Chapter 3

Using Media and Technology Tools

INTRODUCTION

Most of us take our everyday technologies for granted. We expect them to work seamlessly. We do not even notice when they work well.

Every morning, we are awakened by an alarm, whether on our smartphone or a bedside clock. We make our way to the kitchen, flip on the light, and brew the perfect cup of coffee with the touch of a button. We reach into the refrigerator for our favorite creamer to flavor our coffee. We sit down with our mobile device and scan the day's news.

Without the technology solutions we all have in our own homes, how much longer would each of these activities take? Two hundred years ago, we'd wake up naturally or rise with the sun. If it were still dark, we would light a candle. Coffee drinkers would have to grind the beans, light the stove, boil water. If we wanted cream, we'd have to trek out to the ice house to get it. We might collapse at the end of the day, after the work was done, with the day's newspaper to get a view of the outside world.

Technology has made our lives easier in many ways. We default to the assumption that it will be there to support us,

that it will solve the problems we do not even remember we had before we had electricity, cars, the internet. It's easy to forget that technology serves a purpose, that it solves problems. It's easy to get distracted by the shiny.

A couple of years ago, a faculty colleague of mine took an unsolicited call from a representative from a vendor for a classroom response system, commonly known as clickers. The salesperson convinced her that this tool would solve all her large-enrollment lecture class problems, so my colleague signed on the dotted line and came to us for training on the tool. Fortunately, one of my learning design colleagues called a time-out to ask her whether this was really the right tool for the job. She'd been distracted by the shiny, but came to see that clickers would not address her challenges without a purposeful design for their use.

Consider the current state of classroom technology. In the name of active learning, institutions spend hundreds of thousands of dollars on high-tech learning spaces featuring sophisticated technology and flexible furniture to facilitate collaboration. The classroom tech is controlled by a highly complex console at the front of the room. But very often the systems are so complex that they are not used to full effect. I have known many faculty, people without adequate preparation to teach in these spaces, who are intimidated by the sophisticated technology and do not really use it at all.

That's a lot of very expensive shiny technology that does not serve a clear purpose.

IN THEORY

Derek Bruff is the director of Vanderbilt's Center for Teaching and one of the leading voices in higher education today on the use of technology in teaching. An early adopter of the use of personal

response systems in class, Bruff authored one of the first books on the subject, and maintains an active blog on teaching and learning in higher education, with special attention to the role that technology can and should play in our courses. Bruff's more recent book, *Intentional Tech: Principles to Guide the Use of Educational Technology in College Teaching* (in press), begins with him describing the technology that he finds most essential to his own teaching: chairs on wheels. "By that," he explains,

> I mean classroom furniture, including tables and chairs, that I can easily move around before and during class. When I walk into my classroom, I have typically planned a series of activities for my students focused on my learning objectives for the day. Sometimes that involves whole class discussion, other times small group work, or pair work or a class debate or a jigsaw activity. Moveable furniture helps me create the kind of classroom environment that supports the learning activities I have planned.

You'll hear a similar message about teaching and technology from almost every leading voice in this field. Eric Mazur, the Harvard physicist who popularized the use of personal response systems in higher education, gives workshops around the world about his conversion from a traditional lecturer to an advocate for active learning. He has become known especially for his writing on peer instruction, which pairs the use of a personal response system with collaborative learning. At a recent workshop that Jim attended, Mazur had participants engaging in sample peer instruction activities by using hand signals instead of clickers or phones or other electronic devices. A presentation following Mazur's, given by biologist Mindy Maris, had us using colored index cards to show our responses. All three of these proponents and practitioners of technology-enhanced teaching are perfectly

willing to step away from the shiny tools when they are not required to accomplish their objectives.

Cognitive psychologist Michelle Miller has been another pioneer in research and writing about technology in education, and she brings the findings of her home discipline to bear on the field, exploring applications of research from the learning sciences to the intersection of education and technology. When it first became possible to incorporate multimedia components into college courses, she points out, many faculty members leapt to do so – and many still do, even when it might not seem like a good fit.

> The contemporary era of educational technology offers a wealth of multimedia bells-and-whistles we can add to our learning activities. Most of us have an intuitive sense that these media engage students beyond what we can do with plain text … Intuitions, however, are not always right. (Miller, 2014, p. 149)

In fact, Miller argues, some uses of multimedia in teaching have been shown to *detract* from learning, instead of supporting or enhancing it. For example, if you are showing a slide presentation to students, and narrating over your slides – as you might do for a simple video in an online course – the impact on student learning might well depend on how you decide to handle the content of the slides. Simply reading the words on the slides can produce what the research calls the *redundancy effect*, which will actually hurt student learning; but you can err at the other extreme as well, and interfere with learning by not paying enough attention to the slides. What works best – Miller describes it as the "Goldilocks" principle – is a close but not perfect relation between slides and narration, and when the narration occurs in conversational language (Miller, 2014, p. 154).

The point being made by all of these experts in the field of educational technology just represents an extension of what we argued in Chapter 1: Every decision you make in designing your online course should extend from the learning objectives you have designed for your course. Develop those objectives first, and then figure out which technological tools will help you and your students meet them. You'll likely not be using chairs with wheels with your online students, but you might well find that the latest fancy teaching tool or program that you have heard about from a colleague just does not fit well with your course, and that some simple alternative will get the job done more efficiently.

MODELS

A faculty member in construction management wanted his students to draw on actual blueprints, but he only had one set. His solution? Students worked in groups and took a picture of the blueprint with an iPad. Using an app, they drew on the blueprint according to the instructions. They were then able to share their image with the rest of the class on the large projection screen so the class could review and discuss.

A group of faculty had worked for three days in a teaching seminar. At the end of the seminar, teams were to present their work. The other participants wanted to contribute in real time and also record the interaction and material for later reference. Their solution? Each faculty team created a shared Google Doc. As they presented, other participants contributed additional resources and ideas directly into the doc. By the end of each team's presentation, a rich, robust set of materials existed, more fully developed than the team members themselves had started with.

I teach advanced jazz dance, but my body does not perform the advanced turns and leaps like it did 20 years ago. My solution?

I pause class, gather my dancers around me, and play a YouTube video on my smartphone of a young and agile dancer executing the leap with perfect technique. I describe what she is doing so my students get both good instruction and a helpful visual example.

All three of these real-life scenarios feature a purposeful technology tool to accomplish an objective or solve a problem. The construction management professor only had one set of blueprints to work with. The faculty teams wanted to contribute to each other's work in a meaningful way. I am just plain getting old; new aches and pains remind me that my body no longer soars and spins the way it once did.

Both in the classroom and online, our technology should solve teaching problems or open new possibilities for teaching excellence. We have plenty of opportunities to accomplish that goal using the small teaching approach.

Create Short Lecture Videos

One of the pervasive problems of online classes is that they can be text-heavy, dry, and boring. Students are often confronted by an off-putting wall of text. An increasingly feasible solution? Creating short videos to deliver content.

Some faculty are charged by the prospect of upping their online teaching game with informative videos. Many more are intimidated by the idea. Creating lecture videos, for many, seems like it will be "big teaching" – that is, so much work that it never happens. But once again, it does not have to be that way. For small teaching, we advocate use of content videos: Invest a small amount of time and effort to achieve a big reward in student engagement and learning.

When thinking about how to incorporate lecture videos, many online faculty imagine posting videos of their classroom lectures in the course. This is certainly one way to do it, and some

institutions are investing in elaborate lecture-capture systems to facilitate this process. But lecture capture requires expensive tech and a team of skilled professionals. The small teaching way is to record short narrated slideshow videos or webcam-style videos speaking directly to the camera on your computer monitor.

The key word here is *short*. "Traditional in-person lectures usually last an hour, but students have much shorter attention spans when watching educational videos online," writes Philip Guo in a blog post about a study he and his colleagues conducted (Guo, 2013). The researchers compiled data from 6.9 million video-watching sessions to track engagement patterns of online students. Their findings led to a strong recommendation that online class videos should be no longer than six minutes. In a conference paper that presents more in-depth results of the study, Guo and his colleagues note that informal videos led to greater engagement and that high production value might not be effective. The researchers warn that a great deal of pre- and post-production effort will be needed "if instructors insist on recording live classroom lectures" (2014). That sounds like big teaching to me.

Instead, you can create a mini-lecture video yourself without expensive technology or a team of experts, and without a big investment of time. Guo's research actually showed that students engage less with formal professionally edited videos. So set aside half an hour at your desk and record your own content without worrying too much about high production value or perfectly polished delivery.

You can do this using a wide range of video-recording tools and software. For example, Canvas includes a native recording option. Other LMSs may not have that feature, but institutions are increasingly licensing third-party video tools to embed within the LMS, such as Kaltura or Panopto, so that it's seamless to use. Alternatively, find one of the many free or low-cost options

available online. At the time of this writing, Screencast-o-matic (for screencasts only) or Loom (for screencasts or webcam recordings) are both good options. They are relatively simple to use to record short informal mini-lectures. Explain Everything offers recordable interactive whiteboard functionality. You could even record yourself using Zoom or other videoconferencing software if you have more experience with those formats.

The two most common forms of mini-lecture videos involve talking through a short set of slides or speaking directly to the webcam. Both can be very effective. Some instructors are not comfortable seeing themselves on camera: if you are one of them, start by recording a five-minute screen capture of your slides. With practice, you may find that you become more comfortable recording yourself talking to the camera. (Incidentally, this approach is a great way to reinforce instructor presence, as discussed in Chapter 4.) Remember the research cited by Michelle Miller, which showed that, when we narrate over slides, conversational language works most effectively. Keep your narration casual, and make sure you frequently refer to the material on the slides without just reading it word for word.

Most tools offer at least minimal editing ability, and that's really all you need. Do not edit out the occasional trip over your tongue. That makes you and your video authentic. When I record webcam mini-lectures, I capture a few extra seconds of me smiling at the camera after I finish talking. It's quick and easy to cut there or fade out so students do not see me fumbling around trying to find the right button to click to end the recording.

Remember to provide one or more alternative forms of your video content so that you are facilitating successful interactions for all your diverse learners. Captions, transcripts, and even text-based outlines of your video content can provide choices for how your students consume the material (Tobin & Behling, 2018). Some video-recording tools provide an auto-captioning

tool that can speed up the captioning process (though you may have to quickly edit your captions for accuracy); if you like to type out your mini-lecture script before you record, then you'll already have a transcript ready-made. You may also want to provide guiding questions that students can answer while viewing the mini-lectures to help your learners actively engage with your videos instead of passively consuming them.

If you create your mini-lectures in your LMS, they are already embedded where you want them. If you record them using another tool, find out how best to stream them in your online class. Consult your local instructional designer or LMS support team for guidance on this and other support services to make your videos easily viewable and accessible for students on whatever device they are using to engage in class.

Most importantly, remember the small teaching philosophy. Start with one mini-lecture video. Is there a concept that has always been hard to convey in your online class? There's the subject of your first mini-lecture video. Next time you teach that class, add a couple more.

The good news is that you can reuse these videos for future classes if you are intentional about what you include. Do not include a semester-specific due date because that would be irrelevant next time you teach the course. In a recent article for *Inside Higher Ed*, David Joyner, Computer Science faculty at Georgia Institute of Technology, recommends additional strategies to make sure you can reuse your videos (Dimeo, 2017). For example, be careful about referring to other videos within your course. If your videos are too closely connected,

> modifying one area of the course might demand that you modify several others as well to stay up-to-date … avoid this by keeping the videos as individually independent as possible. Rather than using phrases like, "Recall

> the example we used last semester," say "Imagine this example." If the previous area of the course is unmodified, students will draw the connection on their own, but if that example has been dropped, the video does not come across as unconnected. (Dimeo, 2017)

This level of planning may not come naturally, but keep at it. Invest a little time figuring out what to include in your mini-lecture and how best to record it. It'll take less time with practice, you'll benefit from the return on your time investment for multiple semesters, and your students will be glad to have a break from the wall of text.

Spur Engagement with Online Content

Unfortunately, busy online students have developed a predictable pattern. At the risk of overgeneralizing, many students will not watch even the most engaging, informative, or important video if there is no accountability for doing so. Online students are becoming ruthlessly efficient in how they spend their time on classwork. We can hardly blame them for this, as so many of them have busy and challenging lives outside of their studies, which can include special challenges like caring for sick relatives or even fighting food insecurity (Goldrick-Rab, 2016).

A colleague of mine, completing an online master's degree, carefully examines the end-of-module assignment first, then skims the assigned textbook chapters for the necessary information to complete the task. I am guessing his instructors believe their students are thoroughly reading all assigned material, but that may not be the case at all. Just as my colleague does, online learners usually have both work and family obligations. Many of your students will have been drawn to the online format precisely

because they need schedule flexibility in order to pursue college-level learning while maintaining other commitments. So if there is not an explicit reason to watch a video, even if it's less than two minutes long, some students will not watch it. At the same time, we know that the content we have created will benefit their learning, so we have to think deliberately about how to spur their engagement with the course materials.

An effective and simple way to create that engagement and add accountability is to include a short, graded assessment after each required video. This strategy can also help students actively work with the content, which helps them to "process information and monitor their own understanding" (Brame, 2015). Some video tools allow embedded quizzing, although not all do as of this writing, and embedding quizzing adds a layer of complexity to your work. Still, this approach can hold students accountable for engaging with your videos.

If you prefer to keep it basic, add an auto-graded quiz immediately following the video. Use your LMS quiz tool to create a five-question multiple choice or true/false test to check for understanding. You can include feedback in the quiz answers to enrich student understanding. For example, if a student gets a question wrong, you can direct the student to review a section of the video at a particular timestamp. You can set the quiz to show this text to students upon submission of the test. For correct responses, you can also provide additional guidance, perhaps suggesting where students can find additional resources on the topic.

Instead of an auto-graded quiz, in my technology and leadership class I assign a short-paragraph written response—or this could be a recorded audio or video response—worth five points after each mini-lecture video. In the instructions, I tell students they have to demonstrate to me that they watched the video, thought about the content, and are applying it to their context.

I am willing to read and grade these manually because I like that these short responses require higher-order thinking. It typically takes me less than one minute to grade each submission. That small investment of time pays big dividends in terms of increased engagement with the course content.

The most helpful and interesting videos are worthless if students do not actually watch them, or watch them without full attention. Make watching the videos worth a few points. You are likely to get far higher levels of engagement with the video content as a result.

Leverage Video for Spontaneous Updates

In addition to mini-lecture videos, short recorded announcements in which you respond to developments in your class can have a powerful impact. We all take advantage of "teachable moments" in the classroom. Ever alert, we seize unexpected opportunities to reinforce a concept based on an unplanned comment or occurrence during class. The same thing is possible, even desirable, when teaching online. When you spot student confusion, for example, take a few minutes to record yourself clarifying instructions or answering questions that pertain to the whole class. These short updates require even less planning than your mini-lectures; just identify a few salient talking points and record yourself using a native or embedded video capture and streaming tool in your LMS. Or you can use the tools already mentioned (Loom, Screencast-o-matic, or Zoom) or the YouTube app on your phone and then stream the announcement video in your class. The idea is to watch for those teachable moments, then record a quick video to address the situation.

Again, students prefer informal videos in which you are authentic to stiff, formal, or professionally edited videos. They want to see and hear you being you. You needn't record and

re-record until you achieve the perfectly polished presentation. Do you always articulate every word perfectly when teaching in the classroom? If not, don't worry about doing so in your teaching videos.

For many faculty, this might be a new and uncomfortable experience. Some of us don't like the way we look or sound on camera. I'd encourage you to try recording yourself speaking to the camera, even if you begin with a very short one-minute greeting in the "Start Here" section of your online class.

We all practice public-speaking skills when we teach in the classroom. This is simply a variation of that skill. Were you perfectly comfortable standing in front of a room full of people when you first started teaching? For many of us, it took practice to gain confidence in that setting. Give yourself time to practice and build confidence in creating online class videos, too.

The more practice you get, the more comfortable you'll be with sharing your thinking in real time with your students via video. A couple of years ago, I was grading assignments while using my treadmill desk. I wanted to give a couple of points of general feedback to my students, so I used the native recording function in my LMS to make a few comments as I walked. This stretched my comfort zone; I'd never shared something as casual as that, but it was authentic and it got students' attention. Indeed, just a few weeks ago one of my students from that class, who is also a faculty member at NAU, told me he still remembered that announcement because it was so unusual to see an instructor talking to students from their treadmill desk. As another example of authenticity, last year I answered a student's question via video so I could talk through a few considerations. I recorded a 90-second response using the YouTube app on my smartphone. In the middle of my recording, two of my daughters popped up behind me and started clowning around. In the past I would have stopped the recording, banished them from the room, and started

again. This time I briefly introduced them, asked them to settle down, and continued with my recording. My students told me they appreciated seeing that side of me, a working mom in my home office, and they got useful course-related information, too.

Over the years that I have been recording these in-the-moment updates, I have become increasingly fond of the informal, casual approach. When I record using the webcam on my laptop, I literally jot down three to four bullet points on a Post-it Note, affix that note immediately to the right of the camera lens, and review my talking points in a conversational tone, making sure that my eye movement to the right to read the note while talking is not apparent in the recorded video—this became easier with practice, as most skills do. Recall Philip Guo's research that shows a less formal approach can help to engage online learners, whose attention span is shorter than it would be when attending class in person.

However, if you are new to recording video announcements, or if you prefer to plan more meticulously than I do for my off-the-cuff approach, you may want to emulate Joana Girante's method (2015). Girante, an economics professor at Arizona State University, explains how she creates and uses weekly videos on ASU's TeachOnline website (which, incidentally, is a great resource for finding innovative strategies and support materials for online teaching). Girante uses her weekly announcements to set the stage for the week's content and, like me, to address things that occur to her that very week, perhaps referring to a current event or further explaining a concept that her students are struggling with. But these videos are more highly produced than mine are. Girante narrates PowerPoint slides and incorporates images, animated graphics, and short video clips to attract and hold the attention of her students. She writes a script, complete with cues for advancing slides and animations, and she uses video editing software on her computer to edit her recordings. If this

approach resonates with your teaching style, invest some time in learning to create this kind of announcement video. With practice, you'll likely soon become adept at the process so that you become more efficient, able to quickly create your videos as needed throughout the semester.

While mini-lecture videos are probably best created prior to start of the term, try these short videos for updates on the fly. After all, that's what you would do in the classroom, right? You'd say a few words to clear up confusion, not hand around a sheet of paper with some written comments and explanations. If you choose to speak directly to the camera, your facial expressions, combined with your vocal intonations, can do a lot to help students understand your meaning. Provide them with these nonverbal cues using quick casual recordings.

Source Existing Media

I firmly believe that it's essential to include some videos of yourself in your online class. Your students want to see and hear you, their instructor. But you don't have to reinvent the wheel for every topic you want to present. As I am sure you know, you can find rich sources of high-quality media on every subject on the planet and beyond. Take a little time to find relevant videos, audio recordings, and images. If you are not sure where to start, ask your campus librarian for help. There's a huge amount of material available online. Find and share impactful pieces of content that add depth and breadth to your existing instructional materials. This will help students gain a richer understanding of the nuances of your subject.

For example, a faculty member teaching organizational psychology found that his students could not quite grasp the concepts in the textbook. He discerned that these ideas, presented in dry textbook-ese, did not resonate with his students.

His solution? He posted scenes from *Office Space* (as appropriate under copyright permissions) to make the concepts come to life. Students instantly understood the principles at work when presented in engaging, humorous film clips.

Notice once again that technology solved a problem. This instructor did not share *Office Space* solely because he thought it was funny. Doing so would have fallen under the questionable category of "edu-tainment." Rather, the instructor identified a problem and applied an effective technology solution. When considering adding media of any kind, think carefully about how it supports the achievement of course learning outcomes and what problem it solves. If you don't have a good answer for both of those questions, leave it out.

As you look for relevant videos, audio, and images, keep two additional considerations in mind. First, think broadly about categories and sources of media. News outlet archives. TED Talks. Images from credible sources of natural disasters, war zones, refugee camps, shrinking polar caps. Khan Academy videos. Song lyrics on YouTube. Even humorous summaries of the classics. Students in my recent First-Year Seminar on Heroes, Villains and Monsters amused themselves (and, I'll argue, learned a lot) by finding and sharing videos such as the Overly Sarcastic Productions version of *Beowulf*. (Look it up. It's funny—and informative).

Second, always be wary of the shiny. In *Minds Online: Teaching Effectively with Technology* (2014), Michelle Miller provides an excellent overview of multimedia theory, which, she notes, "is most commonly associated with Richard Mayer" (p. 153). Miller explains, "Central to the framework is the multimedia principle, which holds that adding pictures – or diagrams, or other similar representations – to text produces enhanced learning compared

to text alone." Miller further explains that, although this concept seems to make sense, "a host of variables interact to create enhanced learning through multimedia" (as cited in *Multimedia Learning*, Mayer, 2009) and proceeds to give a useful overview of these variables and the various ways in which they interact. "The moral of the story? Don't bring in graphics except those with a substantive connection to what you are trying to teach. Pictures for pictures' sake make your lesson prettier, but less effective" (Miller, 2014, p. 155). Intentionally selected, images and media can powerfully impact student understanding. This seems logical, but it's important to consider the opposite of this statement. Adding images, visuals, and audio that are not directly related to content can overwhelm and confuse learners. Ensure your media resources are relevant, not distracting.

As a quick reminder, you'll want to pay attention to copyright considerations when you source existing media for your online (and other) classes. You will likely find someone at your institution, perhaps a librarian or instructional designer, who can help you navigate legal concerns. Another useful resource is the Stanford University Libraries' copyright and fair use website (https://fairuse.stanford.edu/overview).

Find the Right Tech Tool for the Job

In the 2016 second edition of their book *The Online Teaching Survival Guide: Simple and Practical Pedagogical Tips*, Judith V. Boettcher and Rita-Marie Conrad acknowledge that "digital tools are changing faster than we can describe them" (62). The challenge of "describing specific tools that will be obsolete before the book is published" led them to focus instead on technology tool categories that accomplish specific pedagogical purposes. This

is an effective approach, done thoroughly in that book so I have chosen not to replicate it here. I can highly recommend *The Online Teaching Survival Guide* for a practical treatment of concepts and approaches we touch on in this text.

For small teaching with online technology tools, we can focus on implementing technology solutions in feasible yet impactful ways. Remember that our focus is on solving problems. Don't select a tech tool just because you heard of someone else using it and you thought it sounded cool. Instead, to help you teach most effectively, choose a usable technology tool that solves your problem.

Most of us have the greatest success when we make minor changes, little by little. If your roof is leaking from heavy rain, start by getting a bucket. Don't tear the roof off. Small tech tool fixes can be remarkably effective. By contrast, large-scale implementation of a complex tech tool may very well backfire and cause more problems than it solves.

So how do you identify appropriate and purposeful technologies to implement in your class? Perhaps the most efficient way to conduct your research is to search online for apps and ed tech tools aligned to your course objectives, which should reflect the range of levels of cognition in Bloom's Taxonomy. Here are just a few examples of how to intentionally align tech tools with the cognitive domain of Bloom's:

- *Use Zoom to help your students understand complex concepts*. Schedule an optional synchronous study session in which you answer students' questions in real time.
- *Quizlet can help students remember facts and vocabulary terms*. Students create flashcards that can be accessed via an app on their smartphone or tablet for studying on the go.

- *Hypothesis helps students analyze*. Have students, individually or in groups, annotate online texts to draw out deeper meaning or important concepts.
- *Google Docs and Slides help students synthesize and create*. Assign group research projects or presentations, using Google tools to foster seamless collaborative work, as learners compile findings and create papers and slide decks to report on their research.

There's a seemingly endless array of available technologies, with more coming out every day. By the time you are reading this, the above tools may have been superseded by even more effective solutions. The point is to find a tech tool that accomplishes your objective and aligns with the desired level of thinking for the learning activity you use it for.

Finally, again, I cannot emphasize enough the importance of the small teaching approach when implementing tech tools in your online class. To be most successful, start small. Make sure you yourself are comfortable with the tech. If you cannot easily and confidently use the tool, it's not the right choice for you. Remember, too, that you can teach very effectively using only the basic set of tools in your LMS. Boettcher and Conrad offer excellent advice about beginning your online teaching career with readily available LMS tools such as Announcements, Discussion Forums, Assignments, and Quizzes. "The first time you teach in any new environment or with a new set of learners," they note, "it is wise to keep it simple and use the basic set of tools well supported by your institution" (Boettcher and Conrad, 2016, p. 63). The authors further explain, "Fortunately, most communication tools for teaching and learning are now included in institution-provided learning management systems (LMS)" (p. 65). After providing

a brief introduction to the basic tools available in the LMS, such as those noted above, Boettcher and Conrad share this invaluable advice:

> Give yourself a break and don't expect perfection of yourself the first time you teach in this new-to-you environment . . . . You are learning new digital tools, what they can do, and how to recover when things don't always go as expected. (p. 68)

This last reminder, that things don't always go as planned, is another important reason to stick with the tools that are available in the LMS and are supported by your institution if you are new to teaching online.

However, if and when you are ready to expand beyond the LMS, try one new minimal implementation of a purposeful tool next semester. The next time you teach the class, expand and refine your use of that tool, making incremental advances as you go. Before you know it, you'll be teaching effective and engaging online classes, taking full advantage of the enhancements offered by a range of powerful technology tools, improving student learning and engagement all the while.

One note of caution: Consider the impact on your students of using technologies outside of your LMS. These may require a separate account or a subscription fee; your selected tool may not be accessible for students using a screen reader or keyboard-only commands; social media tools could mean that students have to put themselves out there in a public space in a way they may not prefer to do. Think through the implications and consult with your local instructional designer to help you think about issues you might not even be aware of. Whatever tools you decide to use to engage your students and foster their learning, make sure they are the right tools for the job at hand.

PRINCIPLES

Purposefully incorporating technology tools in online classes can have a significant positive impact on student learning. Follow these guiding principles to help ensure a successful addition to your teaching toolbox:

Identify the Objective

You began creating your class by writing your objectives, and those objectives should help determine your technology use. What tools will help you achieve your goals – and what tools will help you solve the problems that would prevent you from achieving those goals? You can and should certainly explore and learn all about the many technological tools that are available to online instructors, but explore with a critical eye. Which ones of them will help your students learn? Which ones align with your objectives? As you proceed throughout the semester, you will see new challenges arise, learning moments missed, and unexpected obstacles. These pain points are opportunities to explore and implement new tech tools. Having a good understanding of the problem you want to solve will help you find the best technology solution and help to ensure that you are using the technology purposefully.

First, do No Harm

The ancient Greek physician Hippocrates is popularly credited with this basic premise. In providing medical care, doctors are to abide by the overriding principle of not hurting their patients with prescribed treatment. Likewise, our teaching methods should not make things more difficult for our learners. Select technology tools that don't hinder learning. Some common barriers to ease

of use include a difficult log-in process, out-of-pocket expense, nonfunctionality with keyboard use only, or levels of complexity that require learners to use all their cognitive resources to navigate the tech. These kinds of barriers will not promote student learning and success, so carefully analyze and test the usability of your tech tools to ensure that you are not making things harder for your students.

Provide Alternative Means of Access

Including media and using technology tools can do a lot to liven up online classes. But ensure that all materials and tools are accessible in multiple formats (your institution's disability or accessibility resources department can usually help with this). The principles of Universal Design for Learning tell us that an adjustment that helps make technology accessible for one student may also help many others be successful (Tobin & Behling, 2018). For example, captioning videos enables hearing-impaired students to consume the content – but it also benefits non-native English speakers by providing another way to take in what is being said. I have manually captioned my short lectures and announcements directly in YouTube. It takes me roughly four minutes per one minute of video to type the audio. Or, try the auto-captioning tool in YouTube, cleaning up the captions with quick edits after they are produced. You can also provide full-text transcripts for videos or audio recordings. Make sure all images are tagged so that a screen reader being used by a visually impaired learner has meaningful content to convey. If you choose to include a tool that is external to your LMS, check the accessibility first. In short, don't keep your students from being able to access and participate in your online class; provide alternative options that

benefit all your diverse learners with all of their unique preferences and needs.

SMALL TEACHING ONLINE QUICK TIPS: USING MEDIA AND TECHNOLOGY TOOLS

Online classes can be text-heavy and static. Create more dynamic and engaging courses with the intentional use of media and purposeful technology tools.

- *Create short, three- to five-minute mini-lecture videos*. Narrate over a slideshow or record yourself talking to the camera on your computer monitor or smartphone. Use a native video recording tool in your LMS or an external tool or app.
- *Include assessments to ensure students are attentively watching your video content*. A short multiple-choice quiz or written or recorded reflection can hold students accountable for consuming – and actively engaging with – the content you provide.
- *Build depth and nuance with existing video content and your own informal video announcements and updates*. Source clips from any number of media forms and outlets ranging from TED Talks to popular films. Add timely clarification with authentic casual video clips you record. Remember the significance of nonverbal cues to communicate effectively. Find and create video content to bring these cues into the otherwise isolating online classroom.
- *Select technology tools that solve a problem you have identified and that align to the intended outcomes of a given activity or of the course as a whole*. When thinking about using a new tool, whether it's within or external to your LMS, stop and ask yourself why you want to use the tool. If you don't have a good pedagogically sound purpose, leave it out.

CONCLUSION

A few years ago, I decided to keep a food journal to help me achieve some health-related goals. Looking for a pocket-sized notebook that I could keep on me, I spent a couple of hours searching through hall closets, junk drawers, and cupboards full of kids' activities and art supplies. I was pretty sure my young daughters had some stashed from when they used to play Restaurant and take each others' orders while pretending to be servers.

It was only after my fruitless search that it dawned on me that I carry around a device in my pocket all day long. I am never without my smartphone. And chances were good that I'd find an app to function as a food journal. Feeling slightly foolish about the time I'd spent looking for that nonexistent notebook, I searched the App store and indeed found several robust options to track nutrition, activity, and more.

In this case I had a problem, and, although by a circuitous route, I found a technology solution. Soon I had formed a daily habit of tracking calories consumed, such that I hardly noticed I was doing it. In this way, the technology became transparent, seamlessly incorporated in my everyday routine.

Media and tech tools have great potential to improve the student educational experience, identified as national priority number one in a 2017 report from the American Academy of Arts and Sciences, *The Future of Undergraduate Education: The Future of America*. Let us employ these tools to help our students learn more effectively in our online classes. Implement transparent media and technology solutions, being careful not to make things harder or use tech for tech's sake.

These are powerful tools – powerfully beneficial or powerfully distracting. Be purposeful.