The Feynman Learning Technique

The Feynman Technique is the best way to supercharge your learning. And it works no matter the subject. Devised by Nobel Prize-winning physicist Richard Feynman, it leverages the power of teaching for better learning.

Learning doesn't happen from skimming through a book or remembering enough to pass a test.

Information is learned when you can explain it and use it in a wide variety of situations. The Feynman Technique gets more mileage from the ideas you encounter instead of rendering anything new into isolated, useless factoids.

When you really learn something, you give yourself a tool to use for the rest of your life. The more you know, the fewer surprises you will encounter because most new things will connect to something you already understand.

Ultimately, the point of learning is to understand the world. But most of us don't bother to deliberately learn anything.

We memorize what we need to as we move through school, then forget most of it. As we continue through life, we don't extrapolate from our experiences to broaden the applicability of our knowledge. Consequently, life kicks us in the ass time and again.

To avoid the pain of being bewildered by the unexpected, the Feynman Technique helps you turn information into knowledge that you can access as easily as reaching for a chair.

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The Feynman Technique

> *"Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius—and a lot of courage—to move in the opposite direction."*
> E.F. SCHUMACHER

There are four steps to the Feynman Learning Technique, based on the method Richard Feynman originally used. We have adapted it slightly after reflecting on our own experiences using this process to learn. The steps are as follows:

1. Pretend to teach a concept you want to learn about to a student in the sixth grade.
2. Identify gaps in your explanation. Go back to the source material to better understand it.
3. Organize and simplify.
4. Transmit (optional).

Step 1: Pretend to teach it to a child

Take out a blank sheet of paper. At the top, write the subject you want to master. Now write out everything you know about the subject as if you were teaching it to a child or a rubber duck sitting on your desk.

It's important to remember that you are not teaching to your smart adult friend, but rather a child who has just enough vocabulary and attention span to understand basic concepts and relationships. It has to be simple and clear. There is nowhere to hide in obfuscation.

Or, for a different angle on the Feynman Technique, you could place a rubber duck on your desk and try explaining the concept to it. Software engineers sometimes tackle debugging by explaining their code, line by line, to a rubber duck. It sounds silly, but it's a forcing function to make you walk through your thinking as simply as possible.

It turns out that one of the ways we mask our lack of understanding is by using complicated vocabulary and jargon. The truth is, **if you can't clearly and simply define the words and terms you are using, you don't really know what you're talking about.**

If you look at a painting and describe it as "abstract" because that's what you heard in art class, you demonstrate no understanding. You're just mimicking what you've heard. You haven't learned anything.

When you write out an idea from start to finish in simple language that a child can understand, you force yourself to understand the concept at a deeper level and simplify relationships and connections between ideas. You can better explain the why behind your description of the

what.

Writing helps you think because it gives you nowhere to hide.

Looking at the painting again, you will be able to say that the painting doesn't display buildings like the ones we look at every day. Instead, it uses certain shapes and colors to depict a city landscape. You will be able to point out what these are. You will be able to engage in speculation about why the artist chose those shapes and those colors. You will be able to explain why artists sometimes do this, and you will be able to communicate what you think of the piece considering all of this.

Chances are, after capturing a full explanation of the painting in the simplest possible terms that would be easily understood by a sixth-grader, you will have learned a lot about that painting and abstract art in general.

Some of capturing what you would teach will be easy. These are the places where you have a clear understanding of the subject. But you will find many places where things are much foggier.

Step 2: Identify gaps in your explanation

Areas, where you struggle in Step 1, are the points where you have some gaps in your understanding.

Identifying gaps in your knowledge—where you forget something important, aren't able to explain it, or simply have trouble thinking of how variables interact—is a critical part of the learning process.

Filling those gaps is when you really make the learning stick.

Now that you know where you have gaps in your understanding go back to the source material. Augment it with other sources. Look up definitions. Keep going until you can explain everything you need to in basic terms.

Only when you can explain your understanding without jargon and in simple terms can you demonstrate understanding. Think about it this way. If you require complicated terminology to explain what you know, you have no flexibility. When someone asks you a question, you can only repeat what you've already said.

Simple terms can be rearranged and easily combined with other words to communicate your point. When you can say something in multiple ways using different words, you understand it really well.
Being able to explain something in a simple, accessible way shows you've done the work required to learn. Skipping it leads to the illusion of knowledge—an illusion that can be quickly shattered when challenged.

Identifying the boundaries of your understanding is also a way of defining your circle of competence (https://fs.blog/circle-of-competence/). When you know what you know (and are honest about what you don't know), you limit the mistakes you're liable to make and increase your chance of success when applying knowledge.

Step 3. Organize and simplify

Now you have a set of hand-crafted notes containing a simple explanation. Organize them into a narrative that you can tell from beginning to end. Read it out loud. If the explanation sounds confusing at any point, go back to Step 2. Keep iterating until you have a story that you can tell to anyone who will listen.

If you follow this approach over and over, you will end up with a binder full of pages on different subjects. If you take some time twice a year to go through this binder, you will find just how much you retain.

Step 4: Transmit (optional)

This part is optional, but it's the logical result of everything you've just done.

If you really want to be sure of your understanding, run it past someone (ideally someone who knows little of the subject).

The ultimate test of your knowledge is your capacity to convey it to another. You can read out directly what you've written. You can present the material like a lecture. You can ask your friends for a few minutes of their time while you're buying them dinner. You can volunteer as a guest speaker in your child's classroom or your parents' retirement residence. All that really matters is that you attempt to transmit the material to at least one person who isn't that familiar with it.

The questions you get and the feedback you receive are invaluable for further developing your understanding.

Hearing what your audience is curious about will likely pique your own curiosity and set you on a path for further learning. After all, it's only when you begin to learn a few things really well do you appreciate how much there is to know.

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The Feynman Technique is not only a wonderful recipe for learning but also a window into a different way of thinking that allows you to tear ideas apart and reconstruct them from the ground up. It also allows you to supercharge your learning from others.

Too often, we want to seem smart rather than learn. We nod along even when we don't understand what someone is talking about. This is a missed opportunity for learning. If you're having a conversation with someone and they start using jargon that you don't understand, ask them to explain it to you like you're twelve. Not only will you supercharge your own learning, but you'll also supercharge theirs.

Feynman's approach intuitively believes that intelligence is a process of growth, which dovetails nicely with the work of Carol Dweck, who describes the difference between a fixed and growth mindset (https://fs.blog/carol-dweck-mindset/).

> *"If you can't reduce a difficult engineering problem to just one 8-1/2 x 11-inch sheet of paper, you will probably never understand it."*
> —RALPH PECK

What does it mean to "know?"

Richard Feynman (https://fs.blog/intellectual-giants/richard-feynman/) believed that "*the world is much more interesting than any one discipline*." He understood the difference between knowing something and knowing the name of something, as well as how, when you truly know something, you can use that knowledge broadly.

When you only know what something is called, you have no real sense of what it is.

You can't take it apart and play with it or use it to make new connections and generate new insights. When you know something, the labels are unimportant because it's not necessary to keep it in the box it came in.

> *"The person who says he knows what he thinks but cannot express it usually does not know what he thinks."*
> —MORTIMER ADLER

Feynman's explanations—on why questions (https://fs.blog/richard-feynman-on-why-questions/), why trains stay on the tracks as they go around a curve (https://fs.blog/why-do-trains-stay-on-the-track-as-they-go-around-a-curve/), how we look for new laws of science (https://fs.blog/richard-feynman-the-key-to-science/), or how rubber bands work (https://fs.blog/richard-feynman-explains-how-rubber-bands-work/)—are simple and powerful. He doesn't hide behind abstraction or jargon.

Here he articulates the difference between knowing the name of something and understanding it.

> *"See that bird? It's a brown-throated thrush, but in Germany it's called a halzenfugel, and in Chinese they call it a chung ling, and even if you know all those names for it, you still know nothing about the bird. You only know something about people: what they call the bird. Now that thrush sings, and teaches its young to fly, and flies so many miles away during the summer across the country, and nobody knows how it finds its way."*

Knowing the name of something doesn't mean you understand it. **We talk in fact-deficient, obfuscating generalities to cover up our lack of understanding.**

You can't replace translating things into simple language that a kid can understand because you need to reflect in order to learn (https://www.youtube.com/watch?v=iPkBuTpz3rc).

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