# THE FIRST 20 HOURS

## How to Learn Anything ...
*Fast*

## JOSH KAUFMAN

Bestselling Author of *The Personal MBA*

# THE FIRST
# 20 HOURS

## How to Learn
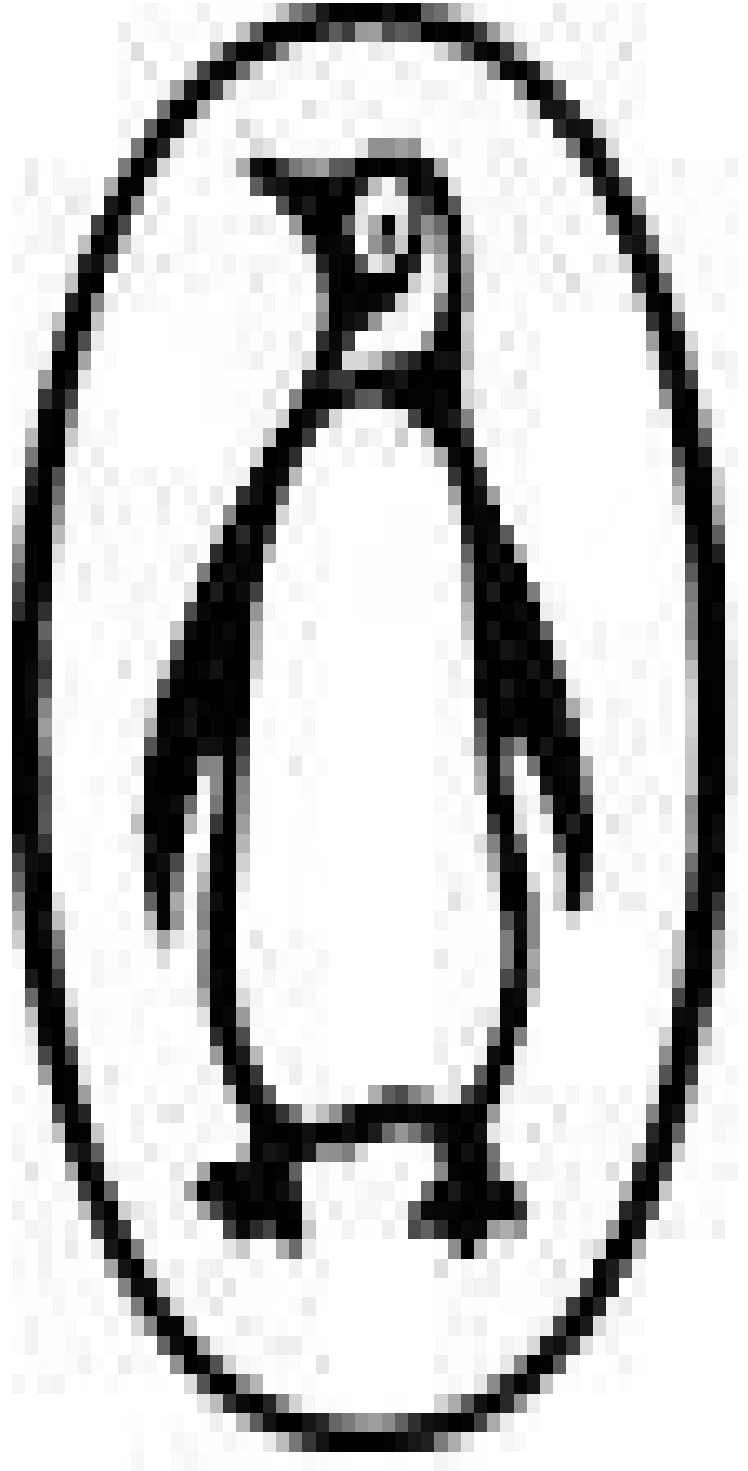## Anything . . . *Fast*

■  ■  ■

# JOSH KAUFMAN

Photographs by the author

Library of Congress Cataloging-in-Publication Data

Kaufman, Josh.
The first 20 hours : how to learn anything . . . fast / Josh Kaufman.

*For Lela*

# Contents

# A Note to the Reader

The lyf so short, the craft so longe to lerne.
—GEOFFREY CHAUCER, *PARLEMENT OF FOULES*, 1374

...

"There's so much I want to do . . . and so little time." The story of modern life.

Take a moment to consider how many things you want to learn how to do. What's on your list? What's holding you back from getting started?

Two things, most likely: time and skill.

Here's an uncomfortable truth: the most rewarding experiences in life almost always require some level of skill. Skills take time and effort to master—time we don't have, and effort we're reluctant to contribute.

"I'll get around to it someday, when I find the time."

It's easier to sit in front of the television or surf the web, frankly . . . so that's what most of us do, and our desires remain dreams.

Here's another uncomfortable truth: many things aren't fun until you're good at them. Every skill has what I call a *frustration barrier*—a period of time in which you're horribly unskilled, and you're painfully aware of that fact. Why start something when you know you're going to be bad at it?

Wouldn't it be great to be able to master new skills with less angst? To break through the frustration barrier quickly, so you can get to the rewarding part? To spend less time slogging through confusion and doubt, and more time having fun?

Is it possible to acquire new skills less painfully, in a way that requires far less time and effort?

I speak from experience: yes, it's possible.

This book is about my personal quest to test the art and science of *rapid skill acquisition*—how to learn any new skill as quickly as possible. The purpose of this book is to help you acquire new skills in record time.

In my experience, it takes around twenty hours of practice to break through the frustration barrier: to go from knowing absolutely nothing about what you're trying to do to performing noticeably well.

This book is a systematic approach to acquiring new skills as quickly as possible. The method is universal. It doesn't matter whether you want to learn a language, write a novel, paint a portrait, start a business, or fly an airplane. If you invest as little as twenty hours in learning the basics of the skill, you'll be surprised at how good you become.

Whatever skill you wish to acquire, this book will help you acquire it in less time and with less wasted energy. With a bit of focused, strategic effort, you'll find yourself performing well quickly, without the fist-pounding frustration.

In this book, we'll start with the principles of rapid skill acquisition: how to go about acquiring new skills as quickly as possible. These ideas and practices aren't complicated, so they won't take long to learn.

Then, I'll explain how to use these principles in the real world by showing you how I acquired the following six new skills in twenty hours or less each, with no more than ninety minutes of practice

per day.

- Developing a personal yoga practice
- Writing a web-based computer program
- Relearning to touch-type
- Exploring the oldest and most complex board game in history
- Playing a musical instrument
- Windsurfing

I hope that this book encourages you to dust off your old "want to do" list, reexamine it, and commit to learning something new.

*Josh Kaufman*
*Fort Collins, Colorado, USA*

# 1

# A Portrait of the Author as a Learning Junkie

Hi. My name is Josh Kaufman, and I'm a learning addict.

My home and office shelves are piled high with books, tools, and unused equipment of all sorts, most of which are slowly accumulating dust.

I have a "to learn" list hundreds of items long. My Amazon.com shopping cart currently has 241 items in it—all books I want to read. I can't walk into a bookstore without leaving with three or four new books, to be added to the 852 volumes I already own.

Every day, I come up an idea for another project or experiment, which I add to my ever-growing "someday/maybe" list. Looking at everything I want to learn how to do feels overwhelming, so I don't look at the list very often.

I want to learn how to improve my publishing business. I want to learn how to shoot and edit videos. I want to produce an audio program. I want to learn how to give better seminars and teach better courses.

I have ideas for a new product, but I don't know how to build it. I have ideas for new computer programs, but I don't know how to create them. I have more potential writing project ideas in my head than the time and energy to write them.

I want to learn how to draw. I want to learn how to white-water kayak. I want to learn fly fishing. I want to learn rock climbing. I want to be able to play the guitar, the ukulele, the piano, and the electric violin.

There are games I've been interested in for years, like Go, but I haven't learned how to play them. I have games that I already know how to play, like chess, but I'm not very good at them, so they're not much fun, and I don't play them very often.

I like the idea of playing golf, but every game I've played turned into a stoic exercise in laughing off embarrassment. (I usually say I play marathon golf: by the end of eighteen holes, I've run a marathon.)

It seems as though every day I add some new skill to the list of things I want to be able to do, ad infinitum. So much to learn, so little time.

By nature, I'm a do-it-yourself kind of guy. If something needs to be done, I'd rather give it a go myself than look for help. Even if someone else could do it faster or better, I'm reluctant to rob

myself of the learning experience.

To complicate matters, Kelsey, my wife, runs her own business, publishing continuing education courses for yoga teachers. Business is good for both of us, so there's always a lot to be done.

To make life even more interesting, we welcomed our daughter, Lela, into the world. Lela is nine months old as I write this.

Before Lela was born, Kelsey and I decided that if we were going to have kids, we wanted to make raising them ourselves a priority. One of the major reasons I quit my former management-track job at a Fortune 500 corporation was to have the flexibility to work from home, set my own schedule, and spend as much time as possible with my family.

Kelsey and I share parenting responsibilities equally. Since we're a two-business household, Kelsey works in the morning, while I take care of Lela. In the afternoon, Kelsey takes care of Lela, and I work until dinnertime. That gives me around twenty-five hours each week to work, plus whatever time I can snatch while Lela is napping.

After Lela was born, I felt like I barely had enough time to get my work done, let alone acquire new skills. For a learning addict, it was crazy-making.

I don't want to give up on learning and growth completely, even with my new responsibilities. I don't have very much free time, but I'm willing to invest what I have as wisely as possible.

That's what prompted my interest in what I call rapid skill acquisition: methods of learning new skills quickly.

I want to continue to acquire new skills, but I don't want the process to take forever. I want to pick up the essentials quickly, so I can make noticeable progress without constantly feeling frustrated.

I'm sure you can relate. How much "free" time do you have each day, after all of your work and family obligations are complete? Do you feel like you'd need thirty-six or forty-eight hours in a day to finally sit down and learn something new?

There's an old cliché: "work smarter, not harder." As it turns out, the process of skill acquisition is not really about the raw hours you put in . . . it's what you put *into* those hours.

# Damn You, Malcolm Gladwell

In 2008, Malcolm Gladwell wrote a book titled *Outliers: The Story of Success*. In it, he set about trying to explain what makes certain people more successful than others.

One of the ideas Gladwell mentions over and over again is what he calls the "10,000 hour rule." Based on research conducted by Dr. K. Anders Ericsson of Florida State University, expert-level performance takes, on average, ten thousand hours of deliberate practice to achieve.[1]

Ten thousand hours equals eight hours of deliberate practice every day for approximately three and a half years, with no breaks, no weekends, and no vacations. Assuming a standard 260 working days a year with no distractions, that's a full-time job for almost five years, assuming you spend 100 percent of that time exerting 100 percent of your energy and effort.

In practice, this level of focused attention is extremely taxing. Even world-class performers in ultracompetitive fields (like music performance and professional sports) can only muster the energy for approximately three and a half hours of deliberate practice every day. That means it can take a decade or more to develop a skill to mastery.

In essence, if you want to master a new skill, Dr. Ericsson's research indicates you're in for a very long haul. Being the best in the world at anything, even for a little while, requires years of relentless practice. If you're not willing to put in the time and effort, you'll be overshadowed by those who do.

*Outliers* shot straight to the top of the nonfiction bestseller lists, and stayed there for three months. Overnight, the "10,000 hour rule" was everywhere.

As if learning a new skill wasn't hard enough. Not only do you have to make time for practice . . . but you now also have to put in ten thousand hours? Most of us count ourselves lucky if we can set aside a few hours a week. Why bother at all if it takes so long to be good at something?

# Look Upon My Works, Ye Mighty, and Despair!

Before you give up all hope, consider this.

There's an element of Dr. Ericsson's research that's very easy to overlook: it's a study of *expert-level performance*. If you're looking to become the next Tiger Woods, you'll probably need to spend at least ten thousand hours deliberately and systematically practicing every aspect of golf. Almost every single professional golfer began playing at a very young age and has been practicing nonstop for at least seven years. Developing world-class mastery takes time.

On the other hand, what if winning the PGA Tour isn't your goal? What if you just want to be good enough at golf that you're able to play decently, not embarrass yourself, have a good time, and maybe have a fighting chance to win your local country club tournament?

That's another matter entirely. World-class mastery may take ten thousand hours of focused effort, but developing the capacity to perform *well enough for your own purposes* usually requires far less of an investment.

That's not to discount the value of what Ericsson calls "deliberate practice": intentionally and systematically practicing in order to improve a skill. Deliberate practice is the core of skill acquisition. The question is how *much* deliberate practice is required to reach your goal. Usually, it's much less than you think.

## Quality, Not Quantity

Embracing the idea of *sufficiency* is the key to rapid skill acquisition. In this book, we're going to discuss developing capacity, not world-class mastery. We're going to tackle the steep part of the learning curve and ascend it as quickly as possible.

Leave the ten thousand hours to the pros. We're going to start with twenty hours of concentrated, intelligent, focused effort.

We're shooting for the results we value with a fraction of the effort. You may never win a gold medal, but you'll reap the rewards you care about in far less time.

If you ultimately decide to master the skill, you'll have a better chance of success if you start with twenty hours of rapid skill acquisition. By knowing what you're getting into, learning the fundamentals, practicing intelligently, and developing a practice routine, you'll make progress more quickly and consistently, and you'll achieve expert status in record time.

# What Is Rapid Skill Acquisition?

Rapid skill acquisition is a process—a way of breaking down the skill you're trying to acquire into the smallest possible parts, identifying which of those parts are most important, then deliberately practicing those elements first. It's as simple as that.

Rapid skill acquisition has four major steps:

- **Deconstructing** a skill into the smallest possible subskills;
- **Learning** enough about each subskill to be able to practice intelligently and self-correct during practice;
- **Removing** physical, mental, and emotional barriers that get in the way of practice;
- **Practicing** the most important subskills for at least twenty hours.

That's it. Rapid skill acquisition is not rocket science. You simply decide what to practice, figure out the best way to practice, make time to practice, then practice until you reach your target level of performance.

There's no magic to it—just smart, strategic effort invested in something you care about. With a little preparation, you'll acquire new skills rapidly, with less effort.

That's not to say that the results will be instant. The desire for instant gratification is one of the primary reasons people don't acquire new skills very quickly.

# The "Matrix" Misconception

Remember the scene in *The Matrix* when Keanu Reeves opens his eyes, blinks a few times, and whispers "I know kung fu"?

Sorry to break it to you: rapid skill acquisition isn't *that* rapid.

Hollywood has done us a great disservice when it comes to skill acquisition. While it would certainly be nice to be able to learn how to pilot a Bell 212 helicopter in five seconds by uploading software directly into our brain, science is currently way behind science fiction.

Until brain uploads become a reality, "rapid" means taking considerably less time than it would typically take to learn a skill if you went about the process as most people do: blindly, haphazardly, and inconsistently.

One of the first professional skills I acquired was web development: being able to build useful, functioning websites. Beginning with a basic Angelfire.com website in 1996, I taught myself how to read and write HTML and CSS (the lingua franca of the web), use Adobe Photoshop to edit images, configure web servers, and maintain the systems that publish my work.

I didn't learn how to do these things in high school or college. Although I completed my undergraduate degree in business information systems, the overlap between what I learned in the classroom and what I do on a day-to-day basis is essentially nil.

I acquired the skill of web development by trying things at random and figuring it out as I went along. Every time I stumbled upon a new technique or tool that promised to enhance my website or reduce my workload, I experimented with it. Over a long period of time, my skills improved.

My haphazard approach to acquiring web development skills served the purpose: I got a job based on those skills, and I now publish information on the web for a living. Mission accomplished, from one perspective.

On the other hand, I learned everything the hard way. You could certainly reach my level of competence in these skills in much less than fifteen years if you approached the topic in a systematic way. If you went about practicing these skills intelligently, you could approach my general level of competence in a month.

That's what I mean by rapid skill acquisition. If you could learn most of what I know about web design in a single focused month versus fifteen years, that's a massive improvement. It's also well within the realm of possibility.

The amount of time it will take you to acquire a new skill is largely a matter of how much concentrated time you're willing to invest in deliberate practice and smart experimentation and how good you need to become to perform at the level you desire.

Don't expect overnight results. Do expect that your total time invested will be much, much less than it would otherwise be if you jumped into the process without a strategy.

Before we explore the method in detail, there's something you should know: rapid skill acquisition has nothing in common with how you "learned how to learn" in school. Academic learning and credentialing have almost zero overlap with skill acquisition, let alone achieving it quickly.

# Skill Acquisition vs. Learning

Like many high school students in the United States, I studied a foreign language. Every school day for four years, I sat in a Spanish class. My marks were high: straight As.

Today, aside from saying *hola*, *cómo estás*, and *muy bien*, I can't hold a conversation with a native Spanish speaker to save my life. (I don't even know what to say if I'm *not* having a good day.)

On the other side of the spectrum, my friend, Carlos Miceli, grew up speaking Spanish in Argentina. In high school, Carlos decided he wanted to speak fluent English, so he made an effort to strike up as many conversations as possible with native-English speakers. In the process, he discovered Skype and set up his own website, so he could practice speaking and writing English regularly.

Carlos never took a class. He doesn't know the formal rules of English grammar. He can't even tell you *how* he knows English. That isn't really important. He can speak and write English fluently, which is what really matters.

Dr. Stephen Krashen, of the University of Southern California, is an expert in the area of second-language acquisition. One of Krashen's primary insights is that language *acquisition* is different from language *learning*.

In school, I learned a lot *about* Spanish. I learned thousands of vocabulary words, verb conjugation, and the rules of grammar. I learned all of these things well enough to pass the tests with flying colors.

Those tests, however, had nothing to do with my ability to exercise the skills of speaking Spanish intelligibly and understanding a native speaker talking at full speed. If my goal was to be able to speak Spanish fluently, a few weeks of trying to converse with people in Spanish would've produced better results than four years of schooling.

At that time, speaking Spanish fluently wasn't my goal. I just wanted to ace the final exam. Carlos, on the other hand, skipped the classroom and simply started practicing. Instead of doing verb conjugation drills, Carlos was practicing what really mattered: communicating with other people in English.

In terms of effectiveness and long-term value, Carlos's approach was far superior to mine. No contest.

# The True Value of Learning

That's not to say learning about the skill you're acquiring isn't important. Learning can be extremely important, but not in the way you'd expect. Learning concepts related to a skill helps you *self-edit* or *self-correct* as you're practicing.

If you know how to conjugate verbs in Spanish, you're better able to self-correct your speech while talking to a native speaker. If you learn common vocabulary words, you're better able to understand what a native speaker is saying, as well as remember an appropriate word or phrase to use when you get stuck while speaking.

Dr. Krashen calls this the *monitor hypothesis*. Learning helps you plan, edit, and correct yourself as you practice. That's why learning is valuable. The trouble comes when we confuse learning with skill acquisition.

If you want to acquire a new skill, you must practice it in context. Learning enhances practice, but it doesn't replace it. If performance matters, learning alone is never enough.

# Skill Acquisition vs. Training

There's also a huge difference between skill acquisition and training. *Training*, in this context, means improving a skill you've already acquired through repetition. It's what happens after you've acquired a basic skill if you want to keep improving.

Take running a marathon, for example. Most of us acquired the skill of running during childhood. Aside from putting one foot in front of the other and staying on your feet until you've covered 26.2 miles, there's not much in the way of new skills to acquire.

There is, however, a significant amount of necessary exertion required to strengthen your body and acclimate to the level of physical fitness it takes to complete a marathon. That exertion and strengthening process is training. The more you train, the stronger you become, and the faster you complete the marathon.

There's also an element of learning involved when running a marathon: how to sign up to participate in races, how to qualify for large events like the Boston Marathon, knowing what to expect as you run, pacing, useful equipment, et cetera.

For example, a small issue like friction between your shirt and your skin isn't a big deal if you're running a 5K, so most runners don't think about it. Unnecessary friction becomes a *huge* deal when you're running 26.2 miles.

Fail to prepare in advance and you're likely to experience the infamous "bleeding nipples" problem. It's painful, embarrassing . . . and entirely preventable. (Don't believe me? Google it.)

Training and learning will certainly make it easier to finish the race, but they're not skill acquisition. Without a certain amount of skill acquisition, training isn't possible or useful. Preparation and conditioning can make some forms of skill acquisition easier, but they can never replace practice.

Relearning how to run at a basic level, however, *is* skill acquisition. Techniques like ChiRunning[2] help the runner acquire the skill of moving in a way that minimizes effort and loss of forward momentum between strides. With a bit of practice, the runner can reacquire the core skill of running, which can then be reinforced in subsequent training.

# Skill Acquisition vs. Education and Credentialing

Despite the high-minded efforts of teachers and professors around the world, modern methods of education and credentialing have almost nothing to do with skill acquisition.

Skill acquisition requires practicing the skill in question. It requires significant periods of sustained, focused concentration. It requires creativity, flexibility, and the freedom to set your own standard of success.

Unfortunately, most modern methods of education and credentialing require simple compliance. The primary (but unstated) goal isn't to acquire useful skills, it's to certify completion of a mostly arbitrary set of criteria, established by standards committees far removed from the student, for the purpose of validating certain qualities some third party appears to care about.

Creativity, flexibility, and freedom to experiment—the essential elements of rapid skill acquisition —are antithetical to the credentialing process. If the standards are too flexible, they're not really standards, are they?

Unfortunately, rigorous education and credentialing can actively *prevent* skill acquisition. The primary problem is opportunity cost: if the requirements to obtain the credential are so intense that they impair your ability to spend time practicing the skills in question, credentialing programs can do more harm than good.

Take a smart, motivated individual who is interested in starting a software company. Completing an undergraduate degree in computer science at a prestigious university usually takes at least four years.[3]

At the end of those four years, our newly minted graduate has spent thousands of hours learning algorithms and analyzing compilers well enough to pass dozens of examinations, but she is no closer to founding a software company than she was when she entered the university. Our unfortunate student has memorized many things about computer programming, at least temporarily, but she still doesn't know how to create a computer program that people find useful enough to purchase.

Starting a software company requires acquiring new skills: learning programming languages, setting up and maintaining computer systems, researching available tools and programs, creating prototypes, finding early users, obtaining any necessary funding or financing, and handling common business administrative tasks.

Is there some overlap between starting a startup and obtaining an educational credential? Sure. But notice the emphasis: most of the effort of obtaining a credential is devoted to the process of meeting the requirements. Whether or not those requirements actually help you acquire the skills you need to perform in the real world is a tertiary concern at best.

In my first book, *The Personal MBA: Master the Art of Business* (2010), I explained why I decided to skip graduate-level business education in favor of teaching myself the principles of modern business practice and starting my own company. By avoiding business school, and spending my time actually building businesses instead, I learned a ton, and saved over $150,000 in the process. Given what I wanted to accomplish, dedicating time to business skill acquisition on my own was better than business school in every respect.

If you want to get good at anything where real-life performance matters, you have to actually practice that skill in context. Study, by itself, is never enough.

# The Neurophysiology of Skill: Brain Plasticity and Muscle Memory

One last thing before we jump into the nuts and bolts of rapid skill acquisition: you must fully appreciate the fact that you're capable of acquiring new skills.

That seems like an odd thing to say, but it's easy to believe your skills are fixed—that you're either good or talented or gifted at something . . . or you're not.

In *Mindset: The New Psychology of Success* (2007), psychologist Carol Dweck cites a wide body of research that indicates individuals commonly hold one of two views of how their minds work.

According to Dr. Dweck, people with a "fixed" mind-set assume that skills and talents are innate, that you're born with certain abilities that are what they are. If a person with a fixed mind-set is "not good at math," then extra effort practicing math is a waste. Why bother if you're never going to be good at it?

People with a "growth" mind-set, on the other hand, assume that skills and abilities grow with practice and persistence. If a person with a growth mind-set gets a few math problems wrong, it's not because they're not blessed with good-at-mathness; it's because they haven't practiced enough. With persistence and practice, it's only a matter of time before they will master the technique.

Here's the good news if you find yourself falling into the fixed mind-set trap: a wide (and growing) body of research indicates that all brains are capable of improving skills and capabilities with practice. Genetic predispositions exist, but they're very minor compared to the power of focused, intelligent practice. You can improve any skill, provided you're willing to practice.

The human brain is *plastic*—a term neuroscientists use to indicate that your brain physically changes in response to your environment, your actions, and the consequences of those actions. As you learn any new skill, physical or mental, the neurological wiring of your brain changes as you practice it.

In the words of Dr. Jon Medina (*Brain Rules*, 2009) "neurons that fire together wire together," forming unique new patterns in the physical circuitry of your brain. Over time, your neurons begin to fire in more efficient patterns in response to the feedback you receive from your environment as you practice.

If you're working on a *motor skill* (that is, a skill that involves physical movement), you're always relatively awkward and slow at first. You have to think about everything you're doing, and you often make frustrating mistakes. Learning the basics is a constant struggle.

As you practice, your muscle coordination becomes more automatic and synchronized with your mental processes. You gain the ability to pay more attention to the subtle elements of what you're doing, and you learn to adjust your approach to the feedback you get from the environment.

You start doing more of what works, and less of what doesn't. Eventually, you're able to perform without conscious attention to every detail.

In academic literature, this general process is called the "three-stage model" of skill acquisition,[4] and it applies to both physical and mental skills. The three stages are

1. **Cognitive (Early) Stage**—understanding what you're trying to do, researching, thinking about the process, and breaking the skill into manageable parts.

2. **Associative (Intermediate) Stage**—practicing the task, noticing environmental feedback, and adjusting your approach based on that feedback.

3. **Autonomous (Late) Stage**—performing the skill effectively and efficiently without thinking about it or paying unnecessary attention to the process.

This neurophysiological skill acquisition process is happening all the time, even while you're reading this sentence. There is no such thing as a mind in stasis. Your brain is learning, encoding, and consolidating new skills all the time.

As Dr. Dweck says in *Mindset*: "Your mind is like a muscle: the more you use it, the more it grows." The more you practice, the more efficient, effective, and automatic the skill becomes.

That's great news when it comes to rapid skill acquisition. If your mind and body are capable of learning to perform in new and better ways, we can figure out how to make that process *faster*.

# Ten Principles of Rapid Skill Acquisition

*I realized that becoming a master of karate was not about learning 4,000 moves but about doing just a handful of moves 4,000 times.*
—CHET HOLMES, AUTHOR OF *THE ULTIMATE SALES MACHINE*

...

Now that we're clear about what skill acquisition really means, let's examine how to do it quickly. The intent of this chapter is to give you a handy checklist for acquiring any new skill.

I find it useful to think of these principles as ways to cultivate a "temporary obsession." Rapid skill acquisition happens naturally when you become so curious and interested in something that other concerns fall away, at least temporarily.

Think of these principles as ways to identify a skill worthy of temporary obsession, focus on it, and remove distractions or barriers that distract you from effective practice.

Here are the ten major principles of rapid skill acquisition:

1. Choose a lovable project.
2. Focus your energy on one skill at a time.
3. Define your target performance level.
4. Deconstruct the skill into subskills.
5. Obtain critical tools.
6. Eliminate barriers to practice.
7. Make dedicated time for practice.
8. Create fast feedback loops.
9. Practice by the clock in short bursts.
10. Emphasize quantity and speed.

Many of these principles may strike you as common sense, and that's okay. Remember: simply knowing these principles is not enough. You must actually use them to reap the rewards.

# 1. Choose a lovable project.

Karl Popper was one of the greatest philosophers of the twentieth century. He's the guy who popularized the idea of *scientific falsifiability*. In layman's terms, if you can't potentially prove something wrong via observation or experiment, it's not actually science.

Popper said many wise things, but I think the following remark is among the wisest: "The best thing that can happen to a human being is to find a problem, to fall in love with that problem, and to live trying to solve that problem, unless another problem even more lovable appears."

If you want a formula for living a satisfying, productive life, you can't go wrong with that one.

Rapid skill acquisition requires choosing a lovable problem or project. The more excited you are about the skill you want to acquire, the more quickly you'll acquire it.

In practice, finding a lovable project is a very individual matter. For example, learning to speak and write Mandarin Chinese is not on my current list of skills to acquire because I have no urgent need to learn it at the moment, and I have a lot of other projects I'm more interested in tackling. If I decide to move to a Mandarin-speaking part of China in the future, it may become lovable, but I'm not there yet.

On the other hand, I'm intensely interested in learning how to play Go, the world's oldest strategic board game, which originated in China more than three thousand years ago. It's a beautiful game, and I've wanted to learn how to play since I stumbled across it years ago.

Learning to play Go requires study. The rules are simple, but accurately reading the evolving patterns of alternating black and white stones on the board is a challenge. Computers have dominated chess for years now, but even the best computers have a difficult time challenging an experienced human Go player.

You naturally learn things you care about faster than things you don't. I'm currently more interested in learning how to play Go, so I'm going to learn Go first, and save Mandarin for later.

If you focus on acquiring your *prime skill* (that is, your most lovable project) before anything else, you'll acquire it in far less time.

## 2. Focus your energy on one skill at a time.

One of the easiest mistakes to make when acquiring new skills is attempting to acquire too many skills at the same time.

It's a matter of simple math: acquiring new skills requires a critical mass of concentrated time and focused attention. If you only have an hour or two each day to devote to practice and learning, and you spread that time and energy across twenty different skills, no individual skill is going to receive enough time and energy to generate noticeable improvement.

Internalizing this principle is more difficult for some people than others. Personally, I've always had a "Renaissance man" sort of temperament: there are hundreds of things I want to learn at any given moment, in hundreds of different areas. Emotionally, it's difficult for me to decide to defer learning new things I discover or hear about.[1]

When I try to learn everything at once, however, I don't really learn anything. Instead of making progress, I spend too much time switching between different skills, getting frustrated, and moving on to something else. That's a recipe for extremely slow skill acquisition.

Pick one, and only one, new skill you wish to acquire. Put all of your spare focus and energy into acquiring that skill, and place other skills on temporary hold. David Allen, author of *Getting Things Done* (2002), recommends establishing what he calls a "someday/maybe" list: a list of things you may want to explore sometime in the future, but that aren't important enough to focus on right now. By adding an item to the list, you're temporarily absolving yourself of responsibility for acting or thinking about the idea until you decide to promote it to active status.

I can't emphasize this enough. Focusing on one prime skill at a time is absolutely necessary for rapid skill acquisition. You're not giving up on the other skills permanently, you're just saving them for later.

# 3. Define your target performance level.

A *target performance level* is a simple sentence that defines what "good enough" looks like. How well would you like to be able to perform the skill you're acquiring?

Your target performance level is a brief statement of what your desired level of skill looks like. Think of it as a single sentence description of what you're trying to achieve, and what you'll be able to do when you're done. The more specific your target performance level is, the better.

Defining your target performance level helps you imagine what it looks like to perform in a certain way. Once you determine exactly how good you want or need to be, it's easier to figure out how to get there. In the words of Charles Kettering, the inventor of the electric automobile ignition system: "A problem well stated is a problem half solved."

How you define your target performance level depends on why you chose to acquire the skill in the first place. If your intent is to have fun, your target is the point at which you stop feeling frustrated and start enjoying the practice itself. If your intent is to perform, what's the minimum level of performance you're willing to accept at first?

Once you reach your initial target performance level, you can always choose to keep going if you wish. The best target performance levels seem just out of reach, not out of the realm of possibility.

As a rule, the more relaxed your target performance level, the more rapidly you can acquire the associated skill. If you're operating under a world-class mastery mind-set, this may feel like cheating: you're just lowering the bar so you can "win" faster, right?

That's exactly what we're doing, and it's not cheating. Remember, world-class mastery is not the end point of rapid skill acquisition. We're shooting for capacity and sufficiency at maximum speed, not perfection.

It's important to note that some skills have safety considerations, which you should always include in your target performance level. Getting hurt (or killed) acquiring a new skill defeats the purpose.

## 4. Deconstruct the skill into subskills.

Most of the things we think of as skills are actually bundles of smaller subskills. Once you've identified a skill to focus on, the next step is to *deconstruct* it—to break it down into the smallest possible parts. For example, playing golf is a skill that has many subcomponents: choosing the correct club, driving off the tee, hitting out of a bunker, putting, et cetera.

Once the skill is deconstructed sufficiently, it's much easier to identify which subskills appear to be most important. By focusing on the critical subskills first, you'll make more progress with less effort.

Deconstructing a skill also makes it easier to avoid feeling overwhelmed. You don't have to practice all parts of a skill at the same time. Instead, it's more effective to focus on the subskills that promise the most dramatic overall returns.

Deconstructing the skill before you begin also allows you to identify the parts of the skill that aren't important for beginning practitioners. By eliminating the noncritical subskills or techniques early in the process, you'll be able to invest more of your time and energy mastering the critical subskills first.

## 5. Obtain critical tools.

Most skills have prerequisites to practice and performance. It's difficult to play tennis if you don't have a tennis racquet, or learn how to pilot a helicopter if you don't have access to one.

What tools, components, and environments do you need to have access to before you can practice efficiently? How can you obtain the very best tools you can find and afford?

Taking a moment to identify critical tools before you start practicing saves precious time. By ensuring you have the resources you need before you begin, you maximize your practice time.

## 6. Eliminate barriers to practice.

There are many things that can get in the way of practice, which makes it much more difficult to acquire any skill. These barriers can be anything from

- **Significant prepractice effort.** Such as misplacing your tools, not acquiring the correct tools before practicing, or skipping setup requirements.
- **Intermittent resource availability.** Such as using borrowed equipment or relying on a resource that has limited operating hours.
- **Environmental distractions.** Such as television, ringing phones, and incoming e-mail.
- **Emotional blocks.** Such as fear, doubt, and embarrassment.

Every single one of these elements makes it harder to start practicing, and therefore decreases your acquisition speed.

Relying on willpower to consistently overcome these barriers is a losing strategy. We only have so much willpower at our disposal each day, and it's best to use that willpower wisely.

The best way to invest willpower in support of skill acquisition is to use it to remove these soft barriers to practice. By rearranging your environment to make it as easy as possible to start practicing, you'll acquire the skill in far less time.

## 7. Make dedicated time for practice.

The time you spend acquiring a new skill must come from somewhere. Unfortunately, we tend to want to acquire new skills and keep doing many of the other activities we enjoy, like watching TV, playing video games, et cetera.

I'll get around to it, when I find the time, we say to ourselves.

Here's the truth: "finding" time is a myth.

No one ever "finds" time for *anything*, in the sense of miraculously discovering some bank of extra time, like finding a twenty-dollar bill you accidentally left in your coat pocket.

If you rely on finding time to do something, it will never be done. If you want to find time, you must *make* time.

You have 24 hours to invest each day: 1,440 minutes, no more or less. You will never have more time. If you sleep approximately 8 hours a day, you have 16 hours at your disposal. Some of those hours will be used to take care of yourself and your loved ones. Others will be used for work.

Whatever you have left over is the time you have for skill acquisition. If you want to improve your skills as quickly as possible, the larger the dedicated blocks of time you can set aside, the better.

The best approach to making time for skill acquisition is to identify low-value uses of time, then choose to eliminate them. As an experiment, I recommend keeping a simple log of how you spend your time for a few days. All you need is a notebook.

The results of this time log will surprise you: if you make a few tough choices to cut low-value uses of time, you'll have much more time for skill acquisition. The more time you have to devote each day, the less total time it will take to acquire new skills. I recommend making time for at least ninety minutes of practice each day by cutting low-value activities as much as possible.

I also recommend *precommitting* to completing at least twenty hours of practice. Once you start, you must keep practicing until you hit the twenty-hour mark. If you get stuck, keep pushing: you can't stop until you reach your target performance level or invest twenty hours. If you're not willing to invest at least twenty hours up front, choose another skill to acquire.

The reason for this is simple: the early parts of the skill acquisition process usually feel harder than they really are. You're often confused, and you'll run into unexpected problems and barriers. Instead of giving up when you experience the slightest difficulty, precommitting to twenty hours makes it easier to persist.

Think of this approach as an exercise in grit: you're not going to let some silly little issue stop you from doing what you've decided you really want to do. You'll either solve the problem, or do your best until you reach the twenty-hour mark. At that point, you'll be in a better position to decide how to proceed.

## 8. Create fast feedback loops.

"Fast feedback" means getting accurate information about how well you're performing as quickly as possible. The longer it takes to get accurate feedback, the longer it will take to acquire the skill.

Take the art of cheese making, for example. The subtle chemical processes that create fine cheeses often take months or years to complete, and there's no way to rush the process without ruining the result. If it takes six months to determine whether or not your cheese is any good, the delay in feedback makes it difficult to acquire the skill quickly.

Fast feedback naturally leads to rapid skill acquisition. If feedback arrives immediately, or with a very short delay, it's much easier to connect that information to your actions and make the appropriate adjustments.

The best forms of feedback are near instantaneous. That's why skills like programming can become mildly addictive: you make a change, and a few milliseconds later the computer tells you whether or not it worked. If you don't like the feedback ("my program crashed!"), make another change and try again.

There are many potential sources of useful feedback. As Atul Gawande, veteran surgeon and amateur tennis player, explained in an article in *The New Yorker*,[2] experienced coaches and mentors can give you immediate feedback on how you're performing and recommend necessary adjustments.

Coaches aren't the only source of fast feedback. Capture devices, like video cameras, can help you watch yourself as you perform. Tools like computer programs, training aides, and other devices can immediately indicate when you make a mistake or something is amiss.

The more sources of fast feedback you integrate into your practice, the faster you'll acquire the skill.

## 9. Practice by the clock in short bursts.

Our minds are built to learn—to notice patterns, simulate potential courses of action, and figure out what's probably going to happen next. They're not built to accurately estimate time—how long something will take, or how much time you've spent doing something.

In the early phases of practicing a new skill, it's very easy to overestimate how much time you've spent practicing. When you're no good (and you know it), time seems to slow to a crawl, and it feels like you've been practicing for a longer period of time than you actually have.

The solution for this is to practice by the clock. Buy a decent countdown timer[1] and set it for twenty minutes. There's only one rule: once you start the timer, you must practice until it goes off. No exceptions.

This simple technique will make it easier to complete longer periods of sustained practice, even when you get tired or frustrated.

The more periods of sustained practice you complete, the faster your skill acquisition. Set aside time for three to five practice sessions a day, and you'll see major progress in a very short period.

## 10. Emphasize quantity and speed.

When you begin to acquire a new skill, it's tempting to focus on practicing perfectly—a recipe for frustration. Your performance, of course, won't be anywhere close to perfection.

Instead of trying to be perfect, focus on practicing as much as you can as quickly as you can, while maintaining "good enough" form.

In *Art & Fear* (2001), authors David Bayles and Ted Orland share a very interesting anecdote on the value of volume:

> The ceramics teacher announced on opening day that he was dividing the class into two groups. All those on the left side of the studio, he said, would be graded solely on the quantity of work they produced, all those on the right solely on its quality.
>
> His procedure was simple: on the final day of class he would bring in his bathroom scales and weigh the work of the "quantity" group: fifty pounds of pots rated an A, forty pounds a B, and so on. Those being graded on "quality," however, needed to produce only one pot—albeit a perfect one—to get an A.
>
> Well, come grading time a curious fact emerged: the works of highest quality were all produced by the group being graded for quantity. It seems that while the "quantity" group was busily churning out piles of work and learning from their mistakes, the "quality" group had sat theorizing about perfection, and in the end had little more to show for their efforts than grandiose theories and a pile of dead clay.

Skill is the result of deliberate, consistent practice, and in early-stage practice, quantity and speed trump absolute quality. The faster and more often you practice, the more rapidly you'll acquire the skill.

That's not to say that you should ignore good form while practicing. Some skills, particularly skills that require physical actions or motions, require a certain quality of form to perform well. If you're practicing your painting technique, going Jackson Pollack on one hundred canvases in a day isn't going to help you if your aim is to paint lifelike portraits. Technique matters.

First, ensure you're practicing using form that's good enough to satisfy your target performance level. Once you're practicing in good form at least 80 to 90 percent of the time, crank up the speed for faster skill acquisition.

That's it: ten simple principles that will ensure you go about practicing your prime skill in the most efficient and effective way possible.

# So Does it Work?

Will this method actually help you acquire skills more quickly? Research says absolutely.

In academic studies of cognitive and motor skill acquisition, researchers have noticed a common pattern: when study participants begin to practice a new skill, their performance always improves dramatically in a very short period of time. It doesn't take much practice at all to go from "very slow and grossly incompetent" to "reasonably fast and noticeably competent."

In the literature, this is referred to as the "power law of practice," and it appears over and over again. The effect has been widely known among skill acquisition researchers since at least 1926,[4] and it's been replicated many times since in studies of both physical and mental skills.[5] One study even went so far as to say "any theory of skill acquisition that does not accommodate the power law function for learning can be rejected immediately."[6]

Academic studies draw the "power law of practice" curve like this, with performance time on the y-axis and practice events on the x-axis:



Since time is a quantity that increases, the curve slopes down. With practice, it takes less time to complete a given task.

It's interesting to note that if you relabel the y-axis as "how good you are" (that is, you define performance in more general terms versus a unit of time), you get the famous and widely known *learning curve*:

The general pattern of the learning curve looks like this: When you start, you're horrible, but you improve very quickly as you learn the most important parts of the skill. After reaching a certain level of skill very quickly, your rate of improvement declines, and subsequent improvement becomes much slower.

Contrary to popular usage, "steep learning curves" are good, not bad. The graph makes it clear why: Steep learning curves indicate a very fast rate of skill acquisition. The steeper the curve, the better you get per unit of time.

You can think of the checklist I just outlined as a way to intentionally make your personal learning curve steeper. The principles themselves are simple techniques that make the first two theoretical stages of the skill acquisition process (*cognition* and *association*) easier to do in practice.

Once you start practicing something new, your skills will naturally and noticeably improve in a very short period of time. The trick is to start practicing as quickly as possible. Not *thinking* about practicing or *worrying* about practicing, but *actually* practicing.

It's all too easy to feel like you're investing a lot of time in a skill without practicing very much at all. If you've wanted to learn something for a long time, you dream about being good at it, but you're hesitant to get started, you can spend *years* of mental and emotional energy without improving one bit. If you don't know where you're trying to go or don't have a solid strategy to get there, you can waste equal amounts of energy in unproductive wandering.

These ten principles are designed to help you eliminate this nonproductive thrashing and replace it with activities that are fundamental to the skill acquisition process. The more time and energy you spend moving through the first two phases of the skill acquisition process and the less time you spend doing things that don't help you, the more quickly you'll acquire the skill. Simple as that.

# What About Immersion?

This isn't the only way to go about acquiring new skills, but it's certainly the most flexible. Other methods can produce similar results, but they require more significant tradeoffs.

The most well-known general method of rapid skill acquisition is *immersion*: completely changing your environment in a way that results in constant deliberate practice. If you want to learn to speak French, for example, learning through immersion would involve living in France for a few weeks or months.

In general, immersion works. If you move to France, you'll be forced to practice your speaking skills every moment of every day for as long as you're there. After a few frustrating days adapting to your new surroundings, you'll notice your skills improving at a rapid rate.

Immersion works because it ensures that you complete the crucial first hours of practice without fail: you can't escape your environment, so the practice happens automatically.

The downside of immersion is that it usually requires making the skill your primary focus for an extended period of time. If dropping all of your commitments, packing your bags, and moving to France is a workable option, learning French via immersion is a good strategy.

Unfortunately, most of us have commitments we can't (or don't want to) walk away from: family, work, mortgage payments, et cetera. In these cases, immersion can be difficult or impossible.

In the worst-case scenario, the idea of immersion becomes an active barrier: if you keep waiting for an immersion opportunity before committing to acquiring a new skill, you can waste years of valuable time.

Take the immersion opportunities as they come, but don't count on them. These techniques are designed to help you acquire new skills even if you only have an hour or two to spare each day.

# Reactivating Old Skills

It's also important to note that these principles are useful even if the skill you're trying to acquire isn't completely new to you. It's entirely possible to use these techniques to reacquire old skills in record time.

For example, I learned to play the trumpet in high school, and I practiced enough that I was pretty good at it. Since graduating and going to college, I haven't played at all.

If I decided to pick up the trumpet again, it wouldn't take very much practice to reactivate the skill. I already know the required subskills, so I'd focus on embouchure (controlling the muscles around the lips while blowing into the mouthpiece), reading notes and recalling the related finger positions, and reviewing basic music theory (beats, tempo, dynamics, and expression).

It would only take a few hours of practice to reacquire the skill. Reactivation would mostly require making time, eliminating barriers to practice, and practicing by the clock.

# Well Begun Is Half Done

You won't need to use every one of these principles for every skill you acquire, but you'll always find at least a handful of them essential.

I find it's useful to think of these principles as a checklist. Whenever you decide to learn something new, just go though the checklist and decide which principles apply to your particular project.

Here's the checklist for rapid skill acquisition:

1. Choose a lovable project.

2. Focus your energy on one skill at a time.

3. Define your target performance level.

4. Deconstruct the skill into subskills.

5. Obtain critical tools.

6. Eliminate barriers to practice.

7. Make dedicated time for practice.

8. Create fast feedback loops.

9. Practice by the clock in short bursts.

10. Emphasize quantity and speed.

That's it. Apply this checklist to your current prime skill, and your practice will be more effective and efficient, allowing you to acquire the skill more quickly.

As I said, this method isn't rocket science. It's common sense, strategy, and preparation applied to a skill you want to improve. Nothing more, nothing less.

Now, let's examine how learning and research can make your skill acquisition process even more effective.

# 3

# Ten Principles of Effective Learning

*No problem can withstand the assault of sustained thinking.*
—VOLTAIRE

...

As we discussed in chapter 1, learning isn't the same thing as skill acquisition. That, however, doesn't mean learning is unimportant. Doing a bit of research before you jump into practice can save you precious time, energy, and emotional fortitude.

Learning makes your practice more efficient, which lets you spend more of your practice time working on the most important subskills first.

In that spirit, here are the ten major principles of effective learning:

1. Research the skill and related topics.
2. Jump in over your head.
3. Identify mental models and mental hooks.
4. Imagine the opposite of what you want.
5. Talk to practitioners to set expectations.
6. Eliminate distractions in your environment.
7. Use spaced repetition and reinforcement for memorization.
8. Create scaffolds and checklists.
9. Make and test predictions.
10. Honor your biology.

## 1. Research the skill and related topics.

Spend twenty minutes searching the web, browsing a bookstore, or scanning the stacks at your local library for books and resources related to the skill. The goal is to identify at least three books, instructional DVDs, courses, or other resources that appear to be connected to the skill you're trying to acquire.

Before you panic, understand that you don't have to spend hours memorizing these resources. On the contrary: time spent reading or watching is not time spent practicing.

You're not cramming for an exam. The intent of this early research is to identify the most important subskills, critical components, and required tools for practice as quickly as possible. The more you know in advance about the skill, the more intelligently you can prepare. The goal is to collect a wide body of knowledge about the skill as quickly as possible, creating an accurate overview of what the skill acquisition process will look like.

For rapid skill acquisition, skimming is better than deep reading. By noticing ideas and tools that come up over and over again in different texts, you can trust the accuracy of the patterns you notice and prepare your practice accordingly.

If you want to be able to bake the perfect croissant, pick up a few good books related to baking and pastries. Instead of reinventing the process, you'll find existing techniques that have been perfected over many years by the masters of the field. If you see the same technique or process described in multiple resources, chances are good it's important to know.

Once you've found what appear to be the most useful techniques, you can experiment with them in your own kitchen, saving you a ton of trial and error.

## 2. Jump in over your head.

Some of your early research will contain concepts, techniques, and ideas you don't understand. Often, something will appear particularly important, but you'll have no idea what it means. You'll read words you don't recognize, and see practitioners doing things you can't fathom.

Don't panic. Your initial confusion is completely normal. In fact, it's great. Move toward the confusion.

Early research is one of the best ways to identify critical subskills and ideas, but it's also very likely you won't know what they mean yet. The meaning comes later, once you've started practicing.

Dr. Stephen Krashen, the language acquisition expert I mentioned earlier, calls this *comprehensible input*. By default, the new information you're consuming isn't very comprehensible, since it's not connected to anything you know or have experienced. Over time, the same information will become comprehensible once you have some experience under your belt. In the words of renowned yoga teacher T. K. V. Desikachar: "The recognition of confusion is itself a form of clarity."

Noticing you're confused is valuable. Recognizing confusion can help you define exactly *what* you're confused about, which helps you figure out what you'll need to research or do next to resolve that confusion.

If you're not confused by at least half of your early research, you're not learning as quickly as you're capable of learning. If you start to feel intimidated or hesitant about the pace you're attempting, you're on the right track. Provided you're working on a lovable problem or project, the more confused you are at the outset, the more internal pressure you'll feel to figure things out, and the faster you'll learn.

Not being willing to jump in over your head is the single biggest emotional barrier to rapid skill acquisition. Feeling stupid isn't fun, but reminding yourself that you will understand with practice will help you move from confusion to clarity as quickly as possible.

# 3. Identify mental models and mental hooks.

As you conduct your research, you'll naturally begin to notice patterns: ideas and techniques that come up over and over again.

These concepts are called *mental models*, and they're very important. Mental models are the most basic unit of learning: a way of understanding and labeling an object or relationship that exists in the world. As you collect accurate mental models, it becomes easier to anticipate what will happen when you take a specific action. Mental models also make it much easier to discuss your experiences with others.

Here's an example: I was recently helping my father set up a website. As I went along, I tried to explain what I was doing. At first, it was frustrating for both of us: I kept using words like "server," and he had absolutely no idea what I was talking about.

Once Dad learned that a server is a special computer that delivers a web page to people who request it, and that the server was a *different* computer than the machine we were using, he found it much easier to understand what we were doing. In this case, server is a mental model—once you're familiar with the term, it's easier to understand the process of publishing a website.

You'll also notice a few things that look like something you're already familiar with. These are *mental hooks*: analogies and metaphors you can use to remember new concepts.

In the case of web servers, imagine a librarian. When you go to the library and request a specific book, a librarian will search shelves containing hundreds or thousands of books to find the exact book you're looking for. When the librarian finds the book, he or she brings it back for you. If the book can't be found, the librarian will tell you "I can't find the book you're looking for."

That's exactly how web servers work. When you request a specific web page, the server will search for that page in memory. If it finds the page, it will deliver it to you. If the server can't find the web page, it will return a message: "Error 404: Page Not Found." Thinking of the server software as a "computer librarian" is helpful when thinking about how the system works.

The more mental models and mental hooks you can identify in your early research, the easier it will be to use them while you're practicing.

# 4. Imagine the opposite of what you want.

A counterintuitive way to gain insight into a new skill is to contemplate disaster, not perfection.

What if you did everything wrong? What if you got the worst possible outcome?

This is a problem-solving technique called *inversion*, and it's helpful in learning the essentials of almost anything. By studying the opposite of what you want, you can identify important elements that aren't immediately obvious.

Take white-water kayaking. What would I need to know if I wanted to be able to kayak in a large, fast-moving, rock-strewn river?

Here's the inversion: What would it look like if everything went wrong?

- I'd flip upside down underwater, and not be able to get back up.
- I'd flood my kayak, causing it to sink or swamp, resulting in a total loss of the kayak.
- I'd lose my paddle, eliminating my maneuverability.
- I'd hit my head on a rock.
- I'd eject from my kayak, get stuck in a hydraulic (a point in the river where the river flows back on itself, creating a loop like a washing machine) and not be able to get out.

If I managed to do all of these things at once in the middle of a raging river, I'd probably die—the worst-case scenario.

This depressing line of thought is useful because it points to a few white-water kayaking skills that are probably very important:

- Learning to roll the kayak right side up if it flips, without ejecting.
- Learning how to prevent swamping the kayak if ejecting is necessary.
- Learning how to avoid losing my paddle in rough water.
- Learning and using safety precautions when rafting around large rocks.
- Scouting the river before the run to avoid dangerous river features entirely.

This mental simulation also gives me a shopping list: I'd need to invest in a flotation vest, helmet, and other safety gear.

Now, instead of (1) raft river (2) have fun (3) don't die, I have a concrete list of subskills to practice and actions to take to ensure I actually have fun, keep my gear, and survive the trip.

Inversion works.

## 5. Talk to practitioners to set expectations.

Early learning helps you set appropriate expectations: What does reasonable performance for a beginner actually look like?

When you jump into acquiring a new skill, it's very common to underestimate the complexity of the task, or the number of elements involved that are required to perform well. If the skill involves the possibility of social prestige, the associated mystique can also cloud early expectations.

Many wannabe rock stars have picked up an electric guitar, only to find it's extremely difficult to play well, sing on key, and look fabulous at the same time. Part of the problem is that "being a rock star" isn't a single skill. It's a bundle of many related subskills, each of which will require dedicated practice to develop.

Talking to people who have acquired the skill before you will help dispel myths and misconceptions before you invest your time and energy. By knowing what you can expect to see as you progress, you'll find it much easier to sustain your interest in practice, and avoid becoming discouraged early in the process.

## 6. Eliminate distractions in your environment.

Distractions are enemy number one of rapid skill acquisition. Distractions kill focused practice, and lack of focused practice leads to slow (or nonexistent) skill acquisition. You can preempt this by taking a few minutes to anticipate and eliminate (or reduce) as many distractions as possible before you start practicing.

The most significant sources of distraction come in two forms: electronic and biological.

Your television, phone, and Internet are electronic distractions. Turn them off, unplug them, block them, or otherwise remove them from your environment while you're practicing unless they're absolutely necessary for the practice itself.

Well-meaning family members, colleagues, and pets are biological distractions. You can't turn people off, but you can let them know in advance that you'll be unavailable while you're practicing, which makes it more likely they'll respect your practice time without interrupting.

The fewer distractions you have while practicing, the more quickly you'll acquire the skill.

## 7. Use spaced repetition and reinforcement for memorization.

To make use of material you've learned while practicing, you have to be able to recall related ideas quickly. Many skills require at least some level of memorization.

Here's the catch: your memory isn't perfect. Whenever you learn something new, you'll probably forget it unless you review the concept within a certain period of time. This repetition reinforces the idea, and helps your brain consolidate it into long-term memory.

Researchers have found that memory follows a *decay curve*: new concepts need to be reinforced regularly, but the longer you've known a concept, the less regularly you need to review it to maintain accurate recall.

*Spaced repetition and reinforcement* is a memorization technique that helps you systematically review important concepts and information on a regular basis. Ideas that are difficult to remember are reviewed often, while easier and older concepts are reviewed less often.

Flash card software programs like Anki,[1] SuperMemo,[2] and Smartr[3] make spaced repetition and reinforcement very simple. Spaced repetition systems rely on a "flash card" model of review, and you have to create the flash cards yourself. By creating flash cards as you're deconstructing the skill, you're killing two birds with one stone.

Once you've created your flash cards, it only takes a few minutes each day to review them. By systematizing the review process and tracking recall, these systems can help you learn new ideas, techniques, and processes in record time. If you review the decks consistently, you'll memorize necessary concepts and ideas extremely quickly.

It's important to note that skill acquisition is usually much more involved than academic learning. If you're primarily interested in memorizing concepts, ideas, or vocabulary in order to pass an exam, you don't need much more than spaced repetition.[4]

The best use of this technique is in instances where fast recall of information is essential. If you're learning common vocabulary words in order to acquire a new language, spaced repetition and reinforcement is valuable. In instances where fast recall isn't crucial, you're usually better off skipping the flash cards in favor of maximizing practice and experimentation time.

## 8. Create scaffolds and checklists.

Many skills involve some sort of routine: setting up, preparing, maintaining, putting away, et cetera. Creating a simple system is the best way to ensure these important elements happen with as little additional effort as possible.

*Checklists* are handy for remembering things that must be done every time you practice. They're a way to systematize the process, which frees your attention to focus on more important matters.

*Scaffolds* are structures that ensure you approach the skill the same way every time. Think of the basketball player who establishes a pre–free throw routine. Wipe hands on pants, loosen the shoulders, catch the ball from the ref, bounce three times, pause for three seconds, and shoot. That's a scaffold.

Creating scaffolds and checklists makes your practice more efficient. They also make your practice easier to visualize, which helps you take advantage of mental rehearsal, which can help with some forms of physical practice.

## 9. Make and test predictions.

Part of the skill acquisition process involves experimentation: trying new things to see if they work.

The true test of useful learning is prediction. Based on what you know, can you guess how a change or experiment will turn out before you do it?

Getting into the habit of making and testing predictions will help you acquire skills more rapidly. It's a variation on the scientific method, with four key elements:


- **Observations**—what are you currently observing?
- **Knowns**—what do you know about the topic already?
- **Hypotheses**—what do you think will improve your performance?
- **Tests**—what are you going to try next?


I recommend using a notebook or other reference tool to track your experiments and form hypotheses as you practice. By keeping track of your predictions and generating new ideas, you'll have more fruitful experiments to test.

## 10. Honor your biology.

Your brain and body are biological systems that have biological needs: food, water, exercise, rest, and sleep. It's very easy to push yourself too hard, which is counterproductive. Without the proper inputs, your body and mind won't produce useful output.

According to Tony Schwartz, author of *The Power of Full Engagement* (2004) and *Be Excellent at Anything* (2011), the optimal learning cycle appears to be approximately ninety minutes of focused concentration. Any more, and your mind and body will naturally need a break. Use that opportunity to exercise, rest, have a meal or snack, take a nap, or do something else.

This principle dovetails very nicely with practicing by the clock. By setting your timer for sixty to ninety minutes before you start practicing or researching, it will be easier to remember to take a break when you're done.

You can also split your practice into several smaller parts, with a short break in the middle if needed: twenty minutes of practice, ten-minute break, twenty minutes of practice, ten-minute break, et cetera.

# Stacking the Deck

There ain't no rules around here. We're trying to accomplish something.
—THOMAS EDISON, INVENTOR

You won't need to use all of these principles for every skill you acquire, but you'll always find at least a few of them essential.

I find it's useful to think of these principles as a secondary checklist. Whenever you decide to acquire a new skill, just review this checklist and decide which principles apply to your project.

Here's the checklist for effective learning:

- Research the skill and related topics.
- Jump in over your head.
- Identify mental models and mental hooks.
- Imagine the opposite of what you want.
- Talk to practitioners to set expectations.
- Eliminate distractions in your environment.
- Use spaced repetition and reinforcement for memorization.
- Create scaffolds and checklists.
- Make and test predictions.
- Honor your biology.

That's it: apply this checklist to your current prime skill and you'll learn what you need to know to practice efficiently and effectively.

# Putting Theory into Practice

*How vain it is to sit down to write when you have not stood up to live.*
—HENRY DAVID THOREAU

Enough theory: it's time for practice.

We've already covered the basics of rapid skill acquisition, but knowing how to do these things isn't nearly as important as actually doing them. Remember: no practice, no skill acquisition.

Instead of going on and on about the theory of skill acquisition, I'll show you how to actually do it. I'm going to use these principles to acquire several new skills, and you'll have a front row seat.

Here are the skills I intend to acquire:

- Yoga: developing a home asana practice.
- Programming: creating a functioning web application.
- Typing: relearning to touch-type with a nonstandard keyboard layout.
- Strategy: playing Go, the world's oldest and most complex board game.
- Music: playing the ukulele.
- Windsurfing: sailing and maneuvering on flat water.

I have no experience with any of these skills. Using the techniques and methods I just described, my goal is to acquire each of them in thirty days or less. My estimated time of acquiring each of these skills is approximately twenty hours, averaging sixty to ninety minutes of practice each day.