Chapter 1

Synchronous and Asynchronous Learning

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Not all remote lessons are the same, but in general, remote learning takes two forms: asynchronous learning and synchronous learning.

Asynchronous learning happens when the work of learning occurs at different times and in different places — say, when your students fill in a graphic organizer you've posted online and email it back to you, or when you videotape a lecture for your students to watch on their own time. Synchronous learning is the kind that happens at the same time, but in different places. Any kind of class that takes place over Zoom, Google Meet, or any number of platforms qualifies.

Each type of remote instruction has its benefits and limitations. In this chapter, we'll look at each, and offer a few ways to get the most out of both.

ASYNCHRONOUS LEARNING: BENEFITS AND LIMITATIONS

If synchronous lessons are live TV, asynchronous lessons are Netflix (or, more accurately, YouTube). With that difference comes all the benefits of having control over the final product. Since teachers can refilm or edit a video when they find they want to improve some turn of phrase, or wait to begin taping until their own children are napping, asynchronous lessons can produce a higher-quality presentation.

Students, too, have a bit more control in an asynchronous setting. Maybe they need to wait until a sibling is finished with a shared laptop, or log in around their family's work schedules (or their own, in the case of a high school student). They can also watch asynchronous lessons at their own pace, pausing when they need more time to complete a question, or rolling back to hear an explanation a second time.

Asynchronous lessons are also scalable: one teacher can tape a lesson that multiple teachers can use, dividing the content workload among staff and freeing teachers up for other tasks. And asynchronous learning lends itself to more complex assignments, since students can take the time to be more reflective and to put more sustained thought into their work.

We've seen many different ways asynchronous lessons can support student learning. Students might watch a history lecture asynchronously, then use the information to answer a writing prompt offline. Math scholars could watch their

teacher demonstrate how to find the average of a series of numbers, then move to practice problems. Asynchronous lessons allow teachers to play with time, too. Lessons can have an "expiration date" or be "evergreen."

Expiration-date lessons are designed to be watched within a specific time frame—as narrow as a few hours or as broad as several days or more. Assigning deadlines is the most common approach ("Watch the lesson and upload the accompanying HW packet before Wednesday at noon," or "Watch the lesson, complete the problem set, and email it to me. When I get it, I'll send you part 2!"), though teachers may also experiment with referring to specific world or community events to bind lessons to a specific point in time. Basing a vocabulary lesson around a class birthday, for example, or selecting news articles to supplement novel study could be included in expiration-date lessons. These types of lessons are especially helpful in establishing and reinforcing responsible work habits in students and in building a strong sense of community.

Unlike lessons with an expiration date, "evergreen" lessons live forever and students can watch them whenever they need to. For example, a teacher might record a quick video on incorporating citations from a primary source if students need a refresher before end-of-unit essays, or simply capture a lesson about three-dimensional prism cross sections without specifying when or how many times to watch it. Students might watch an asynchronously taped science experiment several times.

The internet, too, is full of evergreen videos—famous authors reading their texts aloud, Bill Nye presenting scientific concepts, and Khan Academy coursework—which teachers can use to create a bank of helpful video content. We think as a rule that evergreen videos should be short and pithy, and used primarily for reference, homework, or as introductions to new

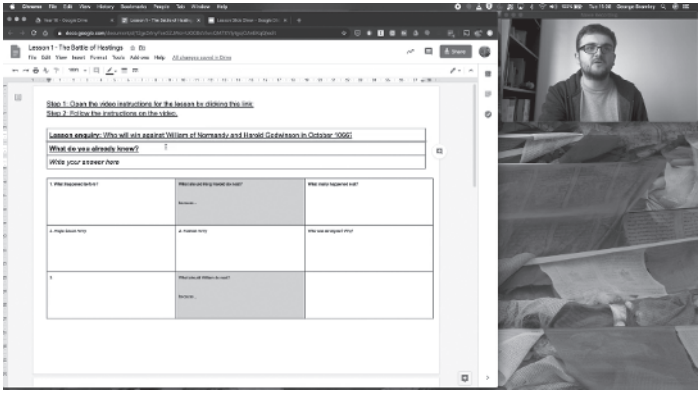
content (ideally followed up by a video with clearer student accountability and community). Though it may be tempting to imagine recording one video to introduce polynomials every year, student attention and engagement may decrease without those personal and timely touch points.

Asynchronous learning has its downsides, too. For teachers, without the ability to assess the engagement or understanding of their students, even the strongest asynchronous lesson can feel like teaching into a void. And the pressure to make the asynchronous "perfect" might translate into hours of refilming.

On the other side of the screen, students may lose a sense of connectedness to teachers and peers—and feel little accountability during asynchronous learning. We fear that students may watch and politely ignore all of the requests to "Stop and Jot," "add this to your notes," or "complete this problem," and instead wait for the teacher to feed them the right answer as the camera rolls. Or they might industriously complete every task but emerge not having mastered much—and without our knowing it. Without some component of synchronicity or accountability, there is no way of knowing if students are engaged at all. They may press play on the video, doodle on their paper while munching a snack, and then work on the assignment as if they'd never seen it.

For these kinds of engagement challenges, history teacher George Bramley from Brigshaw High School in Leeds, England, shared an elegant solution. George requires students to have a lesson-specific Google Doc open as they watch his prerecorded lecture. Throughout the lesson, he asks students to jot down time-specific notes and answers. Because his questions are set up to be embedded within the content as it is explained (e.g. "What happened before?" "What should King

Harold do next?" "What really did happen next?") and are formative in nature, students can't simply fill in the chart after half-listening. George can tell how attentive students were throughout and assess their lasting takeaways after the video has ended.



George also "checks in" with students during this asynchronous lesson by reminding students where they should be and what they should be doing: "Please make sure you are taking notes about this in that second row of boxes," and "You can type this next bit of information into Box #5." George may not be in the room with the students, but his thoughtful supporting document and verbal reminders ensure that students are processing the information step by step, efficiently and effectively.

There is also the risk that an asynchronous lesson may have asymmetric outcomes: the strong students continue to flourish; the struggling students continue to struggle. Multiple factors can influence those asymmetric outcomes: the attention span of the individual student, how much the student perceives themselves to like or "be good at" the subject, the

preexisting relationship with the teacher, and of course the ability and availability of family support.

Consider Sarah, who watches her Spanish lesson while her three siblings run around nearby; she's supposed to help watch them while her mom is out. Amelia, on the other side of town, sits at the kitchen with her mom nearby, keeping a warm but watchful eye on her and helping her stay organized. Who gets more out of that lesson?

As we know from years of making seating charts for our brick-and-mortar classrooms, where you are when you are learning can make a big difference on the outcome. In watching remote learning from around the world, we've seen students "attend" virtual school while wearing pajamas in bed, while buckled in the back of a moving car, and while seated amongst siblings at a crowded kitchen table. We've seen homes where an adult or older sibling is able to sit nearby and refocus a student, and we've peeked into learning environments where it's clear the ninth grader is simultaneously "in algebra class" and managing her much younger siblings.

Both watching a video and completing asynchronous work can require a fair amount of familial support (and internet bandwidth), which we know is particularly challenging for all families—and it's a particularly asynchronous challenge. In asynchronous learning, students are learning in whatever circumstances they may find themselves—supported or independent, confident or insecure.

Finally, too much screen time can increase fatigue and decrease attention. Think of the seven-year-old whose second-grade classroom once burst with song and projects now trying to learn multiplication from two-dimensional Ms. Smith. Or the student whose pull-out classroom gave her the scaffolding and support she needed to succeed in algebra and

is now on the same video as all of her classmates. Dwindling attention spans and lack of engagement can seem impossible to manage or monitor online. How do we know the difference between video rolling in the background and students doing the work?

Given the downsides, why even tape asynchronous lessons? Why not just send kids to some educational corner of the internet like Khan Academy where the content is good and comprehensive and ready to roll? A couple of reasons: connection and engagement.

Though a teacher filming in her dining room may lack the slick polish of popular internet fare, human connection with someone who cares about you is indispensable. And engagement, accountability, and task clarity aren't baked into videos not prepared with our own students' learning outcomes in mind. The content of someone else's video is "optional." It simply doesn't have the structure and support. It doesn't remind kids when and where to take notes, or require them to solidify content by pausing to try a problem.

We see both of these—the connection and the engagement—in Joshua Humphrey's asynchronous math class from KIPP St. Louis High School. First, Joshua breaks his daily math instruction into two shorter lessons and provides an assignment to complete in between. Even for adults, it's hard to maintain focus after 60 minutes or more on a Zoom call; by trimming his lessons and providing an application assignment, Humphrey helps his students pace their days, increasing their chances of attentiveness during each lesson. And Mr. Humphrey kept this lesson to a slim 12 minutes. Josh effectively breaks up tasks to help his students manage their cognitive load, applying and consolidating one concept, thus helping to encode it in long-term memory before moving to

another. And how much easier it is for students to remain fully engaged when they only have to practice the self-discipline of focus for 12 minutes instead of 40!

Video Clip: Joshua Humphrey, "Reference sheet"

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Next, as you can see in the clip, Humphrey models two techniques critical to building student investment in asynchronous lessons: he jumps right into the content, and he makes the learning personal.

In online learning, attention is a precious commodity—not a moment should be wasted. By kicking off his class with a clear objective, Josh is able both to keep the whole lesson to under 12 minutes and, even more importantly, signal to students that each of those minutes is important. What's so brilliant about his approach, though, is that he uses this Do Now to reinforce his connection with his students—a connection that is grounded in the learning they do together. He shows his face on the screen, looks directly at the camera, and delivers the directions with Economy of Language, warmth, and just a touch of informality. When he restates the objective "So you've gotta tell me about all the parts [of a polynomial], okay? What do they mean?" in kid-friendly language, it makes his students feel as though they are really back in the classroom with Mr. Humphrey. He reinforces this with his warm smile as he transitions to the Do Now: "First things first, just like in any other [brick-and-mortar] class."

Let's peek into another math class to see similar parallels with younger kids. Just like Joshua, Rachel Shin, of Brooklyn

RISE Charter School, uses every moment of asynchronous instruction to maximize learning and reinforce her relationship with her kindergartners. Rachel, like Josh, maintains the class structure she established in her brick-and-mortar classroom, jumping directly into the daily story problem. She looks directly at the camera with a warm smile, briefly mentioning the rain as a way of building up a tiny bit of challenge: "It's not going to keep us from getting the math done, right?!" Rachel is also deliberate with her Economy of Language, not wasting a single word or second of her students' ability to focus, but her tone is warm and her language informal. Like Josh, she uses time intentionally. She is present and human.

Video Clip: Rachel Shin, "Good morning"

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Rachel also uses the story problem as an incentive: the student who sends her the best strategy work on their problem is featured in the next day's lesson. This not only makes Nicholas feel incredibly proud that he and his LEGOs are "famous" in class, but also incentivizes his 23 classmates to watch and work hard.

Finally, as Rachel transitions toward her "board" (a piece of chart paper taped to the window), we feel like we are actually in her classroom. She alternates between looking directly at the camera, her students, and at the board, just as she would if they were together.

By infusing their efficient and focused instruction with warmth and presence, both Rachel and Josh are able to make the most of the asynchronous format.

SYNCHRONOUS LEARNING: BENEFITS AND LIMITATIONS

Some of the downsides of asynchronous learning can be addressed through synchronous learning. When done well, a synchronous lesson can truly replicate some of the collegial and engaged mood of a master classroom. Connections can be made and maintained. Students can see their teachers and peers, live, and interact with them in real time. Teachers can once again "read the room," Check for Understanding, and respond to what they see—who is struggling and needs more help. They can know when everyone grasps the concept, so they can increase the pace or present a more challenging problem.

In synchronous learning, there is a much greater likelihood of engagement. Our colleague Colleen shared that her daughter was definitely not a fan of her classes moving online. Until, one day, her teacher Cold Called her. Suddenly, she came alive. She was won over, because she realized that her teacher still sees her, knows she is present, and cares about her answer.

Of course, synchronous lessons have their limitations, too. As teachers, our "home" responsibilities and our "work" responsibilities sometimes collide in ways they haven't before. We've seen lessons where teachers had their own toddlers in their laps, sometimes in tears. (We're pretty sure that wasn't in the original job description!)

Adding further complexity is the fact that getting everyone *to* the lesson *and* logged in at the same time is much trickier than greeting an line of students in the hallway outside. Having to teach through tech adds an additional challenge to the teacher's working memory. A teacher who is juggling all the moving pieces of a lesson—delivering her content, balancing

Means of Participation, comparing student responses to her exemplar, and trying to project warmth and calm—now also has to make room in her brain for troubleshooting tech issues from her kitchen table. It's no wonder that accomplished, veteran teachers may feel as overwhelmed as they did in their first or second year of teaching.

And, as with asynchronous learning, screen fatigue and drifting attention spans sap brainpower. Though it may seem ideal for a fifth grader to spend the hours of 9 a.m. to 3 p.m. online doing synchronous learning with his teachers, we need to consider how many Zoom sessions he can attend in one day without depleting his entire attention span.

	Asynchronous Learning	Synchronous Learning
Benefits	• More polished product • Both teachers and students control their own schedule/pacing • Possibility of more sustained and complex assignments	• Building/maintaining connections • Checking for Understanding and responding to error in real time • Allows for greater engagement
Limits	• Can't assess engagement/understanding in real time • Less connection and less accountability • Disparate impact with struggling students suffering more • Screen fatigue • Decreasing attention	• Coordinating schedules • Tech issues/access disrupt learning • Screen fatigue • Decreasing attention

Though synchronous learning can, on some level, feel most like a classroom, it's not exactly. In fact, many classroom challenges are often magnified through it. How do we assess understanding, or deliver feedback, when we cannot crouch by a student's desk or read over her shoulder? How do teachers effectively monitor student engagement or continue to develop trusting relationships when we—and they—are tiny squares on the screen? These challenges are difficult to surmount, but not impossible. Eric Snider's synchronous lesson on Rita Williams-Garcia's *One Crazy Summer* at Achievement First Iluminar Mayoral Academy (remote) Middle School is the proof.

Video Clip: Eric Snider, "Perspective on poetry"

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In the lesson, Eric masterfully transitions the best practices from his brick-and-mortar classroom to his synchronous remote instruction. He starts his synchronous lesson just as he would his real class, welcoming each student by name as they pop into the Zoom room—he even shouts out one student's upcoming birthday and another's new hairdo, maintaining the relationships he has already built with his students. They get right into the Do Now, independently reading a three-paragraph interview with the novelist and answering two questions.

Because this is a synchronous lesson, Eric can assess student understanding in real time. Watch Eric do this first by thanking the students as they "chat" their answer to the multiple-choice question; his narration says, "I see your work and it's important" to individual students, but also

helps students feel like part of a class, "seeing" their peers hard at work beside them. Then he assesses whole-group understanding by noting that "80% of us got this correct," and proceeds to explicate both the correct and incorrect answer by taking the students back to the text and highlighting the proper evidence. Such a quick feedback loop is only possible in a synchronous lesson, where Eric can assess understanding, diagnose and correct confusion, and make sure all students are set up to succeed as they progress through the lesson.

BUILDING A SYNERGISTIC MODEL

Understanding the differences between the types of learning allows teachers to strategically balance them to maximize student learning. How do synchronous and asynchronous learning support each other? Which is more or less appropriate for students' needs? How can we leverage them in synergy with one another?

Just as teachers do when planning for the traditional brick-and-mortar classroom, they must keep context in mind when deciding how to teach. Variables such as the students' age and abilities, the subject matter, the daily objective, the nature of the content (new material or review), and the time of year (starting the class remotely or moving to remote instruction midway through the year) should guide decisions about when, where, and how to maximize the benefits and minimize the limitations of each type of learning.

The things we love most about teaching seem to transfer best to synchronous instruction. Synchronous lessons seem the best place for establishing and maintaining the trusting academic relationship between students and teacher. Discussion, for example, can only live in a synchronous lesson. Thus,

the lessons we usually reserve for discussion and debate, the interactions that peers need with one another to test out and refine their ideas, are synchronous. Challenging material, like a new math concept or an especially tricky reading, also benefit.

Before we jump to an "as much synchronously as possible" model, though, it's important to keep in mind three factors. First, it can be challenging to train or to find the unicorn teacher who both excels at the skills of brick-and-mortar instruction (content delivery, engagement strategies, classroom management) and has the tech savvy it takes to manage screens and platforms to deliver high-quality, engaging, synchronous instruction. Asynchronous instruction allows more room for coaching and feedback before going live—and as many attempts as needed to ensure a high-quality final product.

Second, as we've mentioned, screen fatigue is a real thing, for both teachers and other adults, and for children. It doesn't seem now that students of any age (or their educators, spending their days in multiple hours of professional sessions) can still concentrate fully in the sixth hour of online instruction, no matter how engaging or talented the teacher may be. Asynchronous learning allows for learners to work at different paces. Not only that, but it also allows them to complete their learning tasks fully unplugged—a state with tremendous benefits to attention.

Third, one of the largest benefits and challenges of synchronous instruction is that all players must be present at the same time. If your student population comprises high schoolers who are themselves essential workers, then asynchronous learning becomes a necessity. If you work with a team of teachers, all or most of whom have young or school-aged children at home who are also in virtual school, day-long synchronous

instruction may also prove exceptionally challenging. Finding ways to maximize the synergies between asynchronous and synchronous instruction will likely yield the most successful learning outcomes for the greatest number of students.

Our colleagues at Uncommon Schools have explored several potential structures for a hybrid model. In one approach, a lead teacher (department chair or instructional leader) records a single asynchronous lesson that all students watch, whether or not the teacher was their classroom teacher during the school year. For example, an outstanding teacher of seventh-grade science in Boston might record the lesson that all seventh-grade science students in Boston, Newark, and Brooklyn would watch. Students then submit the work from that lesson directly to their own classroom teacher, who provides feedback both in a Google Classroom forum and also via biweekly phone calls. In this way, a variety of synchronous options support asynchronous learning, and human capital is maximized. All students with individualized learning plans, as well as those who need additional assistance, are then scheduled to attend daily small-group synchronous sessions to make sure they progress toward their learning goals. In another synchronous learning support, students who struggled with a particular skill are required to attend a live session in which the challenging material is reexplained and students complete additional practice together. Finally, all teachers offer live "office hours" for their students to attend synchronously. Some students choose to attend these office hours, and others are invited or required to do so by their teacher.

We have also heard of schools providing entirely asynchronous content instruction and offering synchronous opportunities to come together as a community to celebrate success, process challenge, or discuss current events. Many

schools have used Deans of Students to facilitate these moments of synchronous community building.

Another way to combine the best of synchronous and asynchronous instruction is to consider a "Flipped Classroom" model, where all instruction takes place via asynchronous video and all "live" time is used for supported practice, discussion, and remediation. In this model, students are responsible for coming to class having watched the asynchronous direct instruction video, at a minimum, and potentially having completed a bit of independent work to serve as a quick way for their teacher to assess their levels of mastery before group practice time.

If you are reading this book as an individual teacher, then these kinds of structural decisions may be out of your control. However, the ideal combination of asynchronous and synchronous learning for your classroom may still be up to you. For that, let's jump back into Eric Snider's *One Crazy Summer* lesson. After the Do Now, Eric plays an audiobook excerpt as students read along, then sets up the independent work—work that will happen asynchronously, but still on the live feed. He stamps this as "the climactic moment" and he's full of questions that make it seem fascinating ("Why does Fern keep barking?") and like a big deal ("Get ready for a plot twist as you now read on your own.").

Video Clip: Eric Snider, "Sync async fusion"

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Eric's clear-as-a-bell task directions remain on the screen for students as they head off for their independent tasks.

He leverages synchronous instruction to reinforce focus and attention with his warm narration ("I see you Armani.") and asks students to "shoot him a chat" if they need more time. Eric structures the last part of his class as a silent, uninterrupted chunk of time to work, while he monitors what students type in their documents. Ten minutes before class ends, he narrates what he sees: "I see Jazleene typing her answer to our Exit Ticket question . . . so's Jaylee and Jordan D," and "I see Jame, she's going down the text to reread for evidence, really smart, Jame." Eric and his students maintain engagement and accountability to the end and echoes of the classroom abound.

PLANNING: WHAT WAS CRITICAL HAS BECOME CRUCIAL

Planning for remote learning relies on many of the same techniques that classroom teaching relies on. Even so, it's easy to underestimate how much preparation can help set up a teacher for success. True, on the one hand, you don't have to run the overhead projector while the class phone is ringing and Sasha wants to use the bathroom (again!). On the other hand, you'll be trying to teach while also running through a PowerPoint deck, attempting to read student chats, and trying to assess understanding and engagement from tiny boxes on a screen. For this, being ready usually means scripting exemplars, using Economy of Language, pacing appropriately, leveraging Wait Time, varying Means of Participation, and internalizing the lesson before recording or going live. We've found that the importance of the following two planning components is amplified in online learning:

1. **Read your entire lesson plan, even if it was written for brick-and-mortar classrooms.** Though you may

reprioritize and tailor content for virtual learning, that's hard to do correctly without reading the entire plan. Further, in remote instruction, intentional teacher language connecting one lesson to another, or clearly explicating the purpose of a particular activity, becomes all the more important. It's not possible for teachers to make the purpose of a lesson "pop" without having full context themselves—without laying out why it is important and how it is connected to the larger plan.

2. **Complete all student materials as if you were a top student, creating an exemplar packet.** This process helps you to get a full picture of what student mastery will look like, enabling you to guide students there with increased precision. It also is your most valuable tactic to anticipate student misconceptions.

The importance of creating an exemplar is amplified for online learning. When assessing for understanding via "chat" while trying to virtually manage 25 ten-year-olds, you need a crisp and clear exemplar to refer to. Especially if you are delivering asynchronous instruction and don't get to read confused faces or confidently raised hands, you need to have thoroughly anticipated student confusion in advance and preemptively respond to it in your instruction. When you are Cold Calling and listening to students answer through occasionally garbled audio, with competing background noise, or reluctant participation, knowing exactly what constitutes a successful verbal answer is essential. There is no working memory to waste. Being prepared to successfully overcome the unique challenges of remote instruction means starting with deep knowledge of the content you are teaching.

A last element of planning may be particularly critical in remote settings, both synchronous and asynchronous, where the screen plays a much more important role. There's power in using images, but the right design is critical.

In her outstanding book *Teachers vs Tech,* Daisy Christodoulou summarizes two of Richard Mayer's principles of multimedia learning. The first is the split attention effect. Integrating text and images together so that the text appears in small chunks at the appropriate time and place and "narrates" the image allows students to focus their working memory on the most important concepts. It's far more effective than presenting a long description and an image to illustrate it. Integrate the two.

The second principle Christodoulou recommends to teachers is the redundancy principle. Good educational graphics remove all extraneous content to let students focus on what's important. That often means taking images from other sources and simplifying them, rather than merely cutting and pasting them. Joshua Humphrey's math lesson at KIPP St. Louis is a great example. Notice how streamlined his graphics are — how the small highlights appear to support his narration and focus students on the relevant part of his reference sheet.

Video Clip: Joshua Humphrey, "Reference sheet"

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Once you've thoroughly prepped for the content of your lesson, it's time to focus on your teaching process: how to translate the learning that would have taken place in a classroom to a synchronous or asynchronous setting. It's here that the

challenges of effective planning multiply in previously unknown ways. It's important to consider the following:

- Have you determined how you will hold students accountable for doing the work? In other words, how can you be sure that they will really pick up their pencils?
- Have you been intentional about establishing and nourishing the precious back-and-forth teacher-student learning relationship that still exists, despite the screens between us?
- Have you streamlined and prioritized content in response to the real challenge of attentiveness in a remote culture?

Our hope is that the remaining chapters of this book will provide you with structure and context for tackling the unique challenges of planning for virtual instruction.

SYNCHRONOUS AND ASYNCHRONOUS LEARNING: IN REVIEW

In general, remote learning takes two forms: asynchronous (at different times, in different places) and synchronous (at the same time, in the same "place").

- **Asynchronous Learning: Benefits and Limitations:** Asynchronous learning gives teachers more control over the final product, and students more control over when and where they learn. They're also scalable, meaning they can be used across classes. The downsides have to do with a limited ability to assess engagement and to sense connectedness among peers.
- **Synchronous Learning: Benefits and Limitations:** When done well, synchronous lessons can replicate much of the magic of brick-and-mortar classrooms. On the downside,

they can be logistically complex, especially for teachers with kids at home.

- **Building a Synergistic Model:** Both types of learning have benefits and limitations. The trick is finding a way to get the most out of both and exploit the natural synergies between the two types of learning.
- **Planning: What Was Critical Has Become Crucial:** Planning is even more important online than it is in person. Being "ready" in remote teaching usually means scripting exemplars, using Economy of Language, pacing appropriately, leveraging Wait Time, varying Means of Participation, and internalizing the lesson before recording or going live.