Evidence-Based Recommendations for Hybrid Classrooms

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The hybrid model of teaching and learning combines online and in-person learning into one cohesive experience. Although the model has been around for many years, interest has been on the rise because it gives instructors the flexibility to design their courses in a way to reduce the risk of exposure to COVID-19 and give students ownership over their learning.

Another advantage of the model is that it can be the "best of both worlds" by giving students and teachers the in-person and social interactions they crave while also taking advantage of the benefits of technology. This is supported by research: on average across many studies, findings show that blending online and in-person learning is slightly more effective than face-to-face learning alone.

This document serves as a primer for those who are ready to try hybrid teaching and learning. Drawing on the research literature, it covers where to start, a model for integrating technology, how to plan hybrid interactions with students, what a learner-centered approach is and how to support it, advice for online assessments, as well as an example of a hybrid implementation.

Where to start

Successful hybrid courses fully integrate online and face-to-face instruction, planning interactions in a pedagogically valuable manner. Build around what you want students to learn:

Don't: think of your hybrid class as a direct translation of your face-to-face course. Common pitfalls are to directly translate the online or to add online components onto a face-to-face class. One meta-analysis cited that many blended courses were not successful because they were "a course and a half".

Do: build your course by starting with the learning objectives in your syllabus. Then, as you're building your course, select and align the delivery method, technology, and assignments that will best help students learn the objectives and content.

Consider three things during this process:
1. What needs to be done in-person versus online
2. What needs to be in real-time versus giving students flexibility
3. What needs to be instructor-facilitated versus facilitated by the learning resources

Integrate the experiences

Melding in-person and online classes doesn't need to be disjointed. You can incorporate them in such a way that they support each other. For example, assign challenging and engaging online learning activities and then discuss them in-person, inviting questions. If you're encouraging online discussion, reference these discussions in class to confirm their value.

Choose the right technology for you

Technology also has benefits that can improve learning, such as immediate feedback and monitoring progress. Rather than starting by shopping for educational technology, start by understanding the problems you experience. Then evaluate whether educational technology can help solve those problems.

Challenge	Solution	Example
Educator Different students struggle with different aspects of the material, and hold a variety of misconceptions. It is difficult to have an in-depth understanding of this for my whole class.	**Insight and analytics** Technology can: — Gather highly detailed information about each student — aggregate information consistently — surface trends through analytics and machine learning — provide this in easily intelligible visualizations that support pedagogical actions — allow for more frequent assessment, so that student needs can be reviewed more often	If students are playing a game that teaches the concept of geometric area, the game can gather information about who understands the concept deeply and who is only able to apply the formula proficiently, based on how the students manipulate objects in the game. Information about students' progress with their conceptual understanding can be displayed for educators in real time.
Educator I have a large class of students with differing abilities, interests, and goals, and it's difficult to pitch the content and support at the right level for everybody. **Learner** When work is too hard, I get frustrated. When work isn't relevant I tune out.	**Personalized activity selection** Technology can create multiple activities from templates, and some of those can be further customized based on a variety of factors, producing individualized choices for students that take into account their abilities, interests, and needs.	Learners could receive algebra problems tailored to their own interests[1] or a worked example could be generated that helps a learner compare an error they made to the correct procedure.[2]
Educator My students are at different levels, and so they need a variety of supports during different parts of their learning process. **Learner** The kind of support I need when I am just starting out is very different from what I might need as I am practicing and learning.	**Personalized feedback** Technology can give each student specific feedback as they work, even on a step-by-step basis.	A student is completing a calculus problem. They submit their written solution to an app. The app indicates whether each step is correct. Next to an incorrect step it also notes, "Try the chain rule. Click here for a video about applying the chain rule."

Plan effective interactions

After you've identified the learning objectives, think about the interactions you'll use to facilitate learning and which mode you'll use. Hybrid learning enables a lot of flexibility in how the students interact with each other, with you, and with the learning materials. Interactions can be categorized into three types: Instructor-Learner, Learner-Learner, and Learner-Content.

Instructor-Learner
Instructor interaction is a major driver of successful learning, filling various roles:

— ***Procedural:*** Provide administrative and technical information

— ***Expository:*** Present content

— ***Explanatory:*** Explain content in relation to learners' questions

— ***Cognitive:*** Present an instructional task that gets learners thinking

— ***Assistance:*** Provide scaffolding

— ***Social:*** Create a positive social atmosphere

Examples: emails, announcements, and discussions

Learner-Learner
These interactions can either happen online, with learners interacting but not necessarily in real time (asynchronous interaction), or in person. These modes each have their pros and cons.

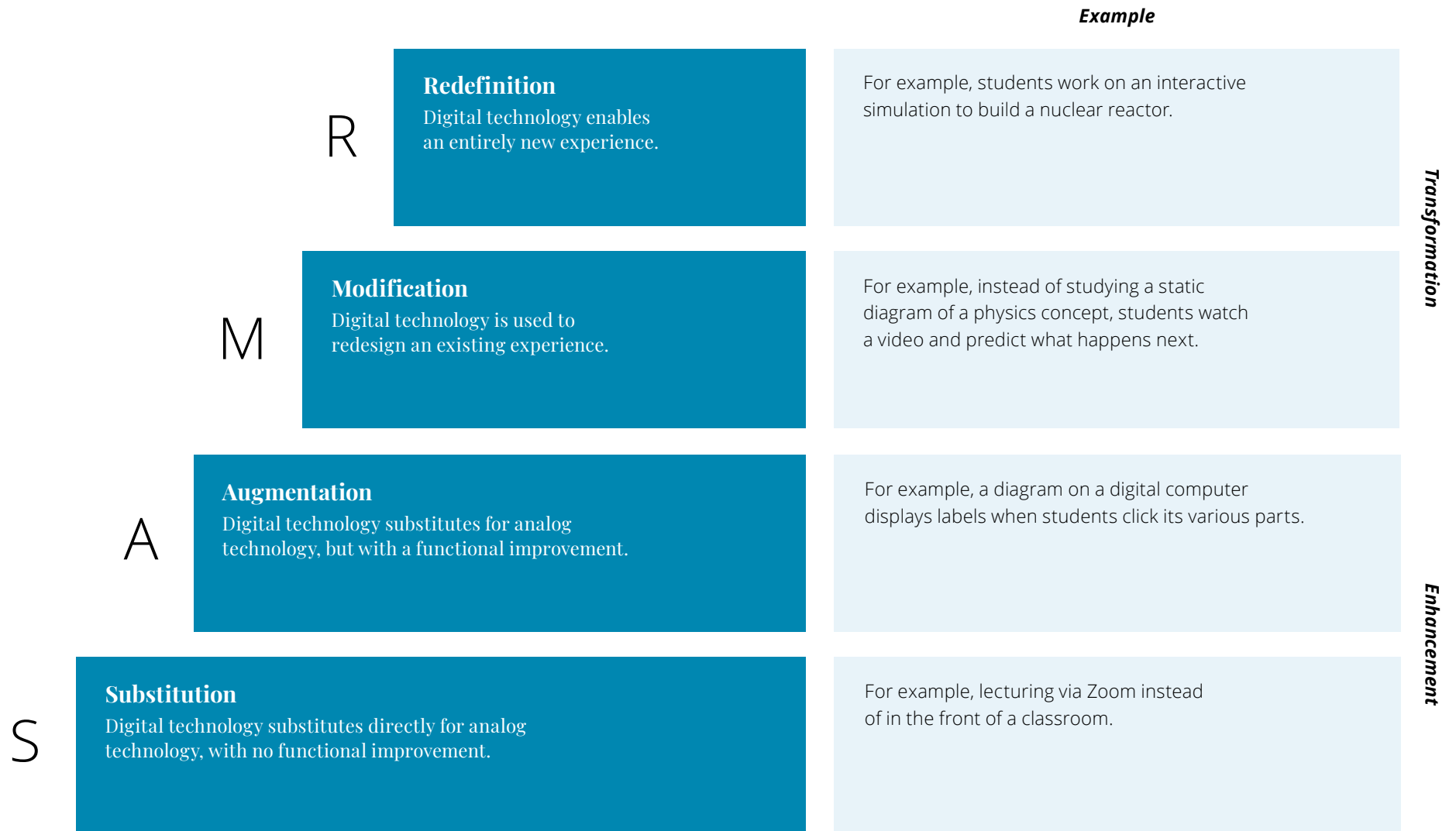|	Online *(asynchronous)*	Face-to-face *(synchronous)*
Strengths	— Flexibility — Participation — Depth of reflection	— Human connection — Spontaneity
Weaknesses	— Less Spontaneity — Procrastination — Less Human connection	— Less Participation

Examples: discussions, collaborative group work, and peer-review activities

Creating effective online discussions can feel daunting. Here are a few tips to encourage learner-learner interactions online:

— Students can be more successful working together after they first get to know each other.

— Organize students to work in smaller cohorts and teams; assign roles if necessary.

— Give students something to talk about and expectations and guidance for how to do so. For example, have students collectively annotate and discuss a reading passage.

Learner-Content

The SAMR Model is one way of thinking to make the most of student interactions using technology. Augmentation, modification, and redefinition have the potential to add value beyond traditional in-person instruction, while direct substitution is the least effective option.

Example

R

Redefinition
Digital technology enables an entirely new experience.

For example, students work on an interactive simulation to build a nuclear reactor.

M

Modification
Digital technology is used to redesign an existing experience.

For example, instead of studying a static diagram of a physics concept, students watch a video and predict what happens next.

Transformation

A

Augmentation
Digital technology substitutes for analog technology, but with a functional improvement.

For example, a diagram on a digital computer displays labels when students click its various parts.

S

Substitution
Digital technology substitutes directly for analog technology, with no functional improvement.

For example, lecturing via Zoom instead of in the front of a classroom.

Enhancement

4

Craft a learner-centered approach to learning

In a hybrid model, encourage students to take control of their learning. Start by enabling students to choose how they engage with the materials. Hybrid models allow students to chose in when, how, and what they engage with. Although there are real-time aspects of a hybrid course (either face-to-face or online), much of the learning occurs on the students' own time.

— Students can flexibly choose when to study and learn based around their own schedule and obligations.

— Flexibility in how to study is important, too. Students are often on the go, and being able to seamlessly switch their learning between a computer, a tablet, and a mobile device makes learning more accessible.

— Depending on the material, students can be offered a choice over in what they engage with. If the content can be modular and stand alone, offer some choice in what learning objectives to take on first. Additionally, let the students decide when they want to practice familiar content, or take on some new learning. Sometimes content must be sequenced in a particular way, but if there is room for it, offer your students some choice.

Students will need a different kind of help to succeed in a learner-centered approach. Their own independence should be encouraged and they'll need support to take ownership of their work.

— Throughout the class, give clear instructions, manageable assignments, and support for students to learn outside of class. Communicating about how the class design works and your expectations, such as online participation, is key for student success.

— Make sure they can use the tools by doing a technology "onboarding" session about how to use the tech and where to go for help.

Importantly, prompt them to monitor and reflect on their learning, and then act on their new understanding.

Motivation may be a strong barrier to completing online learning experiences
There are a few things you can do to keep students motivated:

— **Build a sense of community.** One challenge of online learning is that students often feel quite isolated. Consider how you can make direct contact, through emails, instant message and video, with as many learners as possible, helping them see that you are invested in their learning.

— **Help students feel like they can succeed.** When learners feel like they are capable of succeeding, they are more likely to persist.

— **Establish ways to monitor progress.** If students aren't sure of how they are doing, they may not engage productively. Establish and communicate explicit goals for the course, and tie student activities and progress back to those goals. Look for tools in your online system that can help learners stay on top of their progress (for example practice questions with instant feedback, study organizers that check off when students use different resources, and so on). Be explicit about how you think those tools can help and recommend students use them, so that they see the potential value in them.

— **Reward and celebrate success.** While it is true that learning is its own reward, everyone can use a little help now and then to stick to their goals. Think of ways to provide students with rewards, whether those are in the form of praise, points towards their grades, or some collective goal the class works towards. Focus on rewarding good effort, progress, and the kinds of learning behaviors you want to see more of, not just achievement.

— **Relate class to students' lives.** It can be hard to stay motivated when we don't see the value in what we are doing. One important source of value for academic learning is the connection to our everyday lives. How can I use what I'm in learning in class to advance in my career, achieve my goals, or help my friends, family, and community? Offer students some potential connections like those, and also help them try to make those connections for themselves!

What does good self-management look like?

To help students stay on track, you also can teach them an important lifelong skill: self-management.

Self-management is broadly defined as the ability to intentionally and strategically manage one's emotions, behavior, effort, and environment in the pursuit of goals. It has six components:

1. *Planning:* Sets realistic yet challenging goals and plans activities ahead of time; manages time according to plans.

2. *Organization:* Keeps work artifacts in an organized fashion to improve efficiency.

3. *Persistence:* Applies appropriate levels of effort to tasks, in spite of obstacles or difficulty.

4. *Progress monitoring:* Accurately tracks and assesses one's knowledge, skills, and progress; chooses appropriate strategies to evaluate and improve knowledge, skills, and progress.

5. *Control:* Effectively regulates behaviors and emotions, typically to support goal pursuit.

6. *Attention to detail:* Pays attention to detail and has careful and precise work habits

Like any skill, self-management must be taught explicitly. One particularly useful tool for supporting goal pursuit is the development of implementation intentions. Implementation intentions are "if-then plans" that help students identify good opportunities to act on their goals and then coordinate these opportunities with the specific behaviors that are effective in accomplishing goals. For example, suppose a student wants to study for one hour each weekday evening and realizes she has an hour available after returning from campus at 4:30 p.m. before going to the gym. The student could then make the implementation intention that if it is 4:30 p.m. and she has just returned from campus, then she will sit down in the kitchen and study for one hour.

Take your assessment online

If your preference is to use a traditional summative exam, these research-based tips can make the online experience better for you and your students.

1. Create clear and specific rules and instructions so students know exactly what to do

— Online assessment is new for your students. Reduce anxiety by clearly communicating the rules and instructions before the exam so there are no surprises.

— For example, if you would like them to write their essays in paragraphs or to show their work for problem sets, be sure to explicitly state this.

— The rules may include how many opportunities students have to complete the exam, if they can or cannot save and come back later to finish, if they need to put away all mobile devices, and whether it is an open or closed book exam.

— Provide other details such as the list of learning objectives the exam will address, how many questions to expect, the amount of time they will have to complete the exam, how many points each question is worth, and so on. A study guide or a practice test can also help your students prepare.

2. Reduce the opportunities for cheating

— Password protect your exam and limit students to one login attempt.

— Require students to complete a statement of honesty before beginning the exam (this can be done through a digital form or added as the first item of the exam).

— Open and close access to your exam session within a predetermined time period.

— Shuffle items or create multiple versions of the exam to randomly assign to students.

— Create a pool or item bank to pull random questions from (many platforms allow for this, including MyLab and Mastering, and most learning management systems.

— Ask students to justify or explain their answers by adding an open response field after each selected-response question.

— If you don't have the capabilities listed here, use more open-ended question types instead of true/false or multiple choice questions.

3. Make sure students can reasonably complete the exam within the time allotted

Unless you are assessing how quickly your students can complete the exam, allow them ample time to complete it. It is important to keep in mind that your students don't know the knowledge and skills as well as you do, so be sure to cushion each item with more time than you would expect to take to complete it yourself. If possible, have an assistant or colleague proofread your exam before it is time to administer it.

4. Align your exam questions to learning outcomes

— Regardless of whether the exam is online or on paper, if you are creating it from scratch, make sure you use the objectives as your guide as you develop the questions.

— Determine which types of questions or items best reflect the learning objectives. For example, if the objective requires a student to critique a poem, then an essay question would be a more logical and efficient choice than a multiple choice question.

5. Base scoring and point values on the complexity and difficulty of the questions

For instance, if you have a multipart question, consider assigning partial credit for each part of the question if the system allows. For math or science problem sets, allow students to show their work such as by sending in a photo of their workings or describing the steps they took to solve a problem or complete a process.

Continuously improve

Keep your approach simple at first and aim for continuous improvement, not perfection. We encourage you to try something, get feedback from your students, and keep improving your course. And, you're not alone. Your colleagues may also have advice too. You can build an informal or formal learning network. This is a learning experience for everyone.

Example hybrid implementation

Dr. Nadine Campbell, a lecturer and academic course advisor at Western Sydney University delivered her Organisational Behaviour course via a flipped model, with online lectures followed by a two-hour face-to-face workshop tutorial each week.

To help boost the level of student engagement in the course, in addition to the theoretical content, Campbell also prompted students to examine why they were taking the course, and if they would like to pursue a major,and a career in Management.

How she used technology:

— Students were required to complete certain activities, before their tutorials including online lectures, online quizzes and simulations delivered through MyLab Management, and some curated videos from external sources such as TED talks.

— Campbell merged the voiceover recordings, and lecture slides from the Educator Resources that accompany the MyLab into one unit.

— The MyLab online quizzes were due the night before each tutorial.

— She also tracked students in the platform to see if they were accessing the units as the course progressed.

How she structured her in-person classes:

— At the start of each weekly face-to-face tutorial, Campbell and her tutors administered an online quiz to refamiliarize students with the topics of the week.

— During the tutorial, Campbell used the instructor resources in MyLab Management with some augmentations. For example, Campbell used the Myth vs. Fact and Personal Inventory Assessment resources as stimuli for tutorial activities and class discussions about the outcomes.

— She also discussed case studies from the text in these tutorials.

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About the authors

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Katherine is a Senior Research Scientist at Pearson, and is a research to practice connector. Trained in cognitive science research labs across the country, she has worked to connect insights from the science of learning to educational practice throughout her career. Katherine earned her PhD in Cognitive Development and was an Institute of Education Sciences' Experimental Education Research Fellow at Vanderbilt University's Peabody College of Education. Her research focused on the cognitive development of children's mathematical reasoning, as well as the causal mechanisms and efficacy of instructional interventions in both laboratory and classroom settings. Her postdoctoral work at Arizona State University centered on a research partnership between The Learning Sciences Institute and ASU Preparatory Academies, incorporating a theory of active learning into middle & high school teacher pedagogy. Since then, she has continued to bridge research and practice outside of academia, working with educational technology start-up companies, state governments, and more. Katherine firmly believes in the power of enabling educators with insights from research and incorporates this mindset into her work at Pearson.

Emily Schneider, *PhD*

Emily has spent more than a decade researching and designing learning experiences for higher education. As a Senior Learning Designer at Pearson, she helps product teams create effective and engaging digital learning experiences at scale. Emily believes that we should take advantage of technology for what it offers but never forget the power of the embodied human experience. She holds a PhD in Learning Sciences and Technology Design from Stanford University.

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