
Deep Learning is Doable:

Five Strategies for Supporting Deep Learning in Virtual Environments

Jay McTighe, Harvey Silver, and Matthew Perini

Learning is learning, whether it occurs in a classroom, at a library, or within a virtual environment. But regardless of the venue, learning can vary—from superficial to substantive. We wrote this blog post because we know that so many teachers across the country are looking for ways to make online and hybrid learning more substantive and less superficial. In it, we'll describe five specific and practical strategies, along with associated tools, that promote deep learning in virtual and hybrid settings—as well as in traditional classrooms.

What is deep learning and how is it achieved?

While there are different connotations for the term, we propose that deep learning occurs when students come to understand important ideas and processes and are able to transfer that learning. Our conception aligns with that of the National Research Council (2012): “While other types of learning may allow an individual to recall facts, concepts, or procedures, deeper learning allows the individual to transfer what was learned to solve new problems.” (p 6)

While information can be transmitted by telling, we contend that understanding must be “earned” by the learner. We can directly teach facts and procedures, but developing an understanding of more abstract, and transferrable ideas must be constructed in the mind of the learner through deliberate mental processing of new information. Indeed, the phrases, *coming to understand and making sense of...*, are suggestive of the fact that deep learning occurs over time and requires the active mental manipulation of content via “higher-order” thinking. We refer to this active construction of meaning by students as meaning making.

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Here are five practical and proven strategies for focusing content on bigger ideas to avoid superficial “coverage” and engaging students in the active, meaning-making process necessary to develop understanding in support of transfer.

Strategy One: Make Every Unit a “Study In” a Big Idea

Covering every last bit of the content at the expense of giving students time to think about and process the material has always been a poor strategy for promoting deep learning. The reason is simple: There’s no use in getting through the content if students aren’t getting it in the first place. The result of trying to “cover” too much content is often superficial and disconnected learning that does not last. The realities of online and hybrid learning, with their reduced instructional time, only compound this issue. So, now is the ideal time to frame curriculum units around larger concepts and themes. Making this shift will promote conceptual thinking and keep the big ideas front and center in both teachers' and students' minds.

A simple tool for making this shift is *A Study In...* (Silver & Perini, 2010). This tool invites teachers to look for the biggest of the big ideas when designing and naming their units. Below are some examples of units that were conceived as studies in larger concepts or universal themes:

- The Four Seasons: A Study in **Renewal**
- Decimals, Fractions, and Percentages: A Study in **Equivalence**
- The Rainforest: A Study in **Balance and Harmony**
- The story, Frog and Toad are Friends: A Study in **Relationships**
- Weight Training: A Study in **Proper Technique**
- Covid19: A Study in **Personal and Social Responsibility**

Notice that whether the unit addresses a content topic or a skill, *A Study In...* establishes a conceptual lens to focus learning around transferable ideas, rather than isolated facts and discrete skills. Students are then engaged in finding evidence for, and examples of, these larger concepts, both within the unit and to topics and situations beyond it.

Strategy Two: Use Essential Questions to Promote Exploration of Big Ideas

Another way to keep learning focused on big ideas is to frame lessons units around Essential Questions. Essential questions are open-ended, thought-provoking questions that engage students in exploring and uncovering "big ideas" (McTighe & Wiggins, 2013). Rather than yielding a single, "correct" answer, these questions are designed to engage students in making meaning by stimulating thinking, sparking discussion and debate, and raising additional questions for further inquiry.

Below are a few examples of essential questions in different disciplines. Consider what the impact would be if you were to organize your curriculum around questions like these to help learners make meaning of core concepts and earning deep understanding.

- Geography – *Why is _____ there?*
- Government – *Who should decide?*
- History – *Why study the past?*
- Literature – *Should a story teach you something?*
- Mathematics – *What do effective problem solvers do when they get stuck?*
- Science – *How do we know what to believe about a scientific claim?*
- Writing – *What makes writing worth reading?*
- Visual and Performing Arts – *In what ways does technology affect the arts?*

Strategy Three: Begin Units with a “Pile of Words”

Deep learning occurs when students actively “construct” meaning of abstract and transferable ideas and processes. In essence, they are generalizing, i.e., forming concepts and principles derived from specific examples. A powerful strategy for engaging students in this kind of meaning making is Inductive Learning, which is based on the pioneering work of Hilda Taba (Taba, Durkin, Fraenkel, & McNaughton, 1971). Here, in a nutshell is how Inductive Learning works:

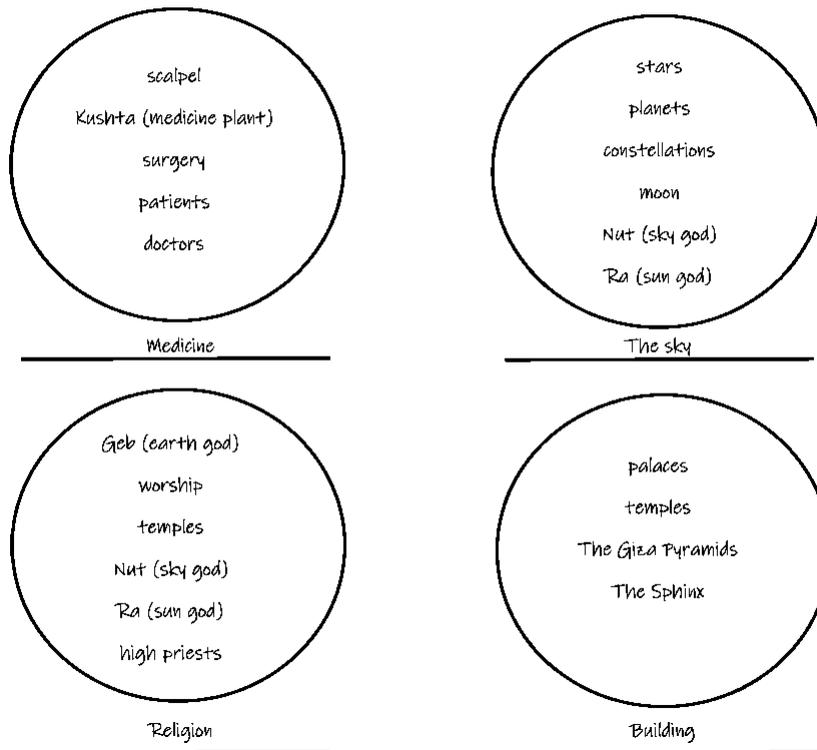
1. Students are presented with a “pile of words”—a list of terms related to a reading, lesson, or unit they are about to begin. For example, young students who are about to learn about the Ancient Egyptians might be presented this word pile:

scalpel	planets	moon
stars	temples	high priests
Geb (earth god)	Nut (sky god)	doctors
Kushta (medicine plant)	constellations	The Giza Pyramids
surgery	patients	
worship	palaces	Ra (sun god)
	The Sphinx	

2. Students review the terms, look up the ones they are unfamiliar with, and then group terms together based on common characteristics. Then, they name the group. Figure 1 shows how one student team grouped and labeled the above terms.

3. Students use their groups to make predictions about the learning to come. For example, students might make predictions like these: “There were Egyptian doctors who used tools and plants to help sick people” and “The Egyptians believed in many gods.”
4. Students test and refine their predictions as they learn more. For example, during the Ancient Egypt lesson, students collect evidence from readings and as they progress through the unit, looking for any information that confirms or challenges their predictions. This evidence-gathering requirement turns the lesson into an inquiry—a search for information and keeps the learning active, thus helping to address one of the biggest challenges of online learning

Figure 1: Grouped and Labeled Terms



Inductive Learning is a versatile strategy that can be used in many ways to help students activate their prior knowledge, construct an initial conception of the content to come, develop their classification skills, make predictions, and test and refine their predictions in light of new learning. Here are a few tips for using it in your classroom or online learning environment:

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- **Model the process.** Work with students to group and label everyday items (things in a sporting goods store, types of food) to help them understand the process.
 - **Mix familiar terms and unfamiliar terms.** Having some familiar terms helps connect new terms to concepts they're already familiar with. And remember that as students get older, they can handle more terms. Aim for somewhere between 15 – 40 terms, depending on the age of your students and your objectives. Of course, make sure that the terms you select will help students discover some of the important big ideas you aim to highlight.
 - **Use it as a pre-reading strategy.** Giving students important words about the setting, characters, and action of a story helps them make predictions and test them as they read.
 - **Think beyond words.** Having students group and label paintings, pictures, or physical objects is a great way to build their thinking and classification skills. Just make sure that students explain why they put certain items together.

Strategy Four: Engage Students in Active Reading

The increase in asynchronous learning that often comes with online and hybrid instruction means that more now depends on students' ability to read and make meaning of texts for themselves. Enter *Reading for Meaning* (Silver, Morris, & Klein, 2010; Silver, Strong, & Perini, 2007), a tool that engages students in active reading and helps teachers accomplish a number of important objectives: *Reading for Meaning* improves reading comprehension, provides direct training in how to find and evaluate relevant textual evidence, and develops in students the healthy skepticism of good critical thinkers ("Let's see what the evidence suggests before we jump to conclusions"). And it does all of this by extending the typical reading comprehension paradigm from asking questions about the text to posing statements about the text.

Unlike comprehension questions, which often suggest right-wrong thinking to students, *Reading for Meaning* statements are open-ended. And unlike questions, which come after reading, statements are presented before students read the text. Statements are meant to be pondered, to be interpreted and defended, to be discussed. Statements also have the power to stir up controversy—a great way to engage students. For example, imagine you are an eighth-grade student about to read a web article about genetically modified foods, or GMOs. Now imagine that before you begin reading the text, you are presented with these three statements:

1. When scientists develop a technology that can improve people's lives, that technology should always be pursued.

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2. There is conclusive evidence that GMOs are safe.
 3. The public's lack of knowledge about the science behind GMOs is being exploited.

Do you agree or disagree with these statements? Maybe you're not sure. Your job, if you were a student, would be to collect evidence from one or more articles that either supports or refutes each statement. And Voila! Inquiry is in the air. Students approach the text with increased focus and purpose. They may collect evidence both for and against the same statement, as controversial and open-ended statements often promote deliberation when the issues are complex and the answers are unclear

Whether using *Reading for Meaning* in the classroom or online, give students time after reading to work in small groups (or virtual rooms) to review the statements and explain the evidence they collected from the text to support or refute each statement. When students cannot reach consensus on a particular statement, encourage them to rewrite the statement so that they can all agree on it. For example, after reviewing their evidence, students might not be able to collectively agree (or disagree) with the statement, "When scientists develop a technology that can improve people's lives, that technology should always be pursued." So, they can rewrite it in a way that promotes consensus: "When scientists develop a technology that can improve people's lives, that technology should be tested for risks before it is pursued."

Reading for Meaning is not limited to classroom uses that involve texts. It works just as well when used with data tables, diagrams, videos, and almost any source of information that we want students to analyze and interpret. Just try to make your statements "juicy" so that students become more invested in taking a position and hunting down evidence to support it. Here, for example, are some examples of juicy Reading for Meaning statements:

- Spiders are more helpful than harmful.
- The work of street artists deserves to be studied alongside the works of the so-called "masters."
- The Declaration of Independence has a "villain."
- The author wants us to feel guilty.
- Everyday life would be very difficult without fractions.

Strategy Five: Use Empathy to Make Learning Personal

With social isolation and political divisiveness at all-time highs, there has never been a better time to invite empathy into our classrooms and online learning environments. Empathy, or "being able to walk in someone else's shoes," engages the distinctly human capacity to step

out of ourselves so we can see and experience the world as others do. Note that teaching with empathy does not amount to content-free “fluff.” Just the opposite, in fact: Empathy can establish a conceptual lens to help students make meaning of abstract and high-level content. What’s more, empathy greatly increase students’ personal engagement with the content, which helps make the learning “stick.”

A Day in the Life is a simple tool for engaging empathy. It asks students to imagine life as a famous historical figure, a literary character, a person living under very different circumstances, even a concept or object. By “becoming” someone or something else, students develop new insights into what they are learning. The tool also nurtures creative thinking and writing skills, as students are typically challenged to tell their story through personal writing, such as diary entries or a letter to a loved one. Below are two examples from *Teaching for Deeper Learning* (McTighe & Silver, 2020, p. 110):

- You have watched the documentary, *Life in the Trenches*, about trench warfare during World War I, and read the poem “In Flanders Fields.” Choose one of the following roles: a frightened new arrival, an officer trying to bolster troop morale, or a nurse in a field hospital. Write a letter back home describing your experiences.
- The wait is too great! You are a chrysalis that just can’t wait to become a butterfly. Explain what life is like as you await your transformation. Make sure you tell us what excites you most about becoming a butterfly.

A Day in the Life can also serve as the basis for an extended research project. For example, a teacher of current events asked students to explore the “labor behind the label” by learning about child laborers who make clothes. After conducting research on child labor practices in various countries, students had to “become” a child laborer and tell what life is like on the factory line. Some students were so engaged by this project that they made direct contact with workers their own age in other countries and conducted interviews to learn about their daily experiences.

Conclusion

We have presented five strategies from our book, *Teaching for Deeper Learning* (McTighe & Silver, 2020), which contains more than 35 deep learning tools and strategies. (See <http://www.ascd.org/Publications/Books/Overview/Teaching-for-Deeper-Learning.aspx>)

The practical tools we offer have proven effective in virtual, hybrid, and in-person settings by enabling teachers to engage learners actively in making meaning. Such active learning is especially important in virtual and hybrid settings where students can easily lose focus when staring at a screen. In sum, deep learning is doable—and it has never been more important.

Note: A shorter version of this blog was published by *ASCD Express* (December 2020).

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Contacts

Jay McTighe jay@mctighe-associates.com

Harvey Silver hsilver@thoughtfulclassroom.com

Matt Perini mperini@thoughtfulclassroom.com