

A more effective presentation will use the slides to convey or reinforce key information visually that is not contained or emphasized sufficiently in the audio. There are several ways to do this. One is to show an image that substantially informs the viewer about the narration. For example, while discussing a case about a sub-contractor who was not paid for work completed, you might show someone working on a construction site. This may help students connect the verbal information to a particular idea.

However, visuals will backfire if the visual is not obviously related to the key concept that should be conveyed. For example, it would be a poor choice for a professor to show a picture of a cat hanging from a tree with a sign that says "hang in there" while discussing a particularly difficult concept in philosophy. Visuals that are unrelated to the

audio recording will confuse and distract students. They will be spending valuable cognitive energy wondering what the cat picture has to do with existentialism.

Another way to reinforce key information visually is to use key words. You can use PowerPoint's animation features to make certain key words larger, bold, or colored, while you are discussing the concepts related to that word. For example, in a lecture in which I introduce students to fiduciary duties, I have a slide with only two words: "Care" and "Loyalty," as the Duty of Care and the Duty of Loyalty are the main duties that directors owe to corporations. Both words are displayed in black text on a white background while I am talking about fiduciary duties in general. When I mention the Duty of Care, I employ an animation that makes the word "Care" larger and the word "Loyalty" grey. When I transition to the Loyalty concept, the animation reverses such that "Loyalty" become large and black while "Care" becomes small and grey.

As a general rule, you should not spend more than 1 minute on a single slide. Aim for 30 seconds per slide. Following this rule of thumb will help instructors keep slides (and videos) short and to the point.

Again, resist the urge to type blocks of text into your slides if you intend to speak different words. This will confuse, distract, and annoy students.

2. Scripting the Voice Over

Once your slides are developed, you must think about what you will say before you start recording your presentation. This "scripting" process can take many forms, depending on how comfortable you are with the material and how likely you are to ramble and digress from the lesson. If you are unfamiliar with the material, tend to ramble on, or insert unnecessary words like "you know," "like," or "um," then you should write a more comprehensive script. If you feel confident, you can write a looser script consisting of bullet points or notes.

One major advantage to recording a Voice-over-PowerPoint presentation, as opposed to a "Talking Head," is you can seamlessly stop and start recording, or edit out glitches and mistakes post-production, such that you have time to gather your thoughts and speak more succinctly through this method. This in turn means you might be able to get away with a looser script when recording via this method.

You can script using rules of thumb to keep slide display under 1 minute and presentation total length under 10 minutes: each video script should be no more than 1000 words, and there should be a section heading each 100 words. Each section heading represents one slide, and each script represents one video. Since the average person speaks at 100-130 words per minute, and since you should speak more slowly

for an effective voice-over-PowerPoint presentation, following these scripting rules of thumbs will ensure that your videos are of suitable length. When your script is complete either print it out or insert it into the "notes" section of PowerPoint so you can read it while you are recording your presentation.

3. Recording and Exporting the Presentation

Once you have your slides and script, you can begin recording. Most faculty will use PowerPoint for this, but Mac users could alternatively use Keynote. Keynote's voice recording is more flexible, but there are some issues that arise when one opens a PPTX (PowerPoint) file in Keynote.[5]

Keynote and PowerPoint both offer different ways in which one can review what was recorded and re-record some parts of the presentation without deleting other parts. In addition, both Keynote and PowerPoint allow you to make minor changes to the slides after recording but before exporting the presentation. This ability to review and revise part of a presentation during the production process makes both Keynote and PowerPoint superior to using Zoom, GoToMeeting, MS Teams, Panopto, MediaSite, and other screen-capture tools to record a presentation. The screen-capture tools do not so easily allow you to make minor changes while recording, and so errors are either memorialized or must be edited out in post-production using different software (such as iMovie or Final Cut Pro).

Keynote allows one to listen to what was just recorded and start re-recording from any point. This is extremely helpful if the recording faculty member, like the author of this Essay, tends to stumble on certain words when reading a script, or when the faculty member draws a blank when recording without a script. On Keynote, correcting the mistake is as simple as pausing the recording, rewinding the audio to the point before the error, and hitting record again. On PowerPoint, correcting an error requires the recording faculty member to stop recording and then re-record from the beginning of the slide. In other words, Keynote makes it possible to start over from any point, whereas PowerPoint requires restarting from the beginning of a slide. However, PowerPoint's slide-based recording is an advantage if faculty want to record a "stock" intro slide. This is easy on PowerPoint because the audio recording is attached to the slide such that you can move, cut, paste, and edit the slide order without changing what is recorded on each.

On PowerPoint, recording your voice over is easy. Simply click "Record Slide Show" on the slide show ribbon. That will launch "Presenter View" with a stopwatch running in the

[5] While PPTX (PowerPoint) files can be opened by Keynote, KEY (Keynote) files cannot be opened by PowerPoint.

upper-left-hand corner next to the “play/pause” and “restart” icons. If the stopwatch is not running, hit play to record. Then, simply speak your voice over into the microphone, advancing your animations and slides as you would in any presentation. If you make a mistake, simply hit the “restart” icon to start over on that same slide. If you do so, the other slides in your presentation will not be impacted.

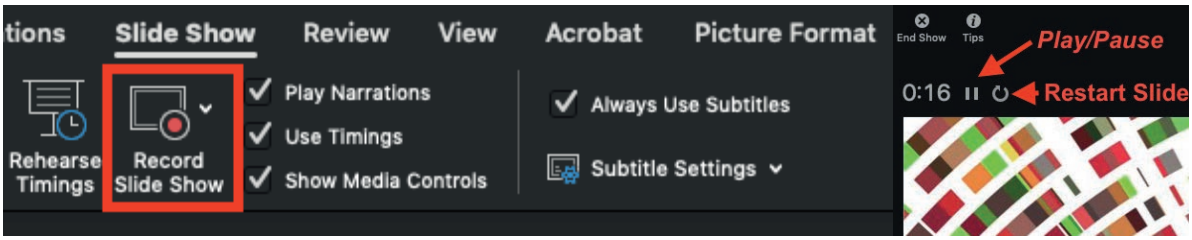

Figure 3. The "Record Slide Show" feature is located on the Slide Show ribbon in the latest versions of Microsoft PowerPoint. Once recording, you can play/pause your recording and restart recording for any given slide.

PowerPoint’s slide-based recording paradigm sometimes results in a glitch that can be easily fixed. As background, note that PowerPoint records audio for a slide separately from determining how long that slide will be displayed. In other words, a PowerPoint slide might attach 1 minute of audio, but could also be programmed to display for 30 seconds (in which case half of the audio would be cut off) or 2 minutes (in which case there would be 1 minute of silence after the audio and before the next slide appears).

The glitch occurs when PowerPoint fails to automatically connect the length of time that should be displayed in the slide to the length of the audio recorded. This happens frequently, and, when it does, the default is for the slide to be displayed for 5 seconds, which rarely coincides with the length of the audio recorded.

Fortunately, the fix is easy. First, go into “Slide Sorter” view, which can be accessed either by clicking the four-box icon in the bottom-right part of the screen or by clicking “View” → “Slide Sorter” from the menu bar. Doing so displays all the slides in the presentation and the number of minutes and seconds that each slide should appear. Identify slide(s) that have either no time or are obviously displaying the wrong time. Double-click on the slide with the wrong time. This will display the slide in Normal view. You should see a speaker icon in the lower right corner of the slide. Move over in the blank bar between the “Play” symbol and the “Back” symbol. This will show the seconds and minutes in the recording. Mouse-over to the right end of the bar to determine the total time of the audio recorded for that slide and make note of it. Then, navigate to “Transitions” and identify the “After” field. In this field, enter the time you noted. This will cause the slide to display for the exact amount of time that the audio was recorded.

Figure 4. PowerPoint "glitched" and did not record the slide-display duration on Slide 1. The speaker icon indicates there is some spoken text, but there is no time displayed next to the star.

Figure 5. You can determine the correct slide duration to match the audio by opening the slide, double-clicking the speaker icon, and moving the display bar to the right. Here, the total time for the audio is 24.41 seconds.

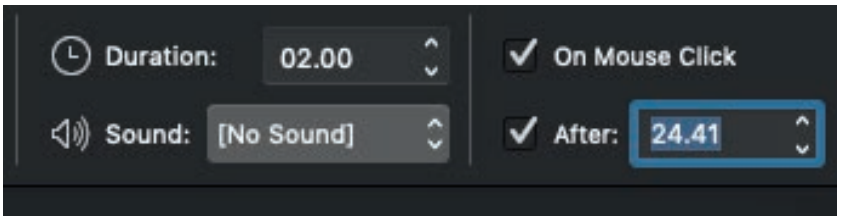

Figure 6. To fix the glitch, transcribe the total time into the "After" box located on the "Transitions" ribbon and make sure that the check box next to "After" is selected.

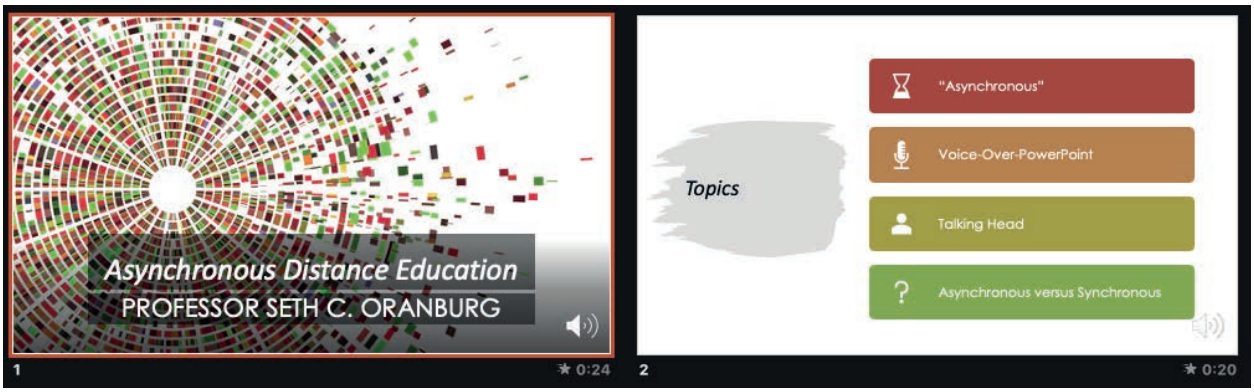

Figure 7. Return to the Slide Sorter view to confirm that the glitch was fixed.

When you have recorded all the audio for your presentation and confirmed the timings are all correct, you are ready to export the file. This process is simple. Go to File → Export (for PowerPoint) or File → Export To → Movie … (for Keynote). If you have the choice of file format to export, select "MP4" because this format is widely used and works with a wide range of devices. If you are doing post-production editing on MacOS, you can select "MOV" format (which is designed by Apple for use with QuickTime). Fortunately, most online learning platforms can handle either format.

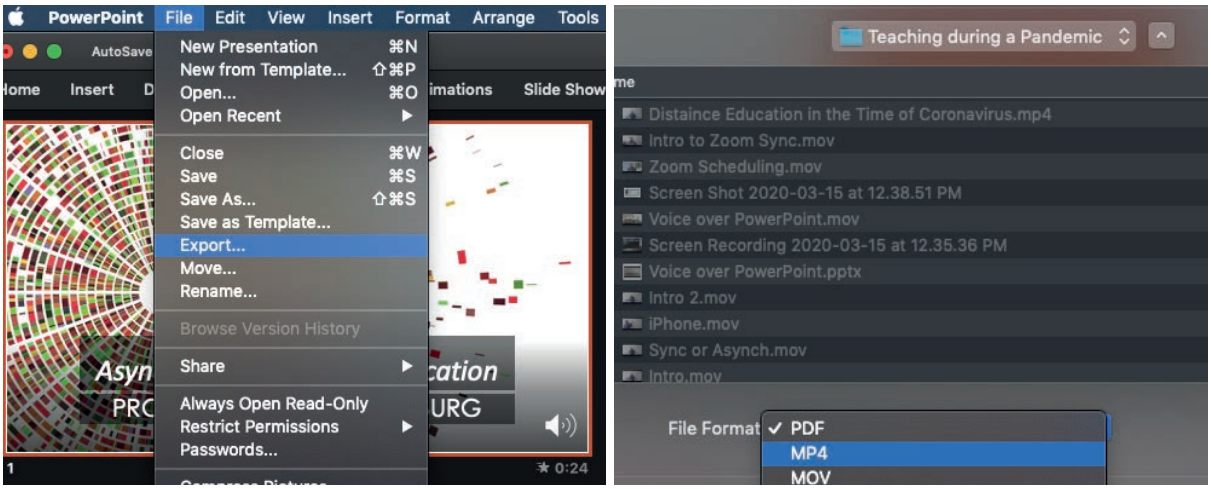

Figure 8. Exporting your video.

Uploading the Voice-Over-PowerPoint video to your online learning platform will be address in Part IV.

B. Creating a "Talking Head" Video

Talking Head videos focus on the professor talking. For an example of a talking head video (recorded in a greenscreen room), see https://youtu.be/hz2LrWDn6js. Talking Head videos are generally discouraged because seeing the professor talk generally adds little to student's substantive understanding of what is said. Moreover, creating a smooth and professional Talking Head video is hard to accomplish. Generally, the entire recording must be done in one "take," because "cuts" are obvious, and transitions are disruptive. This means that the entire 5- to 10-minute video must be recorded in one shot, flawlessly, to make the perfect video. Errors such as stumbling over your words or drawing blanks are thereby memorialized.

Talking Head videos are useful in certain instances. For example, professors may prefer to display themselves when introducing the course. Building rapport and creating a classroom vibe is challenging in an online setting, but personal touches can help make distance learning feel more human. Watching the professor during a lecture might be

more effective in conveying meaning through the use of facial expressions and gestures. These are good reasons for making a talking head video.

But Talking Head videos that are created without an express pedagogical reason for showing the instructor may be inferior to audio recordings or podcasts. From a learning science perspective, viewing the instructor demands more cognitive attention from students, which leaves less cognitive bandwidth for hearing, understanding, and taking notes on the substantive content. As mentioned above, jump cuts may be necessary but obvious and distracting. You should do your best to have good lighting, a decent webcam, and a suitable environment (think: professor with background of neatly ordered books, not: disheveled desk with coffee stains and orange peels). Finally, recording a video requires the professor to look the part. Rarely do faculty have the opportunity to record videos in such a staged environment, and time-crunched faculty who are recording at home have even fewer options.

If a talking head video is deemed pedagogically necessary, consider investing in a teleprompter so you can read a script while looking at the camera. There are many cheap ways to approximate a teleprompter nowadays. For example, there is free iPad software that will display scrolling text. In a pinch, a student, spouse, child, or friend who is willing hold up note cards or large-type printouts of the script will suffice.

The process of recording a Talking Head video is easy. Simply select a nice backdrop and focus the camera on where the speaker plans to sit or stand. Having a stand-in while being able to move and focus the camera is helpful. Once you find the best spot for your camera or webcam, mark it with painter's tape. Try to record all your videos from the same location for continuity.

While most faculty videos will not merit so much effort, there are some time-intensive ways to make Talking Head videos very effective. First, one can use a "green screen" to create the illusion of any background or no background. This requires recording in a room that has a solid-colored curtain or wall behind the subject. After recording, in post-production, the editor can replace the color with anything from scrolling words to a video clip. Just for fun, I put one Talking Head video of myself upon a background of Tahiti. The tropical atmosphere provides some humorous relief.

Second, one can record videos behind a lightboard. A lightboard is like a blackboard in that the teacher can write on it for the benefit of students. A lightboard differs in that it is a clear sheet of acrylic positioned in front of the professor, whereas a blackboard is an opaque sheet that is located behind the professor. In this way, the teacher can write upon a lightboard without turning away from the camera. The writing on the lightboard is backward vis-à-vis the camera, but special software flips it around.

Another way to make Talking Head videos is to record them in an empty classroom. Most classrooms now have some audio-video capture hardware. University IT staff can set up the recording equipment to optimize the picture. Faculty might even be able to display and capture Voice-over-PowerPoint and Talking Head video content simultaneously, which provides flexibility to select either stream, or to switch between them, depending on the content. Additionally, capturing content via classroom equipment does not require the faculty to purchase or even learn to use any new hardware or software. Captured content may also be editable and distributable via the cloud (online computer and memory bank), which can make integration with learning management software faster and easier.

Lightboards and green rooms are expensive investments that institutions, not individual faculty, should make. Using the classroom as a studio is efficient and looks legitimate. Unless good videography and settings are applied, Talking Head videos may appear cheap. Therefore, use Talking Head videos sparingly and only for specific pedagogical purposes, such as personally introducing the students to the instructor. If you film from the classroom, the post-production workflow is similar to repurposing existing videos from prior live classroom recordings.

C. Repurposing Existing Video

Make new videos, but keep the old – some of what you've recorded is gold. The question is whether you are willing and able to mine for it. For an example of a repurposed video, see https://youtu.be/ssTG-zrbs8Y.

Many schools record some or all live classes, and the resulting video files are sometimes stored indefinitely. Ask your IT director whether your class has ever been recorded, and you might be surprised how much video content is available. Whether you are pleasantly surprised depends on many factors outside of your control, such as the university's adoption of audio-video capture, editing, and distribution hardware and software, its integration with the university's online learning environment, class video recording and retention policies.

Your first consideration before spelunking through the video archives at your school is to understand how your classes were recorded, where those files are stored, and who is entitled to edit, and download them. This probably requires at least an email to your IT department, and potentially some training on how to access and use the video resources and editing features.

There may also be some intellectual property issues such as who owns the copyright to the videos. IT rights should not be a present issue so long as you use these videos at

the same institution at which they were recorded; if otherwise, consult a licensed professional for legal advice.

Video files from classroom recordings are often available in multiple formats. The first is a proprietary format that only works through the University's video capture-and-broadcast systems, such as Panopto or MediaSite. Such files can often be edited online via the same software platform that was used to capture and broadcast the videos. Online software makes it much easier to edit videos on any local machine. Your computer can be old and clunky yet perform adequately for online video editing because the computer processing occurs online, in the cloud. However, there are many different programs and setups, so ask your IT director what system your university, college, or school has adopted.

Even if you are fortunate enough to have a rich library of videos that can be easily accessed, edited, and distributed online, there is still much work to be done. First, the videos need to be cut apart into manageable chunks of 5 to 15 minutes each. This is not easily done in instances where the lecture was not designed so modularly. It may be difficult or even impossible to create smooth transitions. To smooth things out, you can add voice-over to freeze-frame or still images, but this usually requires downloading the file and editing it on your own computer via a program like iMovie.

Whether repurposing existing content is easier than creating entirely new videos is a personal decision based on specific circumstances. One advantage, however, is that repurposing existing content is something that an assistant or aid might be able to do, whereas creating new content is something that only the instructor can do. Faculty who are fortunate enough to have support staff will probably find it easier to repurpose existing videos than faculty who must do it all on their own.

All video creation – whether from new content or existing content – takes a lot of work. The benefit is that students can watch these videos on their own time, and these videos can be re-used over time. Videos can be perfected and polished, given enough time and resources. However, they are not a quick and easily solution. In general, the easiest solution for a faculty member who is suddenly required to go online will be to eschew such "asynchronous" videos and instead host live "synchronous" Zoom class meetings.

D. Synchronous "Zoom" Meetings

If you never plan to teach online again, creating videos is a game that may not be worth the candle. Instead of generating such "asynchronous" content, consider holding a "synchronous" (live but online) class session at a specified time. You can also hold office hours online this way, allowing students to "drop in" during a pre-ordained period.

Zoom is the leading video communications platform.[6] Two-way video communication, also called teleconferencing, allows the professor and the students to see and hear each other, as if they were in a virtual room. Instruction happens in real time, just like it does in the classroom. However, a virtual classroom is obviously not exactly the same as a physical one. The software itself presents its own challenges. But most of these issues can be easily addressed by making small adjustments to one's presentation style, especially when getting used to the platform. Here are some tips and tricks regarding Zoom classrooms.

Figure out a system for checking in with students. If you have a small class (about a dozen students or fewer), you can ask them all to keep their webcams turned on. This enables you to glance at their faces to see if they seem focused, distracted, or confused. Students might have issues with getting their microphones to work without realizing they cannot be heard. If you see a student's mouth talking but cannot hear what is said, stop the class to diagnose the problem.

On a similar note, provide some training for your students on how to use the teleconference platform. All the major teleconference platforms have plenty of how-to videos and tutorials online. Instructors should also consider creating their own how-to video, instructing students how to use the specific teleconference application for a given class and setting forth any ground rules such as whether the video should be on or off and how to get attendance credit. If creating a how-to video is not feasible, provide a written set of instructions and guidelines so that students are aware of the norms for this online classroom environment.

When lecturing, speak slower than usual. Audio quality on Zoom and similar modern teleconference platforms is generally good but limited by the quality of the equipment and internet connections that participants have. When getting started with teaching in a virtual classroom, ask students periodically if they can hear you properly. Students are also getting used to the platform, so check in with them about whether they feel comfortable using the tools.

Last but not least, record your sessions. This generates existing content that you can repurpose later.

IV. Deploying Online Content

Creating content is of little use if you cannot share it with your students. Fortunately, most universities and colleges subscribe to one of a few learning management

[6] As of February 2015, of 40 million individuals and 65,000 organizations subscribed to Zoom and held over 1 billion total meeting minutes. Wikipedia: Zoom

platforms, such as Blackboard and Canvas. Unless you have a very good reason to re-invent the wheel, deploy online content via the school's platform. Students are more familiar with it, and it will interface better with other of the school's technology solutions like its video capture and distribution platform.

A. Organizing Content

Once familiar with whatever learning management platform will be used, start by creating folders to organize the content. Whether you organize by day, week, or lesson depends on how you want students to engage with the material. If you organize by day or week, you encourage students to complete specific tasks at specific times. This approach is easier for students who are concerned about completing tasks on time. It also makes it easier for instructors to communicate time-bound expectations to students.

Organizing material by lesson is better for self-directed learners, as it encourages students to learn at their own pace. This method helps students to see the "big picture" – how the lessons fit together – and is a more intuitive way for most faculty to organize learning materials. Using this method, faculty can plan a course based on what learning objectives they want students to accomplish via these lessons. On the other hand, this method makes it difficult to stipulate deadlines. Less self-directed students may therefore fall behind or fail to complete all course objectives on time.

A middle-of-the-road approach, which I recommend, is to employ a nestled structure. The first level of folders is labeled according to daily, weekly, or other due dates for material in the class. Inside these folders is a second level of folders organized by lesson topic. This structure makes it easier for students to understand how much work must be complete by a specified time, while it also allows faculty to organize coursework. Moving topic folders around to balance workload also becomes a simple task.

B. Uploading versus Linking Videos

Once the lesson folders are established, content goes into them. Content includes materials for students to read, videos for students to watch, links to material on the internet, and activities for students to do.[7] If you have created videos, it may be most intuitive to simply upload them. Some learning management platforms do not handle videos well. Fortunately, there are some workarounds.

In my experience, Blackboard cannot display large video files to multiple students at once. Moreover, videos on Blackboard or Canvas for that matter have no features. They

[7] Activities – and how to juxtapose them with "passive" content – are detailed in the next section.

lack closed captioning, which is required by the ADA. They cannot be streamed in lower video resolutions. And they are glitchy.

Instead, I choose to host my videos on my YouTube channel. Hosting on YouTube features several advantages. YouTube automatically generates closed captioning. YouTube videos can be watched at different speeds (e.g., 1.25x) and in different resolutions (e.g., 720p, 1080p, and 4K). YouTube servers are incredibly reliable, and glitches have never occurred for me. In addition, it more clearly designates these videos as my own intellectual property, not the property of my institution.

Linking YouTube videos to Blackboard or Canvas is simple. Students do not have to leave the learning management platform to view the videos if they are "embedded." YouTube videos can be made public such that they appear in search engines, or they can be kept private such that only a person with the link can access the file. Since the link is not displayed to the students via the learning management platform (unless the course builder chooses to display it), an embedded video is relatively private to the course users.

Those seeking more security or who prefer to remain entirely on their school's platforms may instead host their videos on the school's video distribution platform, such as Panopto or MediaSite. Although these platforms are generally designed to capture in-class videos, they can also be used to distribute videos recorded elsewhere. Consult with your IT manager to determine whether your school has this capability and how to integrate these videos into your Blackboard, Canvas, or other learning management platform course site.

C. Juxtaposing Learning Activities

In addition to the passive content (e.g., readings and videos) that you uploaded and linked, you should also require students to perform active learning exercises, so they internalize, categorize, and express their understanding of the material. There are multiple ways to do this online, each with pros and cons, including: automatically graded tests, manually graded essays, journal entries, and discussion boards.

1. Tests

Tests as that term is used herein refers to learning activities that can be automatically scored and graded. Test formats include multiple choice, multiple answer, matching, true false, and numeric. For example, a test question might be, "In what year did the War of Independence begin?" The answer would be "1775," and students who answered that exact numeric would be awarded a point and given a pre-scripted response for correct answerers. Students who provided any other value or no value

would be given a response indicating an incorrect answer. Such tests may be programed so that students are graded on their first and only attempt, or students can be allowed to take tests multiple times and be graded on their final or best effort.

Tests are best used in large classes or other circumstances where it would be unduly burdensome or impossibly time-consuming to manually grade all students' written work product. Whether a class has ten students or a thousand, the test takes the same amount of time to write and score. Indeed, in very large online classrooms, or in courses with frequent assessment, automatically graded tests may be the only feasible option for student assessment. Moreover, the test can be evaluated statistically, provided that the sample size is large enough.

However, the downside of tests is they have to be written carefully. It is wise to have a teaching assistant or colleague confirm that multiple-choice tests appear valid, and the answers are reasonably clear. It takes more time to write an effective multiple-choice or other quantitative test and to write model feedback that applies to all students than it does to respond to a student's short qualitative statement. Therefore, tests are best employed where there are sufficient economies of scale (large enough class size and frequent enough testing) – or where the questions come from a well-regarded exam bank or other reputable source.

2. Essays

Essays as that term is used herein describe all the qualitative learning activities that must be manually graded, such as short answer and long form essay questions. While essay questions are relatively easy to write, they are harder to grade than tests.

The most effective use of essays is in small classes where the faculty member has time to read and comment on all answers. Providing such feedback is essential for student learning, especially early in the course. Students cannot be expected to self-assess their work product against a rubric until they have been trained to do so. Even then, it is helpful for teachers to give tailored feedback to students at regular intervals.

Even if essays are not scored and graded, they still prompt students to recall and reconstruct passively learned information, provided that students take the exercise seriously. However, students may stop taking essays seriously once they determine that they are not graded.

Although easier to create, the advantage of using essays is outweighed by the time it takes to grade. This problem is compounded as a function of how many students are in the class, how frequently students are assessed via essays, and how long and complex the essays should be. For these reasons, essays are better suited for smaller classes.

3. Journal Entries

Requiring students to reflect on passively learned content through writing has been shown to enhance long term recall and understanding of that content. Journal entries are an easy way to require students to be "activate" in their learning. Start by creating a Journal for the course. Then add a Journal Task after each, or at least some, of the videos and writing that you require students to watch or read. Prompt the students to reflect on what they just learned or give them more guidance by asking a pointed question about what they should have taken away from the passive-learning content.

For example, one subject I teach in contracts class is called "remedies." It regards what a court will require a losing party to do. For example, a court may require the losing party to pay money damages or return ill-gotten property. For their passive learning, I ask students to read the rule of law that address contract remedies generally.[8] Then, I prompt students to make a journal entry as follows:

> Why do contract remedies exist? In your own words, combine what you gleaned from R. 344 with what you have been learning all year in Contracts. You should read the Comments to R.344 before making this entry.
>
> Once you understand and articulate why remedies exist, try to define for yourself the differences between the three contractual interests: Expectation, Reliance, and Restitution. It is worth thinking about these concepts now, since they are foundational to the rest of the doctrine.

That was an example of a pointed journal prompt. Other journal entries may be more open ended. For example, I ask students to watch a video on Efficient Breach,[9] which is where a party stands to make more money by breaking a contractual promise than by keeping it. Then I ask the students to journal about it generally by asking, "What is efficient breach? Make a journal entry describing it in your own words. Then consider whether efficient breach is good or bad for society." This open-ended prompt is intended to motivate student thought on policy matters.

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[8] Restatement (Second) of Contracts Section 344. Purpose of Remedies. ("Judicial remedies under the rules stated in this Restatement serve to protect one or more of the following interests of a promisee: (a) his "expectation interest," which is his interest in having the benefit of his bargain by being put in as good a position as he would have been in had the contract been performed, (b) his "reliance interest," which is his interest in being reimbursed for loss caused by reliance on the contract by being put in as good a position as he would have been in had the contract not been made, or (c) his "restitution interest," which is his interest in having restored to him any benefit that he has conferred on the other party.")

[9] Seth Oranburg, Contract Remedies 3: Efficient Breach, YouTube.com (April 19, 2018), https://youtu.be/U7yBEpsijtc

Journals are popular with students. They readily understand the value of note taking, and they appreciate the guidance on what notes to take. Moreover, it gives them a centralized location to house their online thoughts. They can download and print their journals, which can help them during exam review. Meanwhile, instructors can see what students are journaling about. This gives instructions the ability to gain insight into whether students are grasping the material or not.

The only downside to journals is they are hard to grade substantively. Since journals are meant to be personal (subjective) reflections by students, an objective grading standard may not be suitable. Moreover, if used to prompt reflection on most or all of the passively learned content, students produce a substantial number of journal entries, further complicating grading.

For these reasons, I do not grade journals based their substance according to a rubric. Rather, I award student full credit for completing journal entries if the substantial majority of their entries show significant thought and were completed timely.

4. Discussion Boards

Discussion boards are forums where students respond to a prompt or to each other by posting messages. Although discussion boards are widely used, they are easily mis-used. It is quite difficult to stimulate a meaningful discussion asynchronously, and many students have negative impressions about discussion board activities.

Students have good reason to be wary of discussion boards. Teachers often pose a question that is similar to an essay question, but this belies the fact that making a public post on a message board is very different than writing a good essay. The first distinction is that posts are supposed to be original, but it is very hard to write an original post when dozens of other students have already replied to that question. Second, students are liable to be judged by their peers for the quality of their post, whereas an essay is only evaluated by the instructor. These dynamics should be taken into account when faculty create discussion boards.

I have found that discussion boards are most effective when students engage in discussion groups no larger than 10 members. For each additional student added to a discussion group, it becomes incrementally harder for each one to draft an original post. Likewise, students are less apt to draft thoughtful replies.

Another reason to keep discussion groups small, even in a large class section, is so instructors have an opportunity to write specific research questions for each student. For example, in a lesson regarding corporate social responsibility (CSR), I ask each of 10 students to choose one of 10 listed YouTube videos (in which a corporation

describes its CSR programs) and analyze whether this is true CSR or mere greenwashing (where corporations use eco-friendly and pro-society messages to increase profits). Students took the exercise seriously and became mini-subject matter experts on the company they researched.

In my experience, the best way to call on students in large virtual classrooms is to identify which students will be prepared to talk about certain issues before class even begins. To accomplish this, I recommend organizing small groups (<10) of students to make discussion board posts and responses at least 24 hours before a scheduled synchronous online class. If the instructor reads the discussion board posts in advance of hosting the live class online, the instructor can anticipate what students failed to understand from the material and which students can be called upon as thought leaders to develop certain concepts via Socratic dialogue.

V. Conclusions: Five Steps to Online Teaching

Faculty who urgently need to shift from in-class teaching to online teaching should do so efficiently by following a five-step plan:

1. Determine whether the course should be taught “synchronously” (live) or “asynchronously” (recorded).
    a. Synchronous online teaching is more similar to in-class teaching, so it may be easier as a quick switch, especially where the instructor has already developed in-class presentation materials and learning activities.
    b. Synchronous virtual classrooms work well for small groups (about a dozen students is ideal), but classroom discussion and other dynamics break down as class size increases beyond 20, so teachers of larger classes who elect to teach synchronously may need to employ pedagogical strategies that improve class dynamics.
    c. Asynchronous pedagogy requires skill in video production and editing plus time and effort. It also features economies of scale. Thus, it is best suited for creative faculty and those who teach large courses repeatedly.
    d. Asynchronous class preparation results in materials that can be re-used many times, and this preparation itself is easier if the instructor already has some recorded materials that can be re-purposed and used.
    e. Asynchronous learning is preferred by busy students and by self-directed learners because it allows them to learn on their own schedules, whereas synchronous learning provides more direction and structure for students.
2. Obtain the hardware and software necessary to create effective online content.
    a. Consider upgrading your microphone, as good audio quality is essential for appealing videos and for communication in the virtual classroom.
    b. Get a decent webcam and a stand for it if you plan to host virtual classrooms, especially if you have abundant nose hair, since students will be staring up your nose if you simply use the webcam on your laptop.
    c. Learn from your IT managers what software is available to you via your institution’s subscriptions; if your institution does not have a subscription to teleconference software, you will either have to pay for it yourself or forego synchronous online teaching.
    d. Familiarize yourself with the software on your computer, especially PowerPoint, which is the easiest tool for recording effective videos.
    e. If you do not want to use PowerPoint, explore options for recording in your classroom; if your institution has a greenscreen or lightboard recording studio, consider making your videos in these facilities.
3. Create your video content. **If asynchronous:**

a. Divide your course topics into the most granular (smallest) units possible such that you can cover each topic within a 5- to 10 -minute video.
b. Design PowerPoint slides that do not conflict with what you plan to say while they are shown to students:
    i. Use text on slides sparingly, if at all; representative images may be even better than text.
    ii. If you write large blocks of text, plan to read that text aloud.
    iii. Use Animations to highlight key concepts.
    iv. Create 1 or 2 slides per minute of video – never use more than 20 slides in any one video.
c. Script what you plan to say in your voice-over for each slide; you can write a verbatim script if you are anxious about stumbling or rambling, or you can write a loose script if you feel confident about speaking effectively.
d. If synchronous: determine what software platform (e.g., Zoom, GoToMeeting, Webex, etc.) you will use, set up an account, schedule virtual class meetings, and learn to use the features.

4. Develop your Online Learning Environment.
    a. Use whatever platform your institution licenses.
    b. Organize your content first by week, then by lesson.
    c. Upload your video content to a media server, whether that is the media platform licensed by your institution or YouTube, and then link the content to your OLE, instead of directly uploading videos into the OLE.
    d. Synchronous modalities:
        i. EITHER create online learning activities that prepare students for class discussion online, like discussion boards that invite subject matter experts to opine on their knowledge, which instructors can read and thereby know who to call upon;
        ii. OR deploy formative assessments such as Tests and Essays during or after live-streaming lectures, such that you require all students to be actively engaged learners.
    e. Asynchronous modalities: pair passive learning content (such as readings and videos) with active learning Tasks (tests, essays, journals, and discussion boards) to encourage long-term retention and understanding.
5. Deploy your OLE to the class.
    a. Provide opportunities for student feedback.
    b. Use Announcement tools to keep everyone informed.
    c. Respond to concerns and fix problems quickly.
    d. Keep calm and carry on.