

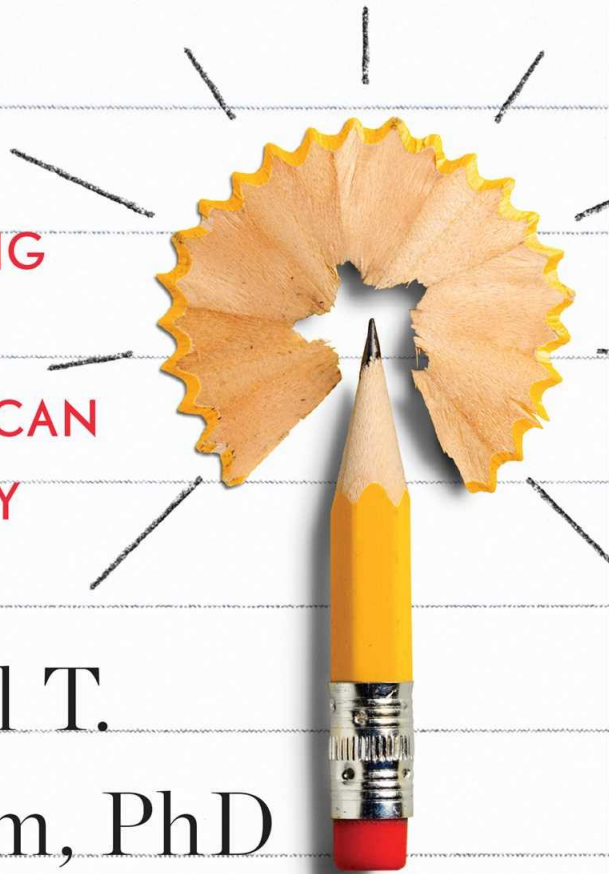
"In a sentence, this is the best book I've read on how anyone can learn the tactics of the most successful students." —Angela Duckworth, *New York Times* bestselling author of *Grit*

Outsmart Your Brain

WHY LEARNING
IS HARD
AND HOW YOU CAN
MAKE IT EASY

Daniel T.
Willingham, PhD

Bestselling author of *Why Don't Students Like School?*



Advance Praise for Outsmart Your Brain

“对《智胜你的大脑》的高度赞誉

“In a sentence, this is the best book I’ ve read on how anyone can learn the tactics of the most successful students. Practical but backed by the latest science, Outsmart Your Brain is an on-ramp to the virtuous cycle of interest, confidence, and achievement.”

—Angela Duckworth, New York Times bestselling author of Grit

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“Brisk and interesting, this is a wonderful book with a wealth of practical advice for students in ‘how to’ chapters on many topics. I would also recommend the book for teachers and lifelong learners—anyone who cares about learning.”

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“Willingham does double duty: he places the power to learn back where it should be, in the hands of students, while showing teachers how to harness the most effective systems and techniques for boosting learning. An essential tool for the new school year, every bit as important as that calculator, handful of sharpened pencils, and stack of notebooks.”

“这是在学校表现出色的终极指南，也是任何即将上大学的学生的完美礼物，对于刚开始关心分数，或者更好的是，真正学习的高中生也是如此。”

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This book is dedicated to

Sherry Willingham Segundo

and Judy Willingham Shimm

这本书献给

雪莉·威灵汉姆·塞贡多

和朱迪·威灵汉姆·什姆

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INTRODUCTION 引言

When you started preschool, your teachers and parents had no expectation that you would be responsible for your own learning. No parent has ever said to a five-year-old, “Your teacher tells me that you’re not really giving your best when it comes to learning your colors. She also says that you don’t fingerpaint like you really mean it. I don’t see why I should keep paying for preschool if you’re not going to apply yourself!” It was your teacher’s responsibility to create an environment where you would learn.

But by your early teens, school had morphed into a format where you carried much greater responsibility for your own learning. The teacher lectured while you took notes; at home, you read textbooks, completed assignments, and studied for tests. This class format meant your teachers expected that you knew how to (1) set priorities and plan your schedule; (2) read difficult content independently; (3) avoid procrastination; (4) memorize content; (5) avoid distractions; (6) judge when you had studied enough; (7) show what you knew on a test; and (8) deal with emotions like anxiety that interfere with learning. And if you didn’t do those things well, it was your problem, not the teacher’s. In short, you were expected to be an independent learner.

当你开始上幼儿园时，你的老师和父母并不期望你能对自己的学习负责。没有哪位家长会对一个五岁的孩子说：“你的老师告诉我，你在学习颜色方面并没有展现出你的最佳状态。她还说你在用手指画画时并未全力以赴。我不明白为什么我要继续为你的幼儿园付费，如果你不打算付出努力的话！”你的老师负责创造一个让你能学习的环境。

但到了你的青少年时期，学校的形式变成了让你更加自我负责自己学习的模式。老师在讲课，而你在做笔记；到了家，你需要阅读课本，完成作业，准备测试。这种课堂形式意味着你的老师期望你知道如何(1)设置优先级并安排你的时间；(2)独立阅读困难的内容；(3)避免拖延；(4)记住所学的内容；(5)避免分心；(6)

判断何时已经学习足够；(7)在测试中展示你所学的知识；以及(8)处理干扰学习的情绪如焦虑等。而如果你没有做好这些事情，那就是你的问题，而不是老师的问题。总之，人们期望你能成为一个独立学习者。

But your brain doesn't come with a user's manual. Independent learning calls for many separate skills, and you needed someone to teach them to you. Most likely, no one did. Surveys of college students show that the vast majority devise their own strategies for studying, avoiding procrastination, and so on. But the strategies they come up with usually aren't very good. That's why I wrote this book. It's a user's guide to your brain that will allow you to fully exploit its learning potential and so become an independent learner.

How I Came to Write This Book

My primary motivation in going to graduate school was not an altruistic wish to help people learn but a selfish wish to become a professor, because I believed that professors didn't have bosses. (That turned out to be less true than I thought but more true than I probably deserve.) I entered a psychology doctoral program with a let's-see-how-this-goes attitude, which is exceptionally stupid planning.

但是，你的大脑并没有附带用户手册。独立学习需要许多不同的技巧，而你需要有人教你这些技巧。然而，很可能没有人教过你。大学生调查显示，绝大多数人会制定他们自己的学习策略，避免拖延等。但他们制定的策略通常并不太好。这就是我写这本书的原因。这是一本关于你的大脑的用户指南，它将允许你充分利用它的学习潜力，从而成为一个独立的学习者。

我是如何写这本书的

我去读研究生的主要动机并不是出于无私的愿望，帮助人们学习，而是出于自私的愿望，成为一名教授，因为我相信教授没有老板。（我发现这不如我想象中的那么真实，但可能比我应得的还要真实。）我带着一种让我们看看这会怎样的态度进入了一个心理学博士项目，这是极其愚蠢的计划。

But I got lucky. I found myself fascinated by the human mind and especially human learning. I finished the program with enthusiasm, and I lucked into a job teaching at a college. My research concerned memory, but it was pretty technical and removed from everyday life. You've heard the joke about the guy who gets a PhD, whereupon his mother explains to her friends, "He's a doctor, but not the type who helps people." I was a learning

researcher, but not the type who helps you learn.

So it went for about ten years. One day I got a phone call from a near stranger, inviting me to come to Nashville to deliver a lecture on learning to five hundred teachers. I politely pointed out that I didn't know anything about teaching because I was a doesn't-help-you type of researcher. He said, "Sure, we get that. We just think teachers would find it interesting." Puzzled but flattered, I said, "Okay."

Six months later it was time to write the talk, and I panicked. Obviously teachers know how children learn; what could I possibly say that they didn't already know? I considered backing out, but I knew it was too late for the event organizers to replace me. I threw together a fifty-minute talk, plucking a few ideas from the introductory course on cognition that I had been teaching to college sophomores. I was so certain the talk would flop that half an hour before it started I asked my wife (a teacher), whom I had dragged to Nashville for my first talk about teaching, not to attend.

But to my considerable surprise, it was a success. Teachers didn't know the content, even though it covered material you'd take in your very first course on learning. Furthermore, they saw it not as abstract but as useful in their classrooms.

My career changed course. I thought teachers could benefit from knowing what scientists have figured out about how people think and learn, so I started writing articles and books that explained it.

但我很幸运。我发现自己对人类的思维和学习特别感兴趣。我带着热情完成了这个课程，并幸运地找到了一份在大学教书的工作。我的研究涉及记忆，但它非常技术化，离日常生活很远。你可能听过这个笑话，一个人得到了博士学位，然后他的母亲向她的朋友解释说：“他是个医生，但不是那种帮人的医生。”我是一个学习研究者，但不是那种帮你学习的研究者。

这样过了大约十年。一天，我接到了一个陌生人的电话，邀请我去纳什维尔向五百名教师发表一个关于学习的讲座。我礼貌地指出我对教学一无所知，因为我是那种不帮助你的研究者。他说，“没问题，我们明白。我们只是认为教师会对此感兴趣。”我感到困惑但受宠若惊，于是我说，“好的。”

六个月后，该写讲话的时候了，我感到恐慌。显然，教师知道孩子们是如何学习的，我能说出什么他们还不知道的呢？我考虑过退出，但我知道对于活动组织者来说，要找到我的替代者已经太晚了。我草草整理了五十分钟的讲话，从我给大学二年级学生教过的认知入门课程中摘取了一些想法。我如此确定讲话会失败，以至于在开始前半小时，我请求我的妻子（一名教师），我把她带到纳什维尔参加我第一次关于教学的讲座，让她不要出席。

但出乎我的意料，这次发言非常成功。即使讲话涉及你在第一次学习课程中所学的内容，教师们也不知道这些内容。更重要的是，他们认为这些内容并不抽象，而是可以在他们的课堂中使用。

我的职业生涯改变了方向。我认为，教师可以从科学家们关于人们如何思考和学习的研究中受益，所以我开始写文章和书籍来解释这一点。

I also started thinking about how this information applied to my own students. I added a “how to study” lecture to my introductory course on cognition. Students said it was useful, but their grades didn’t change much. I had focused on efficient ways to commit information to memory, so I guessed that there must be other aspects of studying that caused problems.

When students came to my office for help, I started asking more questions about their study habits and strategies. I asked them to bring their textbooks and notebooks to our meetings so we could talk about how they read and took notes.

I learned that my students struggled for many reasons, not just poor memorization strategies. Some didn’t know how to comprehend a complex book chapter, some procrastinated, some had trouble understanding lectures, some choked when they took a test, and so on.

After about a year I felt I was getting pretty good at diagnosing where the problem lay for any given student. But I wasn’t great at getting students to change how they studied, which, to be honest, I thought was strange. They came to me because they knew things weren’t going well. Why not try my advice?

我也开始思考这些信息如何应用在我自己的学生身上。我在我的认知入门课程中加入了“如何学习”的讲座。学生们说这很有用，但他们的成绩并没有太大改变。我曾专注于有效的记忆信息的方式，所以我猜想一定有其他方面的学习问题。

当学生来到我的办公室寻求帮助时，我开始了解他们的学习习惯和策略。我让他们带上教科书和笔记本，这样我们就可以讨论他们如何阅读和做笔记。

我了解到，我的学生们有许多困扰，并不仅仅是记忆策略不佳。一些人不知道如何理解复杂的书本章节，一些人总是拖延，一些人听不懂讲座，一些人在考试时会紧张，等等。

大约一年过后，我觉得我已经很擅长诊断任何一个学生的问题所在。但是，我并不擅长让学生改变他们的学习方式，坦白说，我觉得这很奇怪。他们找我是因为

他们知道情况并不好。为什么不试试我的建议呢？

Why Your Brain Must Be Outsmarted

I solved the puzzle by accident. A student asked me how I had become interested in memory, and I was reminiscing about a course I had taken in graduate school. “I was so struck by the weirdness of memory,” I said.

“So much of what I thought was true wasn’ t.” As the words were coming out of my mouth, I realized how strange my advice about studying probably sounded to my students.

For example, wanting to learn has no direct impact on learning. You often remember things you didn’ t try to learn. I expect you could tell me whether or not Prince Harry is married, what Harvey Weinstein did wrong, and whether or not Bradley Cooper played the lead in the movie Forrest Gump. You didn’ t study any of these things; you were simply exposed to them, and they stuck in your mind. When I was a college student, I spent much time frantically trying to cram new knowledge into my head; it was weird to be told that the desire to learn doesn’ t matter.

为什么你的大脑需要被智胜

我是无意中解决了这个难题的。一个学生问我为什么对记忆产生了兴趣，我在回忆研究生阶段上过的一门课。我说：“我被记忆的奇怪性质所震撼，我以为是真的东西很多都不是。”当这些话从我口中说出来时，我意识到我关于学习的建议听起来对我的学生来说可能很奇怪。

比如，想要学习对学习本身并没有直接影响。你经常记住你并没有努力去学的东西。我猜你可以告诉我哈里王子是否已婚，哈维·魏恩斯坦做错了什么，以及布拉德利·库珀是否在电影《阿甘正传》中领衔主演。你并没有专门去学习这些事情；你只是被这些事情所影响，它们就留在了你的脑海中。当我还是大学生时，我花了很多时间紧张地试图把新知识塞进我的头；被告知想要学习并不重要是很奇怪的。

I was equally dumbfounded to discover that repetition, although it often helps learning, doesn’ t guarantee it. For example, do you know what’ s written across the top of a dollar bill? There’ s an eagle on the back of the bill; what appears over its head? Given the number of dollar bills you’ ve seen in your life, with all that repetition, you’ d think you’ d know what one looks like.

So I started asking my students, “Please, be honest: Did you try any of

those strategies I recommended?” Most said they had, but not more than once. The problem wasn't that the strategies sounded weird, it was that they felt ineffective while they were doing them.

That made sense to me; learning is like exercise in this way. If you want to increase the number of push-ups you can do, you could practice push-ups, but it would be even better to practice really difficult push-ups, like those where you launch yourself off the floor and clap. You can't do very many of them, so it feels counterproductive. “This is stupid. I'm trying to do a lot of push-ups, and I can only do a few of these!” You have to keep in mind that the greater challenge will make you stronger in the long run. In contrast, if you practice push-ups on your knees, it feels like things are going great because you can do so many so quickly, but it's obviously a less effective exercise.

When you're trying to learn, your brain tells you to do the mental equivalent of push-ups on your knees. Your brain encourages you to do things that feel easy and feel like they are leading to success. That was why my students, left to their own devices, drifted toward the same ineffective study strategies. Outsmarting your brain means doing the mental exercise that feels harder but is going to bring the most benefit in the long run.

我同样惊讶地发现，尽管重复经常有助于学习，但并不能保证学习效果。例如，你知道美元钞票顶部写着什么吗？钞票背面有一只鹰，它头上是什么？考虑到你一生中见过的美元钞票数量，有了所有这些重复，你可能认为你知道它长什么样子。

于是，我开始问我的学生：“请诚实地告诉我，你试过我推荐的那些策略吗？”大多数人说他们试过，但不止一次。问题不在于策略听起来怪异，而在于他们在做这些策略的时候感觉效果不佳。

这对我来说很有道理；学习就像锻炼一样。如果你想增加你能做的俯卧撑数量，你可以练习做俯卧撑，但更好的方法是练习非常困难的俯卧撑，比如你从地板上弹起并拍手的那种。这样的俯卧撑你只能做几个，所以感觉适得其反。“这太愚蠢了。我试图做很多俯卧撑，我却只能做几个！”你必须牢记，更大的挑战将使你长期变得更强大。相比之下，如果你在膝盖上练习俯卧撑，会感到事情进展得很顺利，因为你可以迅速地做很多，但显然这是一种不太有效的锻炼方式。

当你试图学习时，你的大脑会告诉你做相当于在膝盖上做俯卧撑的精神锻炼。你的大脑会鼓励你做那些感觉容易且像是导向成功的事情。这就是为什么我的学生，在自己的选择上，会偏向同样无效的学习策略。智胜你的大脑意味着做那些感觉

更困难但长期会带来最大收益的精神锻炼。

How to Use This Book

Most of schooling—starting around age twelve and continuing through postcollege education, like medical or law school—has the same format: You learn by attending lectures and reading on your own. You demonstrate your learning by taking tests. There's more to schooling than that (sometimes you have to write a paper, for example), but these three tasks—listening, reading, taking tests—make up the bulk of a student's work. So these are the tasks I've addressed in the book.

Naturally, each of these basic tasks has subcomponents. For example, studying for a test requires not only committing things to memory but having good notes to study, planning time in your schedule to study, and so on.

Each chapter of this book guides you to success in one of these processes. You can pick and choose which chapters to read according to which aspects of learning you want to improve. You don't have to read the chapters in order or read all of them. And I don't expect that you will use all of the tips in a chapter. I offer a bunch so you can select one that appeals to you; if it doesn't work, try another. But don't reject a strategy simply because it sounds to you as though it won't work. Remember, many will sound funny, and they may feel, at the time, as though they're not working! Judge the effectiveness of a method by the results, not by how it feels to do it. Instructors will find the advice for students useful, but there's also a section at the end of each chapter that describes how they can make use of the same principles in the classroom.

如何使用此书

大部分的学校教育——从大约十二岁开始，一直延续到大学后的教育，如医学院或法学院——都有同样的格式：你通过听讲座和自己阅读来学习。你通过考试来证明你的学习成果。学校教育不仅仅包括这些（有时你需要写论文，例如），但这三个任务——听讲座、阅读、考试——占据了学生工作的大部分。因此，这些是我在书中讨论的任务。

当然，这些基本任务都有一些子组件。例如，学习考试不仅需要记住事物，还需要有良好的学习笔记，需要在你的时间表中安排学习时间，等等。

这本书的每一章都会指导你如何在这些过程中取得成功。你可以根据你想要提高

的学习方面来选择读哪些章节。你不必按顺序阅读所有章节，同样我也不希望你会使用章节中所有的技巧。我提供了很多建议，这样你就可以挑选其中一条你感觉最合适的；如果它不管用，就试试另一个。但不要仅仅因为你认为某种策略不会管用就拒绝它。记住，很多时候，这些策略听起来可能有点儿奇怪，而且在实行的时候，也可能会觉得它们似乎没有效果！通过结果来判断一种方法的有效性，而不是通过做它的感觉。老师们会发现对学生的建议很有用，但每章的结尾部分也描述了他们如何可以在课堂上使用相同的原则。

* * *

Your memory is a tool, and this book is an operating manual that will allow you to become an independent learner. I can't promise that I'll make learning completely effort-free. The brain just doesn't work that way, and if anyone tells you otherwise... well, keep your hand on your wallet while they're around.

What I can promise is much greater efficiency. I will show you how to change your approach to learning so that you can learn on your own and so that the effort you put in will have much greater impact. You'll learn faster, and what you learn will stick with you longer. All you need to do is understand a bit about how your brain works—and about its stumbling blocks. Then you can outsmart it.

你的记忆是一项工具，而这本书则是一本操作手册，能让你成为一个独立的学习者。我不能保证我会让学习完全无需努力。大脑就是不会这样工作，如果有人告诉你不是这样……好吧，他们在你身边时，你最好小心你的钱包。

我可以保证的是提高你的效率。我会向你展示如何改变你的学习方法，以便你可以独立学习，你付出的努力将会产生更大的影响。你会学得更快，而且你学到的知识会更加深入。你只需了解一点关于你的大脑是如何工作的，以及它的障碍在哪里。然后，你就可以以智取之。

第一章 如何理解一场讲座

By the time students get to college, they've listened to thousands of hours of lectures, so you'd think that they'd all be quite good at learning that way. They usually aren't. Part of their problem is the inability to take good notes, and I'll tackle that topic in the next chapter. Here I want to focus on understanding what the instructor says.

Now, if you don't understand, your next step seems obvious: ask for clarification. But what if you fail to understand and you don't realize that you haven't understood? How are you supposed to guard against that?

Let's consider the process of noticing that you don't understand something. That feeling is triggered by a failed search of your memory. For example, a talkative stranger at the grocery store says, "Wow, this stack of cans is in a parlous state, right?" Or a friend asks, "What does it mean when a bird sings at night?" In either case, you search your memory for information (definition of parlous, why insomniac birds sing), you don't find it, and so you think, "I don't get it."

There's a second type of failed memory search that leads to confusion, and it's based on how people communicate. When people speak, they don't say a lot of what they actually mean. They are not trying to be mysterious; they assume that you have the missing information in your memory and will use that information to fill the gaps in what they said. For example, suppose a friend says:

"What the heck, I called Domino's an hour ago. Have you seen my phone?"

到了大学，学生们已经听过数千小时的讲座，所以你可能会认为他们都非常擅长这种学习方式。但事实通常并非如此。他们的部分问题是无法做好笔记，我将在下一章中讨论这个话题。在这里，我想关注对教师所说内容的理解。

现在，如果你不理解，下一步看似明显：寻求澄清。但是，如果你未能理解，而且你没有意识到你没有理解呢？你应该如何防止这种情况呢？

让我们考虑一下注意到自己不理解某件事的过程。这种感觉是由你的记忆搜索失败引发的。例如，一个在杂货店里喋喋不休的陌生人说，“哇，这堆罐头的状态真是危险，对吧？”或者一个朋友问，“鸟在晚上唱歌是什么意思？”在任何一

种情况下，你都在寻找你的记忆中的信息（危险的定义，为什么失眠的鸟唱歌），你没有找到，所以你会想，“我不明白。”

有第二种类型的记忆搜索失败会导致混淆，这是基于人们的交流方式。人们说话的时候，并不会说出他们真正想表达的大部分内容。他们并不是故意要神秘；他们认为你的记忆中有缺失的信息，并会用这些信息来填补他们所说的空白。例如，假设一个朋友这么说：

“到底怎么回事，我一个小时前就打电话给 Domino's 了。你见过我的手机吗？”

The connection between the first and second sentences seems obvious—the friend is asking about his phone to call the pizza place—but consider how much information is needed to make that connection. Your friend assumed you knew that Domino's is a business that delivers pizza, that you knew an hour is a long time for pizza delivery, that calling the store is an appropriate action for poor service, and that phones are for making calls.

We always omit information when we speak. If we didn't, communication would be really long and really boring. (“Toss me my phone, would you? Because I want to make a phone call, and that's what phones are for.”)

Now imagine your friend says this:

“What the heck, I called Domino's an hour ago. There are at least six minnows in the shallow part of the pool.”

第一句和第二句之间的联系看起来很明显——朋友是在询问他的电话以便给比萨店打电话——但请思考一下需要多少信息来建立这种联系。你的朋友假设你知道 Domino's 是一个提供比萨外送的商家，你知道一个小时对比萨送货来说时间很长，打电话给店家是对糟糕服务的适当反应，以及电话是用来打电话的。

我们在说话时总是会省略信息。如果我们没省略，那么沟通就会变得非常长且非常无聊。（“你能把我的手机扔给我吗？因为我想打个电话，这就是电话的用途。”）

现在想象一下你的朋友说这个：

“什么鬼，我一个小时前就打电话给 Domino's 了。游泳池的浅水区至少有六条鲦鱼。”

It's fine for neighboring sentences not to have an obvious connection

—sometimes someone's talking about pizza, and the next moment she's asking about her phone—but we assume we will find a connection once our memory is consulted.

So we recognize that we've failed to understand when we probe our memory for either (1) a fact (the meaning of parlous) or (2) a connection (pizza and minnows) and find nothing. These are cases when you know that you don't understand and you can do something about it—most obviously, ask the speaker to explain.

Now, when would you fail to understand and not even know that you're missing something?

It won't happen with an unknown vocabulary word, but it could with a connection, because there can be more than one possible connection. Perhaps you connect two ideas in one way and hence think you've understood. But the speaker thought you would also connect them in another way. You've missed something, but you don't realize it.

并不一定要求相邻的句子之间有明显的联系——比如，有人一会儿在谈论披萨，下一刻她就在问她的手机在哪——但我们会假设当我们去回忆的时候能找到某种联系。

所以，当我们回忆起来试图寻找（1）一个事实（比如“parlous”的意思）或者（2）一个联系（比如披萨和鱼饵之间的联系）却什么都找不到的时候，我们就知道我们没有理解。这些情况下，你知道你没理解，你能做些什么来解决——最明显的，就是让对方解释。

那么，你没有理解，甚至还不知道你有漏掉什么的情况会在什么时候出现呢？

如果遇到一个你不知道的单词，这种情况不会发生，但如果是在寻找联系时，可能会发生，因为可能存在多种可能的联系。或许你可以通过一种方式将两个思想连接起来，认为你已经理解了。但是，对方可能以为你会以另一种方式连接这两个想法。你错过了一些东西，但你并没有意识到。

For example, suppose in a history class the instructor says:

“A lot of movies starring Shirley Temple came out during the 1930s. They were meant to make their audience feel good and forget their troubles.”

A listener might think that he's understood the connection between the sentences: each provides a fact about Shirley Temple movies. But suppose that a few days earlier the instructor had taught about the Great

Depression: that economic times were terrible in the 1930s and most people were struggling financially. The lecturer thought listeners would understand that Shirley Temple's movies were popular because they made people feel good during economically difficult times.

So now we see how you might fail to understand something but not perceive that you don't understand: you make a connection between ideas, so you think you've got it, but the instructor wants you to connect them in another way.

例如，假设在一堂历史课上，教师说：“很多由雪莉·坦普尔主演的电影都是在1930年代上映的。这些电影的目的是使观众感到愉快，忘记他们的烦恼。”

听者可能会认为他已经理解了这两句话之间的关联：每一句都提供了关于雪莉·坦普尔电影的事实。但是假设几天前，教师曾经讲过关于大萧条的内容：那时的经济状况非常糟糕，大多数人都在经济上挣扎。讲师认为听众会明白，雪莉·坦普尔的电影之所以受欢迎，是因为它们在经济困难的时期让人们感到快乐。

所以，现在我们看到，你可能无法理解某件事，但并未察觉到你不理解：你将各种思想联系起来，所以你认为你已经理解了，但教师希望你以另一种方式来连接它们。

This sort of problem is especially likely to pop up during lectures because of the way they are organized. Conversations are unplanned; I just talk about things as they occur to me, so connected ideas typically follow one after the other almost immediately. But lectures are usually organized hierarchically, which means the instructor wants the listener to connect some ideas that are not next to one another. Let's look at what that means.

Imagine taking a food science class and attending a lecture on cooking meat. There are three main topics for the day: cooking meat kills bacteria, it imparts flavor, and it makes meat more tender. The figure on the opposite page shows a partial outline of the lecture.

This is the organization the speaker might have in her head, but it's not the organization you would experience in her class. No one talks in a hierarchy. Learners experience lectures linearly. The capital letters show the order in which a speaker would talk about each point.

The ideas labeled A, E, and L (“kills bacteria,” “flavor,” and “tenderness”) ought to be linked. Those all exist in a subcategory: the three reasons that humans cook meat. But if the instructor simply goes through the lecture without highlighting that, some listeners will miss that important connection. The neighboring sentences in the lecture will probably connect well enough, so that there's no sentence that surprises

students and makes them wonder, “Wait, what is this idea supposed to connect to?”

Now we see why most students get the factoids in lectures, for example, the definition of terms such as collagen and psoas muscle. They notice they don’t know those words, just as you noticed parlous. It’s the deeper connections they miss, ideas that are related by how they function or because they are all evidence for or examples of a broad conclusion. The information they miss is also the information instructors think is more important.

这种问题在讲座中尤其可能突然出现，因为它们的组织方式。对话是无计划的；我只是在它们浮现在我心头时谈论事情，所以相关的想法通常会几乎立即接踵而至。但是讲座通常是分层组织的，这意味着讲师希望听众将一些并非相邻的观点联系起来。让我们看看这意味着什么。

想象一下你在参加一门食物科学课，并参加了一场关于烹饪肉类的讲座。当天有三个主要话题：烹饪肉类可以杀灭细菌，它可以增添风味，它可以使肉类更柔嫩。对面页的图示显示了讲座的部分提纲。

这可能是讲者在她的头脑中的组织结构，但并非你会在她的课堂中体验到的组织结构。没有人会按层次交谈。学习者线性地体验讲座。大写字母显示了演讲者谈论每个要点的顺序。

被标为 A、E 和 L 的观点（“杀灭细菌”，“风味”和“嫩度”）应该是有关联的。这些都存在于一个子类别中：人类烹饪肉类的三个原因。但是，如果讲师只是简单地讲完讲座而没有强调这一点，一些听众将会错过这个重要的联系。讲座中的相邻句子可能就足够紧密，所以没有一句话会让学生感到奇怪，并让他们想，“等等，这个想法应该和什么联系起来呢？”

现在我们明白为什么大多数学生能从讲座中得到事实，例如胶原和脊肌的定义这样的术语。他们注意到他们不知道这些词，就像你注意到了“parlous”。他们错过的是更深层的联系，这些想法是通过它们的功能或因为它们都是对一个宽泛结论的证据或示例而相关。他们错过的信息也是教师认为更重要的信息。

In summary, your brain evolved to understand typical speech. In a normal conversation you don’t plan fifty minutes of remarks in advance; you say things as they occur to you, and because you’re planning only a sentence or two at a time, you’re unlikely to say something that can be understood only if your listener connects what you’re saying now to what you said twenty minutes ago. But lectures are planned and organized hierarchically. Therefore, it’s not just possible that an idea connects to something mentioned twenty minutes ago, it’s likely, and if a student misses that connection, she will miss a layer of meaning.

WHEN LEARNING BY LISTENING

What your brain will do: It will listen to a lecture the way you listen to a friend speaking and therefore miss deeper connections in the content.

How to outsmart your brain: Plan for the mismatch between the way the speaker thinks of the content being organized (a hierarchy) and the way you experience a lecture (linearly), so that you make the connections the speaker wants you to.

总结来说，你的大脑进化为了理解典型的语言。在正常的对话中，你不会提前准备五十分钟的话语；你会随着思绪的流动来说话，因为你一次只计划一两句话，你不太可能说出只有当你的听者将你现在说的内容与你二十分钟前说的内容联系起来时才能理解的话。但是，讲座是提前计划和分层次组织的。因此，一个想法与二十分钟前提到的内容连接起来的可能性不仅存在，而且很可能，如果学生错过了这种连接，她会错过一层含义。

当通过听力学习：

你的大脑会做什么：它会像你听朋友说话一样听讲座，因此会错过内容中更深层次的连接。

如何智取你的大脑：计划好说话者认为内容的组织方式（层次结构）和你听讲座的经验（线性）之间的不匹配，这样你就可以建立说话者希望你建立的连接。

In this chapter you' ll learn some tricks to ensure that you get the deeper meaning of a lecture, not just the new vocabulary words and factoids.

TIP 1 Extract the Organization from a Lecture

在这一章节中，你将学习一些技巧，以确保你从讲座中获得更深层次的含义，而不仅仅是新的词汇和小事实。

提示 1：从讲座中提取组织结构

Ideally a speaker will be explicit about organization; she will tell you at the start of the lecture, “This is what you’ re going to learn. The main conclusion is X. There will be four points that support X.” And then during the lecture, she’ ll refer back to this organization, saying, “Okay, now we’ re finished with the first point that supports our conclusion. Let’ s move on to the second.” She’ s telling you what the organization is as she goes.

But what if she doesn’ t? In that case, you must do your best to figure it out yourself. For example, in the lecture we discussed earlier about cooking meat: if the instructor says, “Cooking also makes tough meat more tender,” you’ re supposed to know that this statement is one of the three reasons explaining why humans cook meat.

But as you listen, you’ re not going to appreciate every bit of the lecture organization. It moves too quickly. Aim for getting the first two levels of the hierarchy. The top level is the question, or the overriding theme of the day. In our food science lecture, the top-level question was “Why cook meat?” In a history class, it might be whether presidential candidates today could run front-porch campaigns—candidacies in which the politician does not travel but makes speeches close to home.

You may get help in determining the lecture organization from a written document you see before the lecture—a syllabus if it’ s a class, a handout if it’ s a presentation—that gives you some idea of the main topic. If you have no advance knowledge of the theme, a decent guide is whatever the speaker says first. Speakers almost always provide a summary, even if it’ s just a sentence or two, of the topic to come. Which means that if you’ re a minute late, you’ ll miss it. If you’ re slow to turn your attention to the speaker because you’ re chatting with the person next to you or you’ re on your phone, you’ ll miss it. Be present and ready for the start-of-presentation summary.

理想情况下，讲师会明确地组织内容；在讲座开始时，她会告诉你，“你将要学到什么。主要结论是 X。会有四个论点支持 X。”然后在讲座过程中，她会回到这个结构，说：“好的，我们现在已经完成了支持我们结论的第一个论点，让我们继续下一个。”她会在讲解过程中告诉你这个结构。

但如果她没有呢？在那种情况下，你必须尽力自己去弄清楚。例如，在我们之前讨论的关于烹饪肉类的讲座中：如果讲师说，“烹饪也使坚硬的肉变得更嫩”，你应该知道这个陈述是解释人类为什么要烹饪肉的一个原因之一。

但是你在听的时候，你不会完全理解讲座的每一部分的组织。进展太快了。努力抓住层级结构的前两级。最顶层是问题，或者说是当天的主要主题。在我们的食品科学讲座中，最高级别的问题是“为什么烹饪肉？”在历史课上，问题可能是

今天的总统候选人是否可以进行前廊竞选——在这种情况下，政治家不会出行，而是在家附近发表演讲。

在确定讲座组织结构方面，你可能会从讲座前看到的书面文档中得到帮助——如果是课程，那就是课程大纲；如果是演讲，那就是讲义——这会给你一些关于主题的想法。如果你没有提前知道这个主题，一个不错的指导就是讲师首先说的内容。演讲者几乎总是会提供一个摘要，即使只是一两句话，来概述即将到来的主题。这意味着如果你迟到一分钟，你就会错过它。如果你因为和旁边的人聊天或是在玩手机，而没有及时把注意力转移到讲师身上，你也会错过它。在演讲开始时要集中注意力并做好准备。

The second level of the hierarchy will be pieces of evidence that support the conclusion of the day. As we saw in the food science lecture, it was the three reasons people cook meat. In the history class, perhaps the second level of the lecture would be examples of successful (and unsuccessful) front-porch campaigns, the nature of media when such campaigns were conducted, the characteristics of the candidates who ran them, and then a summary of these factors as related to modern politics.

If the point of the lecture is to teach you to do something—draw blood, for example — the subpoints might be substeps of the procedure, justifications for why they are effective, or a list of circumstances describing when to use each method.

Again, a good instructor will use verbal cues that explicitly say, “I’ve finished defining the features of a front-porch campaign, so now I’ll give some historical examples.” Ineffective instructors won’t do that, but they know they are shifting topics, even if they don’t think to tell you. So listen for verbal cues that provide clues to organization, for example:

“The second reason…”

“That raises a different question.”

层级结构的第二层将是支持每天结论的证据。正如我们在食品科学讲座中所看到的，人们烹饪肉三个原因。在历史课上，也许讲座的第二层会是成功（和不成功）的前廊竞选活动的例子，进行这种竞选活动时媒体的性质，进行竞选的候选人的特征，然后是这些因素与现代政治的关系的总结。

如果讲座的目的是教你做某件事——例如，抽血——那么它的小点可能是程序的子步骤，为什么它们有效的理由，或者描述何时使用每种方法的情境列表。

再者，一位好的导师会使用明确地说，“我已经定义了前廊竞选的特征，所以现在我会给出一些历史例子”的口头提示。无效的教师不会这样做，但是他们知道

他们正在转换话题，即使他们没有想到告诉你。所以要听口头提示，这些提示为你提供组织的线索，例如：

“第二个原因是...”

“这引起了另一个问题。”

“So now we know...”

“Let’s look at this from a different perspective.”

“Anyway...”

“Okay.”

"所以现在我们知道了..."

"让我们从一个不同的角度来看这个问题。”

"总之..."

"好的。”

Look for nonverbal cues. Instructors usually stop for questions when they’ve finished covering a topic, to be sure their listeners understand it before moving on to something new. If the instructor stops to consult her notes, or even if she pauses for a moment to think, that probably signals a shift to a new topic; she’s finished with one idea and is checking to see what’s next.

You shouldn’t try to put together the whole hierarchy while you’re listening to a lecture, but do try to interpret details in light of broader ideas. Remember, the whole point of this chapter is how to understand new content as you listen. Part of understanding is interpreting things in the right context. For example, take the fact that when James Monroe was elected president in 1820, he received every vote in the electoral college except one. This same fact might be mentioned:

As evidence that it was an “era of good feeling” and harmony in the United States

As evidence of the weakness of the Federalist Party after the War of 1812

In the context of Monroe's hope that the party system would die out
寻找非语言提示。讲师在讲完一个话题后通常会停下来询问问题，以确保听众在进入新的话题之前理解了它。如果讲师停下来查阅她的笔记，或者甚至暂时思考一下，那可能表明要转向一个新的话题；她已经结束了一个想法，并在查看下一个是什么。

你在听讲座的时候不应该试图整理出整个层次结构，但是你应该尝试在更宽泛的观念的照耀下解读细节。记住，这一章的全部目的就是如何在听的时候理解新的内容。理解的一部分就是在正确的语境中解读事物。例如，以詹姆斯·门罗在1820年当选总统，他得到了选举人团中除一个之外的所有选票这个事实。这个事实可能会被提及：

作为证明那是美国的“美好时代”和和谐的证据

作为1812年战争后联邦党实力衰弱的证据

在门罗希望党派制度将消亡的语境中

To interpret details in light of the big picture, you have to keep the big picture continually in mind as you're listening. That's hard to do because you're trying to follow the lecture and take notes. So instead, mentally check in with the big picture every now and then. Suppose you've learned about vectors in a previous class and now the instructor introduces the idea of vector addition. It's hard to simultaneously understand this new idea and think about how it connects to other ideas in the course. So try to think about it when the instructor is ready to shift to a new topic. When the instructor asks if there are any questions, don't just ask yourself, "Do I understand what she just said?" Also ask yourself, "Do I understand how what she just said relates to the broader topic of the day?" If it's not obvious, ask.

In a sentence: Expect that lectures will be hierarchically organized, and try to extract the organization during the lecture.

要在大局下理解细节，你必须在倾听时时刻记住大局。这很难做到，因为你正在尝试跟随讲座并做笔记。因此，你可以时不时地在心里检查一下大局。假设你在之前的课程中已经了解了向量，现在老师又介绍了向量加法的概念。很难同时理解这个新的概念，并思考它如何与课程中的其他概念联系起来。所以，试着在老师准备转向新话题时思考一下。当老师问是否有任何问题时，不仅要问自己，“我

理解她刚才说的了吗？”也要问自己，“我理解她刚才说的如何与今天的更广泛的主题相关吗？”如果不明显，就提问。

一句话：期望讲座将会按照层次结构组织，并试图在讲座期间理解这种结构。

TIP 2 Expect Listening to Require Work

People often mistakenly think that attending a lecture is easy because they're just listening. In fact, lectures have a bad reputation among some educators because they seem passive; students just sit there. But this is inaccurate, and in the previous section we saw an important reason that learning from a lecture requires active thinking: listeners must rebuild the hierarchical organization of what they hear.

There are other important ways in which lectures differ from typical conversation. People use more unusual vocabulary when they deliver a lecture, and they are communicating more difficult ideas than you normally would when talking to a friend. Further, your friend usually notices whether or not he is understood; he might pause or say, “You know?”—which is your cue to show that you're getting it by nodding or saying, “Right.” Instructors pause for questions much less frequently.

提示 2：预期听力需要付出努力

人们常常误以为，参加讲座很容易，因为他们只需听。事实上，讲座在一些教育者中有不好的名声，因为它们看起来很被动；学生只是坐在那里。但这是不准确的，在前一部分我们看到了从讲座中学习需要积极思考的一个重要原因：听众必须重塑他们听到的东西的层级组织。

讲座与典型的对话有其他重要的不同之处。人们在发表讲座时会使用更多不寻常的词汇，他们传达的观念比你平时与朋友说话时更加困难。而且，你的朋友通常会注意到他是否被理解；他可能会暂停或说，“你知道吗？”——这是你的提示，通过点头或说，“对”的方式来表明你已经理解。教师提问的停顿则要少得多。Plutarch, the Greek biographer, commented on the difficulty of listening nearly two thousand years ago:

There are others who think that the speaker has a function to perform, and the hearer none. They think it only right that the speaker shall come with his discourse carefully thought out and prepared, while they, without

consideration or thought of their obligations, rush in and take their seats exactly as though they had come to dinner, to have a good time while others toil. And yet even a well-bred guest at dinner has a function to perform, much more a hearer; for he is a participant in the discourse and a fellow-worker with the speaker.

I' ve taught a large lecture course for each of the last thirty years, and I' ve been speaking to groups of adults at schools and corporations for the last fifteen. Unengaged students and adults look the same, and they are easy to spot. They slump in their seats. Their eyes are dull, and they focus only slowly when I start to talk. It' s not that they are tired or anxious or distracted by personal problems; it' s that they are passive. They' re treating a lecture like a movie or a concert.

It' s easy to see why you' d feel like you' re part of an audience when you' re in a large lecture hall with a few hundred other students. It' s natural to expect that the entertainment will come to you. But you' ll fare much better if you come to each lecture psychologically prepared to put in some mental effort.

约两千年前，希腊传记作者普鲁塔克曾经评论过听的困难：

有些人认为只有发言人有任务要执行，听众则无所事事。他们认为发言人应该认真思考并准备好他的发言，而他们却毫无考虑或思考他们的义务，就像来吃晚餐一样，他们匆匆忙忙地进入会场并坐下，期待在他人的努力中享受愉快时光。然而，即使是在晚餐上的有教养的客人都有任务要执行，听众的任务更重要；因为他是论述的参与者，也是发言人的合作伙伴。

在过去的三十年里，我每年都教一门大型讲座课程，而在过去的十五年里，我一直在学校和对成年人群进行讲话。不积极参与的学生和成人看起来都一样，很容易识别出来。他们在座位上倒退。他们的眼神呆滞，当我开始讲话时，他们的专注力只能缓慢地聚焦。这并不是因为他们累了、焦虑了或者被个人问题分心；而是因为他们被动。他们把听讲座当作看电影或听音乐会。

当你与其他几百名学生一起坐在大型讲堂里时，自然会有种你是观众的感觉，期待娱乐会自动来到你面前。但如果你每次听讲座时都做好心理准备，付出一些精神努力，你会过得更好。

In a sentence: Learning by listening takes work, so come to each class with that expectation.

TIP 3 If You' re Given Notes, Use Them to Check Your Notes, Not Replace Them

在一句话中：通过听来学习需要努力，所以请带着这个期待来上每一节课。

提示 3：如果你获得了笔记，那么用它们来检查你的笔记，而不是替换它们。

Suppose the speaker provides you with copies of her notes. Or with an outline of the lecture or copies of the figures. How should you use them? You can get closer to answering that question by answering another: Why do you take notes in the first place?

Researchers have asked people that question, and they point to two functions that you' ve probably thought of: First, just writing things down makes them more memorable. Second, reading your notes later jogs your memory. Research shows that notes do serve both functions.

Now consider how each function is affected by getting notes from the instructor. We might guess that those notes will be more complete and accurate than the notes you take. In fact, they will probably have all the deep connections that I explained are hard to capture while you are listening. So they would seem to be quite good for the memory-jogging function. But you won' t get the memory boost that comes from writing things down. The instructor did the writing, not you.

Our guess—that using instructor notes is both a plus and a minus—matches what researchers have found. There' s not a clear advantage to learners taking notes versus being given notes. That may be why some instructors don' t provide notes—they don' t see the point.

But suppose you do get notes or an outline or slides. What should you do with them? Although there' s not a clear, research-based answer, we can make a reasonable guess, based on the two purposes of notes.

假设演讲者给你提供了她的笔记副本，或者讲座的大纲，或者图例的副本。你应该如何使用它们？你可以通过回答另一个问题来接近答案：你为什么要做笔记？

研究人员曾询问过人们这个问题，他们指出了你可能已经想到的两个功能：首先，仅仅写下来的事情会使它们更容易记住。其次，后来阅读你的笔记可以唤醒你的记忆。研究表明，笔记确实起到了这两个功能。

现在考虑一下每个功能如何受到讲师提供笔记的影响。我们可能会猜想，那些笔记比你做的笔记更完整、更准确。事实上，它们可能包含了我解释过的所有深层次的联系，这些联系在你听讲时很难抓住。因此，它们似乎对唤醒记忆的功能非常有用。但你不会得到写作带来的记忆提升。因为是讲师在写，而不是你。

我们的猜测——使用讲师的笔记既有优点也有缺点——符合研究人员的发现。学习者做笔记和被给予笔记之间并没有明显的优势。这可能就是为什么有些教师不提供笔记——他们觉得没有必要。

但是，假设你确实得到了笔记、大纲或者幻灯片。你应该怎么处理它们呢？虽然没有明确的、基于研究的答案，但我们可以根据笔记的两个目的做出合理的猜测。

You still want the memory benefits that come from taking your own notes. So take your own notes, even if you know you will get notes later. And if you get them before the lecture, don't bring them with you, figuring you will follow along and add your own observations to them. You're not going to get the same memory boost, and trying to simultaneously listen to the lecture and line it up with the written outline can get confusing. The same goes for PowerPoint slides: don't print them and take notes on them.

If you get notes or an outline before the lecture, look them over. You don't need to spend a long time doing it. Just identify the top two levels of the hierarchical organization of the lecture: What's the overall theme, and what are the main subpoints?

Knowing this information in advance provides a big advantage to your comprehension and your note taking. Write the theme and subpoints at the start of your lecture notes for easy reference. Then, as the lecture progresses, you'll know where you are in the overall lecture organization, and you can mark it as you go.

You'll still want to coordinate your notes with the instructor's notes later. That's obviously your only option if the notes are available only after the lecture, but even if you get them beforehand, afterward is the time they'll prove most useful. The process of working with your notes after you take them is so important that I devote all of chapter 4 to it.

In a sentence: If the speaker provides notes or an outline, use them to aid your comprehension before or after the lecture, but don't consider

them a replacement for your own notes.

你仍然需要记笔记带来的记忆优势。所以,即使你知道你之后会得到讲课的笔记,你也要自己记笔记。如果你在讲座前就拿到它们,那就不要带着它们去听讲座,想着你会跟随着它们并添加你自己的观察结果。你不会得到同样的记忆提升,试图同时听讲座并将其与书面大纲对应起来可能会变得混乱。对于 PowerPoint 幻灯片也是同样:不要打印它们并在上面记笔记。

如果你在讲座前拿到笔记或提纲,你需要查看它们。你不需要花很长时间来这么做。确定讲座的分层结构的前两层:总的主题是什么,以及主要的子主题是什么?

提前知道这些信息对于你的理解和记笔记有着巨大的优势。将主题和子主题写在你的讲座笔记开始处以便参考。然后,随着讲座的进行,你将知道你在整个讲座组织中的位置,并且你可以随着进行标记。

你仍然需要将你的笔记与讲师的笔记进行协调。如果笔记只在讲座后才可用,那显然只有这样做。但是,即使你在讲座前就拿到它们,讲座后这些笔记才会最有用。处理你的笔记在你记笔记后是如此重要,我将第四章全部用来讨论它。

一句话总结:如果演讲者提供了笔记或提纲,你可以在讲座前后使用它们来帮助自己理解,但不要因此认为它们可以替代你自己的笔记。

TIP 4 Be Thoughtful About When to Read Assignments

提示 4: 仔细考虑何时阅读作业

There's often some assigned reading associated with a lecture, and you're supposed to show up having read it. The logic "read first, then listen" seems obvious; you will understand the lecture better if you already know something about the topic. Recall that when people write or speak, they exclude some information that their audience needs for understanding, on the assumption that listeners have that information in memory. That was the point of the example concerning Shirley Temple movies; the instructor assumed that the students knew that the Great Depression had occurred during the 1930s and that they would conclude that the economic circumstances primed people to enjoy this kind of film. You will understand more if you already know something about the topic, so doing

the reading first will help you understand the lecture.

But it turns out that the reverse is equally true. If you go to the lecture and then do the reading, you' ll understand the reading better.

Making the right decision—reading first or lecture first—really depends on what the instructor assumes you know when you walk into the lecture hall. On the one hand, if you diligently do the reading first and then the speaker explains all the content you read but is clearer than the book was, there was obviously no reason to do the reading in advance. On the other hand, if you don' t do the reading and the lecturer assumes you know that content and goes beyond it, you will definitely be confused.

The key to answering the question “Should I do the reading before or after the lecture?” is knowing what the instructor assumes you' ve gotten out of the reading before you come to the lecture. Of course, you can simply ask the instructor what they expect. They will likely say they want you to have done the reading beforehand. Still, they may not teach that way.

For example, when I was in college, I took a course in epic poetry: we read the Iliad, the Odyssey, The Song of Roland, and several other works. I found each of them pretty difficult to understand, and I don' t mean anything very deep by understand; I mean I had trouble following what happened in the poem. We were to come to class having read something like fifty pages, and the professor would lecture, focusing on historical and cultural information that helped put that bit of the poem into context.

与讲座有关的，通常会有一些指定的阅读任务，你需要在讲座之前完成阅读。”先阅读，然后听讲”这个逻辑似乎显而易见；如果你对话题有所了解，你就会更好地理解讲座。请记住，当人们写作或说话时，他们会省略一些听众为了理解需要的信息，假设听众已经记住了这些信息。这就是关于雪莉·坦普尔电影的例子的重点；讲师假设学生知道大萧条是在 20 世纪 30 年代发生的，他们会推断出当时的经济环境使人们更愿意观看这种类型的电影。如果你对话题有所了解，你会理解得更多，所以先阅读会帮助你理解讲座。

然而，事实证明，反过来也是同样的道理。如果你去听讲座，然后再去阅读，你会更好地理解阅读内容。

在阅读优先还是听讲优先的决策中，真正的关键在于，当你走进讲堂时，讲师假设你已经知道什么。一方面，如果你勤奋地先做阅读，然后讲者解释你读过的所有内容，而且讲者比书本更清晰，那显然没有必要提前阅读。另一方面，如果你不做阅读，讲师假设你知道那些内容并超越了它，你肯定会感到困惑。

回答“我应该在讲座前还是在讲座后做阅读？”的关键是知道讲师假设你在讲座之

前已经从阅读中得到了什么。当然，你可以简单地问讲师他们期望你什么。他们可能会说，他们希望你提前完成阅读。然而，他们可能并不是这样教的。

例如，当我在大学时，我选修了一门史诗诗歌课程：我们读了《伊利亚特》，《奥德赛》，《罗兰之歌》，及其他几部作品。我发现每一部作品都很难理解，我并不是深入理解的意思，我是说我很难跟踪诗歌的发生情况。我们应该读完大约五十页赶到课堂，而教授会讲座，重点放在帮助我们吧诗歌内容放入其环境背景的历史和文化信息上。

About the third week I noticed that the instructor started each session with a summary of the reading; he' d provide the basic outline of events in three minutes. So I started doing the reading after I attended class. Having his skeletal summary in mind made it much easier for me to comprehend the poem. And not having read it before class didn' t affect me much because he had provided the summary, so I could more or less follow the historical and cultural material.

If you find the instructor' s lectures quite easy to follow but find the readings difficult, try reading after the lecture and see if it helps.

In a sentence: The second time you encounter material, it' s easier to understand, whether you' re reading it or hearing it; plan your reading and listening accordingly.

大约到第三周，我注意到教师在每一个课程开始都会做读物的摘要；他会在三分钟内提供事件的基本概述。因此，我开始在上完课后做阅读。有了他的精简总结，我更容易理解诗歌。由于他提供了摘要，所以即使在课前我没有阅读，对我影响也不大，因为我能够或多或少地跟随历史和文化材料。

如果你觉得教师的讲座很容易理解，但是阅读困难，试着在讲座后阅读，看看是否有帮助。

用一句话来说：你遇到材料的第二次，无论是阅读还是听，理解起来都更容易；因此，需要根据这一点来规划你的阅读和听课。

TIP 5 Get Over Your Reluctance to Ask Questions

Earlier in the chapter, I described how a failure to understand can slip by you. But other times you know darn well that you don' t understand.

If it happens while you're listening to a lecture, the solution would seem to be simple: stick your hand in the air and say, "Wat?" For many people, it is that simple. But others are reluctant to ask questions, usually because they (1) "don't want to be annoying," (2) "don't want to look stupid," or (3) "are shy."

If you don't want to be annoying—great! Instructors don't want you to be annoying, either. And your caution about asking questions is not foolish, because although instructors often say, "All questions are welcome!" this statement is dishonest. Annoying questions are not welcome, and some questions are annoying. You'll be less reluctant to ask questions if you know which ones they are.

Questions people ask just to show off are annoying. "Mr. Willingham, don't you think what you've been saying about the history of nineteenth-century Europe relates to the anatomy of tree shrews, which by the way I've been reading about?" No, what I've been saying doesn't relate, and you only asked because you have something you want to say about them, and everyone knows it. Don't use my lecture as a platform to show off what you know, with a "question" as your cover.

提示 5：克服羞于提问的犹豫

在本章的前面，我描述了你可能会轻易地忽视对某个问题的理解失败。然而，有时候你深知自己并不太理解。如果你在听讲座的时候有这种情况，那么解决方案看起来很简单：举起手来，然后说：“什么？”对于许多人来说，这就是这么简单。但是，还有一些人不愿意提问，通常是因为他们（1）“不想让人感到烦恼”，（2）“不想显得笨”，或者（3）“很害羞”。

如果你不想让人感到烦恼——很好！教师们也不希望你让人感到烦恼。而你对提问的谨慎并不愚蠢，因为虽然教师们经常说，“欢迎提问！”但这种说法其实并不诚实。烦人的问题并不受欢迎，而有些问题就是让人烦的。如果你知道哪些问题是让人烦的，你就不会那么不愿意提问了。

人们只是为了炫耀而提问的问题是令人烦恼的。“威灵顿先生，你不觉得你刚才谈到的 19 世纪欧洲历史与树鼩的解剖学有关，我顺便说一下，我一直在阅读有关这方面的内容？”不，我刚才谈论的并不相关，而你只是因为你对这个话题有自己的观点而提问，每个人都知道这一点。不要把我的讲座当做一个平台来炫耀你所知道的，以“问题”为掩护。

Questions that sidetrack the speaker shouldn't be annoying but do bother some people. "Mr. Willingham, don't you think what you've been saying about the history of nineteenth-century Europe could be related to the

imminent collapse of the aristocracy?” Unlike the tree-shrew business, this question makes sense in light of the subject, so the listener probably isn’t just trying to show off. But it will make a few listeners roll their eyes, and I understand why. They are thinking, “You’re taking up time with a topic that the instructor didn’t think was important enough to include in the lecture. It’s great that you’re interested (I guess), but why should we all have to listen as you indulge your enthusiasm?” Most people don’t hold this attitude, and they recognize that curiosity should be tolerated (at the least) in a setting in which people aim to learn. But if you’re very anxious about annoying a few people, fine, don’t ask questions that explore new terrain. Talk to the teacher on your own.

The type of question that never annoys others is the one you’re most likely to ask: questions of clarification. You miss a definition, so you ask for it to be repeated, or you know I said there were three reasons something is true, and you got only two of them. Fellow students who did get the information understand that everybody misses things now and again, and to the extent that you’re “slowing things down,” it’s for all of ten seconds.

Now, what if the instructor just spent the last fifteen minutes explaining something complicated—say, the octet rule in chemistry—and you realize you Just. Don’t. Get it. Can you ask the instructor to explain everything again? You might worry that everyone else must have understood, so asking for clarification will make you look stupid. It’s different from the I-missed-what-you-just-said question because it requires understanding. You’re not saying, “I didn’t hear that,” you’re saying, “I heard it, but it didn’t penetrate my thick skull.” Furthermore, the explanation was long, so concern over wasting time is not unreasonable.

The way you phrase your question can alleviate some of each concern. Ideally, you won’t just say, “Uh, can you explain that again?” You’ll start by saying what you do understand. That will help the instructor focus the explanation (making it shorter) and has the side benefit of showing everyone you’re not hopeless; you understood some of it.

If you are a worrier, that advice might help, but it’s probably not enough. To go a little further on this issue, I’ll ask you to get out of your own head for a moment and take the teacher’s perspective.

让演讲者跑题的问题本不应让人烦躁，但却让一些人感到困扰。例如：“Willingham 先生，你不认为你关于 19 世纪欧洲历史的谈论能否与贵族即将崩溃的情况相关？”与树鼠的事情不同，这个问题在主题的语境下很有意义，所以听众可能并不只是为了炫耀自己。但它会让一些听众翻白眼，我理解他们的想法。他们在想，“你在讲师认为在讲座上不重要的主题上浪费时间。你对此感兴趣是

好事（我猜），但是我们为何要听你满足你的热情？”大多数人并不持有这种态度，他们认识到在人们寻求学习的场所，应至少容忍好奇心。但如果你很怕烦恼别人，好的，那就不要提出探索新领域的问题。你可以私下和老师谈话。

你最有可能提出的，且从不会烦恼他人的问题类型是：澄清问题。你错过了一个定义，所以你会要求重复，或者你知道我说过某事是正确的有三个原因，而你只记得其中的两个。与你一起学习的同学们了解每个人都会有时候错过一些事情，因此，如果你“拖慢了步伐”，也只是十秒钟左右。

那么，如果教师在过去的十五分钟里一直在解释一些复杂的事情，比如化学中的八隅规则，你发现自己就是不明白。你能要求教师重新解释一遍吗？你可能会担心其他所有人都已经理解了，所以要求澄清会让你显得愚蠢。这与我错过了你刚才说的话的问题不同，因为它需要理解。你并不是说，“我没听到你说的”，而是说，“我听到了，但我无法理解。”此外，解释很长，所以你对浪费时间的顾虑并不是没有道理。

你提问的方式可以缓解一些担忧。理想情况下，你不会只是说，“呃，你能再解释一下吗？”你会从表明你所理解的开始。这将有助于教师集中精力进行解释（使其更简短），并有附带的好处，即向其他人展示你并非一无是处；你理解了其中的一部分。

如果你是一个焦虑的人，那么这个建议可能会有所帮助，但可能还不够。为了在这个问题上再深入一点，我会建议你暂时走出你的内心世界，试图理解教师的观点。

When you ask a question, you' re not just helping yourself. Questions provide feedback to the instructor. A half-decent teacher is always scanning faces, trying to gauge whether people look puzzled, but that goes only so far. Direct feedback is better.

When it comes to wasting class time to reexplain something: that' s not really your call. I' m the instructor, and I' ll decide whether or not it' s a waste of time. In making that decision, I' ll weigh factors such as how quickly I can reexplain it, how many people besides you are probably confused, and what else I need to cover. If I think it' s not worth it, I' ll say, “I really need to move on, so let' s connect afterward on this.” Don' t take the “blame” for slowing down the group. It' s the instructor' s decision.

Finally, let me address the “I' m shy” reason for not posing questions. Being ready to ask questions and to admit ignorance is not just a technique for short-term gain in classes; it' s a skill you need to master. Everyone' s job has duties that run counter to their personality or abilities. For example, an extrovert may love that his sales job requires constant

contact with new people, but he still has desk work to do in the home office one day a week. If you're shy, you'll still need, on occasion, to speak up and ask questions to make sure you know what's going on. Can you imagine a navy pilot failing to understand a mission briefing and thinking, "I don't want to ask a question and look stupid. I'm sure I'll figure it out when I'm in the air"?

So if you don't like to ask questions, don't view that as "part of your personality" and therefore unchangeable. View it as a skill like any other and one you need to work to improve. If you can, sit in the front row so you can't see everyone else; you might feel less self-conscious. Try asking a short clarification question about a definition, just for the practice. If you're reluctant to raise your hand and you have a relationship with the teacher, maybe tell her you're working on this skill; she may become more sensitive to times when you're trying to break in. Asking questions may never feel 100 percent comfortable to you, but the more you make the effort, the easier it will become.

In a sentence: Know which types of questions are annoying and which aren't, and if asking the harmless type of question still makes you anxious, view it as a skill you should master.

当你提问时，你不仅是在帮助你自己。问题为导师提供反馈。一位尚可的老师总是在扫视学生的脸部表情，试图判断他们是否看起来困惑，但这种办法的效果有限。直接的反馈更好。

关于浪费课堂时间来重新解释某事：那真的不是你该做的决定。我是导师，我会决定是否浪费时间。在做这个决定时，我会考虑诸如我可以多快地重新解释它，除了你可能还有多少人感到困惑，以及我还需要涵盖哪些内容等因素。如果我认为这不值得，我会说，“我真的需要继续前进，所以我们稍后再讨论这个问题。”不要因为拖累了小组而自责。这是导师的决定。

最后，让我来解答一下“我很害羞”这个不提问题的原因。准备提问和承认无知不仅仅是课堂上短期得分的技巧；这是你需要掌握的一项技能。每个人的工作都有与他们的个性或能力相反的职责。例如，一个外向的人可能喜欢他的销售工作需要他不断与新人接触，但他还是需要在家中办公室每周工作一天。如果你害羞，你仍然需要，在某些时候，大胆地提问，以确保你知道正在发生的事情。你能想象一个海军飞行员在听不懂任务简报后想：“我不想问问题看起来很蠢。我等到空中的时候肯定能弄明白”吗？

所以，如果你不喜欢提问，不要把它视为“你的个性的一部分”从而认为它是无法改变的。将其视为一项技能，而且是你需要努力提高的技能。如果可以，你可以坐在第一排，这样你看不见其他人；你可能会感觉不那么自觉。试着问一个关于定义的简短澄清问题，仅做练习。如果你不愿意举手，你与老师有关系的话，也许可以告诉她你正在锻炼这项技能；她可能会更敏感于你试图发言的时刻。提

问可能永远不会让你感到 100% 的舒适，但你越努力，就会变得越容易。

总的来说就是：知道哪些问题令人讨厌，哪些不是，如果提问这种无害的问题仍然让你感到焦虑，那就把它视为一项你应该掌握的技能。

For Instructors

How can an instructor help listeners understand the high-level connections that they often miss? Obviously, you should make these connections easy to appreciate by making the organization of your talk explicit.

对于讲师

讲师如何帮助听众理解他们常常错过的高层次的联系呢？显然，你应该通过明确你的演讲组织来使这些联系易于理解。

I find that the simplest method is a preview of the lecture—a slide with a list of the topics that I’ ll cover, corresponding to the second level of the hierarchy that I mentioned. I spend thirty seconds reviewing it, and then each time I move to a new topic, I return to the slide to show where we are. There’ s research showing that verbal signals help, too, with or without a slide of the outline. Start by telling your listeners the organization to come, for example, “There are five ways that the consolidation of media companies has affected Hollywood.” Then begin your discussion of each by referring back to this organization, e.g., “The third way that the consolidation of media companies has affected Hollywood...”

Now, what about this listening-takes-work business? People set a low bar for thinking they understand, so they need your help in knowing whether they’ ve really done so. You can use clicker questions that test what you’ ve just taught, but students find such comprehension questions irritating, and they don’ t encourage deeper thinking. I prefer to pose a discussion question that requires using the new concept and having students turn to their neighbors and talk about it for thirty seconds. This makes it obvious to students whether they understand a concept well enough to use it.

But recognizing that they don’ t understand may not be enough to get them to ask a question. They need to feel comfortable doing so, and your body

language and facial expression are important cues to your openness. Try videoing a lecture and watch yourself with the sound off, focusing on moments you ask for questions. Do your face and body show openness, eagerness? If you can't tell, ask someone else.

Your reaction to questions is a key determinant of class atmosphere, and the best test case is when a questioner makes it obvious that he wasn't listening. If you shame the questioner, even obliquely, everyone else gets the message: there are stupid questions, and those who ask them will pay. Just answer the question at face value and briskly move on.

Even more, look for opportunities to praise questions. Actually, I more often praise the thought that went into the question, rather than the question itself, by saying something like "Oh, that's an interesting insight" to acknowledge that the question had some thought behind it. And there's nothing wrong with pausing after a question to show that you're thinking about it, taking it seriously.

我发现最简单的方法是预览讲座——一张列有我将要涉及的话题的幻灯片，相当于我提到的等级结构的第二层。我花三十秒钟复习它，每次转到新的话题时，我回到幻灯片展示我们所在的位置。有研究表明，无论有没有大纲幻灯片，口语信号都会有帮助。首先告诉你的听众即将呈现的组织结构，例如，“媒体公司的整合对好莱坞的影响有五种方式。”然后开始讨论每个参考这个组织的讨论，例如，“媒体公司的整合对好莱坞的影响的第三种方式...”

那么，听力需要工作这个问题怎么解决呢？人们设定的理解标准较低，所以他们需要你帮助他们知道他们是否真的理解了。你可以使用测试你刚刚教过的内容的点击问题，但是学生们发现这样的理解问题很烦人，它们并不鼓励深入思考。我更喜欢提出一个需要使用新概念的讨论问题，然后让学生转向他们的邻居，讨论三十秒钟。这让学生明白他们是否理解一个概念到足够使用它。

但是，只有认识到他们不理解可能还不足以让他们提问。他们需要感到舒适才能这样做，你的身体语言和面部表情是你开放性的重要暗示。试着录制一段讲座视频，然后静音观看，主要关注你问问题的时候。你的脸和身体显示出开放性、热情吗？如果你看不出来，可以问别人。

你对问题的反应是课堂氛围的关键决定因素，最好的测试案例是当提问者明显没有听你讲的时候。如果你羞辱提问者，即使是间接的，其他人也会明白：有愚蠢的问题，提出这些问题的人会付出代价。直接实质性地回答问题然后迅速继续。

更重要的是，寻找机会赞美问题。实际上，我更常赞美问题背后的思考，而不是问题本身，通过说类似于“噢，这是个有趣的见解”这样的话来承认这个问题背后有一些思考。对一个问题进行思考，认真对待它，暂停一下也没什么不对。

A final note: If your students consistently do not ask questions, you

should wonder about your relationship with them. They are not quiet because your explanations are so brilliant and clear. They're quiet because they see asking a question as taking a risk. Ask yourself why that is.

Summary for Instructors

Start a lecture with a visual preview of the organization.

最后一点：如果你的学生一直不提问，你应该对你和他们的关系产生疑问。他们的沉默并不是因为你的解释非常明了和高明，而是因为他们认为提问是一种风险。你需要问自己为什么会这样。

给讲师的摘要

讲座开始时，用视觉化的方式预览组织结构。

Return to this preview as you transition to a new topic.

Reinforce this visual cue about the transition with a verbal cue.

To help listeners evaluate whether they are understanding, pose questions that require people to use the information they have just heard.

Encourage questions by showing through your facial expression and body language that questions really are welcome.

When appropriate, praise questions.

在过渡到新话题时，请返回此预览。

用口头提示来强化关于过渡的视觉提示。

为了帮助听者评估他们是否理解，提出需要人们使用刚刚听到的信息的问题。

通过你的面部表情和身体语言，鼓励提问，表明真的欢迎提问。

在适当的时候，赞扬提问。

第二章 如何做讲座笔记

Understanding a lecture is hard, and taking notes obviously makes that hard job more difficult—it's an added task. It's no surprise that people don't do it very well. Research shows that if a lecturer lists the points she thinks are important enough to make it into listeners' notes and then examines the notes listeners actually took, she'll see that they captured between 25 and 50 percent of them. That figure doesn't change from middle school through college.

It's not that people are lazy or stupid. Taking perfect notes is literally impossible, because lectures move too quickly. People can speak about six times as quickly as they can write (120 versus 20 words per minute). Taking good notes requires making wise compromises.

Items 1 and 2 in the list below describe the mental processes required to understand a lecture. Items 3 through 7 describe the added mental processes required when you take notes.

理解讲座是困难的，而做笔记显然使这项困难的任务更加艰巨 - 它是额外的任务。并不奇怪人们并不擅长做这件事。研究表明，如果一位讲师列出了她认为重要到足以进入听众笔记的要点，然后检查听众实际做的笔记，她会发现他们捕捉到了 25%到 50%的要点。这个数字从中学到大学都没有变化。

这并不是因为人们懒惰或愚蠢。因为讲座进度太快，完美地做笔记实际上是不可能的。人们说话的速度大约是他们写作速度的六倍（每分钟 120 个单词对比每分钟 20 个单词）。做好笔记需要做出明智的妥协。

下面的列表中，第 1 项和第 2 项描述了理解讲座所需的心理过程。第 3 项到第 7 项描述了做笔记时所需的额外心理过程。

Mental Processes Required to Attend a Lecture

Resist distractions and maintain your attention on the lecture.

Listen and understand. The content is probably new to you and complex.

抵抗干扰，将注意力维持在讲座上。

倾听并理解。内容可能对你来说是新的且复杂的。

Mental Processes Needed to Take Notes

Evaluate the content for importance so you can decide what to include in your notes and what to omit.

Decide how to paraphrase the ideas in the lecture.

Physically write or type your notes.

需要进行笔记的心理过程

评估内容的重要性，以便决定笔记中应包含和省略哪些内容。

决定如何改述演讲中的思想。

亲自写下或键入你的笔记。

Shift your gaze between your notebook (or laptop) and the instructor.

Coordinate all the processes listed above and shift your attention among them. In other words, decide when to do each of these mental processes and for how long.

The list makes it obvious that taking notes while listening is sort of like playing chess, watching a mystery movie, and cooking a stir-fry all at once. There's not enough attention to go around, so one or more mental processes are going to get shortchanged.

Which processes get cheated of the attention they need? Typically, the first thing you try to do is write or type faster (process 5 in the list). Your handwriting gets a little sloppier or you make more typing errors, but who cares? It's a small price to pay if you can keep up.

将视线在笔记本（或笔记本电脑）和讲师之间移动。

协调上述所有过程，并在它们之间分配您的注意力。换句话说，决定何时进行每个心理过程以及进行多长时间。

列表让我们明白，边听讲边做笔记就像同时下棋，看悬疑电影和煮炒菜一样。注意力不足以分配给所有过程，所以一个或多个心理过程会受到忽视。

那些过程会被剥夺它们需要的注意力？通常，你首先尝试做的是更快地写或打字（列表中的第五个过程）。你的手写可能会稍微潦草，或者你会犯更多的打字错误，但谁在乎呢？如果你能跟上的话，这是小小的代价。

But you can't. So what's next to go? Paraphrasing ideas (process 4) is pretty attention demanding, so when people feel rushed, they start to take notes using the precise words the instructor says; that way they don't have to think of a way to rephrase them. But if they're focused on recording snippets of what the instructor says, they can easily drift into a more shallow understanding of what she's saying (process 2). That shallow understanding means they can't properly evaluate what they should write and what they need not (process 3).

So the three mental processes that you will likely shortchange in an effort to write faster all concern understanding: understanding ideas, evaluating their importance, and paraphrasing them. As you feel the pressure of falling behind in note taking, your brain drifts toward writing more and understanding less. You may even tell yourself, "I know I'm not really understanding all of this, but I'm at least writing it, so I can figure it out later."

You probably think I'm going to say, "Don't do that! Write less and understand more." Actually, it's a little more complicated than that.

How much attention you should spend on understanding versus writing depends on the content of the lecture and your learning goals. Sometimes learning means getting a lot of details straight. For example, suppose it's the beginning of your physics lab section, and the teaching assistant is going over the details of how to perform the experiment for the day. There are a lot of details, but none of them are complicated. In this case you'd want to emphasize speed in your note taking, and you wouldn't need to worry much about devoting mental resources to understanding because that part is easy.

Contrast that with a different note-taking scenario: You're a high schooler, and your history teacher tells the class that students can earn a bit of extra credit if they attend an evening lecture on the Great Migration, the movement of about 6 million Black Americans from the rural

South to the urban North from World War I until about 1970. To get the credit, students later need to tell the class three important things they learned from the lecture. In this case, emphasizing speed in your note taking doesn't make sense. You need to devote most of your mental resources to listening, understanding, and evaluating the importance of what you hear so you can select your three important ideas.

但你不能。那么，下一步是什么？转述思考（过程4）往往要求较高的注意力，所以当人们感到匆忙时，他们开始用教师的原话记笔记，这样他们就不用去想如何改述这些话。但如果他们只专注于记录教师讲的小片段，他们很容易陷入对她所说的东西的理解较浅（过程2）。这种肤浅的理解意味着他们不能正确地评估他们应该写下什么，什么不需要（过程3）。

因此，你在加快笔记速度的努力中，可能会忽视三个都与理解有关的思维过程：理解思想，评估其重要性，以及转述它们。随着你在做笔记时感到压力越来越大，你的大脑会趋向于更多地涉入写作，理解越来越少。你甚至可能告诉自己，“我知道我并没有真正理解所有的东西，但我至少写了下来，所以我可以稍后弄清楚。”

你可能会以为我要说，“不要这样做！少写点，多理解点。”其实，问题比这要复杂一些。

你应该在理解和写作上花费多少注意力，取决于讲座的内容和你的学习目标。有时候，学习意味着要理解很多细节。例如，假设你刚开始上物理实验课，助教正在详细讲解当天的实验步骤。有很多细节，但没有一个是复杂的。在这种情况下，你需要强调你的笔记速度，并且不需要太担心花费精力去理解，因为这一部分很容易。

再与另一个记笔记的场景进行对比：你是一个高中生，你的历史老师告诉全班，如果他们去参加一个关于大迁徙的晚间讲座，可以得到一些额外的学分。大迁徙是指从一战开始到大约1970年，约600万的黑人从南部的农村地区迁移到北部的城市。为了获得额外的学分，学生们需要在课后告诉全班他们从讲座中学到的三件重要的事情。在这种情况下，强调你的笔记速度就没有意义。你需要将大部分精力放在倾听，理解和评估你听到的内容的重要性上，这样你才能选出你的三个重要观点。

WHEN TAKING NOTES DURING A LECTURE

What your brain will do: It will devote more and more attention to writing quickly in a desperate bid to keep up with the speaker. Little attention will be left for understanding the meaning of the lecture.

How to outsmart your brain: Be strategic about balancing your attention to writing and your attention to understanding. The right strategy depends on the content of the lecture; decide on it in advance, if possible.

This chapter will show you how to find that balance, as well as give you some other tricks to ensure that as much of your attention as possible is available to be devoted to note taking.

在听讲座时做笔记

你的大脑会做什么：它将越来越多地将注意力集中在快速写字上，以便急切地跟上讲者的速度。对理解讲座内容的注意力会有所减少。

如何智胜大脑：对写字和理解的注意力进行策略性的平衡。正确的策略取决于讲座的内容；如果可能的话，提前确定策略。

这一章将教你如何找到这样的平衡，以及如何使用其他一些技巧来确保尽可能多的注意力可以用于做笔记。

TIP 6 Be Ready

The main obstacle to taking good notes is time. You're trying to do several things at once. Anything that can be done before the lecture instead of during the lecture should be done before. Prepare.

提示 6: 准备好

好的笔记的主要障碍是时间。你在试图同时做好几件事。任何可以在课堂之前而非课堂中完成的事情，都应该提前完成。做好准备。

Make sure you come with the materials you need. Bring a pen and two spares: one for you and one for the person sitting near you who didn't bring a spare. Don't use pencils; they are erasable, but they smudge. If you're taking notes on a laptop or tablet, make sure it's charged.

Organize your materials. If you use a laptop, have a separate digital folder for notes. Scan paper handouts into electronic versions so everything is in the same place. If you take notes longhand, buy a separate

notebook for each class, and make sure they have pockets for handouts. If you're going to be assigned practice problems or lab exercises, keep those separate so your lecture notes are sequential. Some people prefer three-ring binders, because they make it easy to move pages around, but they are a little heavier. Some students like to have one three-ring binder for all their classes, because that way they never grab the wrong notebook.

If you're the type of person who never seems to have what you need at a lecture, make a list. Get into the habit of thinking each night, "Am I attending a lecture tomorrow?" Tie this question to something you do each night, for example, charging your phone. If the answer is yes, gather what you'll need for the lecture the next day. If you're the kind of person who will gather all this stuff and then forget it at home, put it by your front door so you'll see it when you leave the house.

Many videos about note taking on YouTube encourage you to bring highlighters or sticky notes to a lecture. The idea is to use a red pen for definitions and a blue highlighter for explanations. This sort of thing doesn't make your notes much more useful, and it takes time and attention to switch ink colors or put sticky notes onto the middle of a page. It's not worth it.

Though color coding is unnecessary, certainly notes are more useful if you keep them tidy. Write the date and subject at the top of the page. Use a broad margin, left and right, so you can add information later. If you're taking notes on a laptop, use a new file for each day of notes. Name the file with the date in this order: year-month-day (e. g. , 22-03-18). That way the computer will order the files in the folder chronologically. (You can't count on organizing the folder by date created, because you will update the files later.) Add information about the topic to the file name later. For the love of all that is holy, use a sync program that backs up those files automatically.

确保你带有你需要的材料。带一支笔和两支备用笔：一只给你自己，一只给坐在你旁边没有带备用笔的人。不要用铅笔，它们虽然可以擦，但会造成污渍。如果你在笔记本电脑或平板上做笔记，要确保它们有足够的电。

整理你的材料。如果你使用笔记本电脑，为笔记建一个单独的电子文件夹。将纸质讲义扫描成电子版本，这样所有的东西都在同一个地方。如果你手写笔记，为每门课买一个单独的笔记本，并确保它们有口袋放讲义。如果你要被分配练习题或实验练习，把它们单独放置，这样你的课堂笔记就是按顺序的。有些人喜欢三环活页笔记本，因为它们方便移动页面，但是它们有些重。有些学生喜欢所有课程都使用一个三环活页笔记本，这样他们就永远不会拿错笔记本。

如果你是那种在讲座上总是找不到所需物品的人，做个清单。养成每晚思考的习

惯，“我明天要去听讲座吗？”把这个问题和你每晚都要做的事情关联起来，比如给手机充电。如果答案是肯定的，收集好明天讲座需要的所有物品。如果你是那种会把所有这些东西准备好然后忘在家的人，把它们放在前门旁边，这样你在离开房子的时候就能看到它们。

许多关于如何做笔记的 YouTube 视频都鼓励你带荧光笔或便签纸去讲座。这个主意是用红笔标出定义，用蓝色荧光笔标出解释。这种做法并不能让你的笔记有更多的用处，而且切换墨水颜色或在一个页面中放便签纸需要时间和注意力。这样做不值得。

尽管颜色编码并不必要，但如果你能保持笔记整洁，笔记肯定会更有用。在每一页的顶部写上日期和主题。使用宽边距，左右各留一些，以便你稍后可以添加信息。如果你在笔记本电脑上做笔记，每天的笔记使用一个新的文件。以这样的顺序命名文件：年-月-日（比如，22-03-18）。这样电脑会按照时间顺序排列文件夹中的文件。（你不能依赖于按创建日期整理文件夹，因为你会在后面更新文件。）稍后再在文件名中添加主题信息。为了你所珍视的一切，使用一个可以自动备份这些文件的同步程序。

If possible, arrive at the lecture at least five minutes early. That gives you a chance to catch your breath, get out your stuff, and turn off your phone. Even better, you can glance at any documents you were assigned to read before the lecture (or glance at your notes from the last lecture) to get your head into the topic.

These may feel like minor details, but they are all directed toward the goal of saving you from having to think about things other than the speaker during the lecture. And these small details can add up to significant distractions if you don't attend to them.

In a sentence: Attention is scarce during a presentation, so minimize the need to perform unnecessary tasks.

如果可能，尽量提前至少五分钟到达讲座地点。这样可以让你有时间喘口气，拿出你的物品，并关掉手机。更好的是，你可以浏览一下你被分配在讲座之前阅读的文件（或者看一下上一次讲座的笔记），以便让自己进入主题。

这些可能感觉像是一些小细节，但它们都是为了让你在讲座中不需要考虑其他事情而做的。如果你不处理它们，这些小细节可能会变成重要的干扰。

用一句话来说：在演讲中，注意力是稀缺的，所以尽量减少做不必要的任务。

TIP 7 Determine in Advance Whether You Plan to Understand More or Write More

I've emphasized that as understanding demands more attention, the amount of information you can record in your notes will drop. Therefore, think about what you hope to learn, and consider what other resources are available to support you.

Let's consider two examples representing opposite ends of the spectrum. Imagine that you're a college student taking a creative writing class. Each week, three people submit about ten pages of fiction they've written for the rest of the class to read. In class, roughly twenty minutes is devoted to a discussion and evaluation of each person's work.

提示 7：预先确定你计划理解更多还是写更多

我已经强调，随着理解需要更多的注意力，你可以在笔记中记录的信息量将会减少。因此，考虑一下你希望学习什么，并考虑有哪些其他资源可以支持你。

让我们考虑两个代表两个极端的例子。假设你是一名大学生，正在上创意写作课。每周，有三个人都会提交他们写的大约十页的小说，供班级的其他学生阅读。在课堂上，每个人的作品的讨论和评价大约会花费二十分钟的时间。

Now imagine that you are a high school student taking an American government class. You have an assignment: to write a ten-page paper in which you find a quotation from one of the founders and contrast the quote with principles in the US Constitution. None of the students understand the assignment very well, so the teacher is elaborating on it in class by offering examples of the kind of quotations he had in mind, who counts as a "founder," and what he means by "principles" in the Constitution.

Both of these scenarios call for learning by listening, and you'd want to take notes in either case, but their demands are quite different. In the writing class, your notes would be infrequent and personal to you; different people in the class would get different insights from the discussion that they might choose to record. In the civics class, you'd want to list all the details in your notes and get them right; a mistake could create a lot of extra work for you later.

So you want to consider the relative importance of understanding and of

capturing details before you sit down to listen and take notes. Most of the time, understanding is going to be more important than capturing information, because the details are recorded somewhere else; you can get the facts from a book, and the point of a lecture is to have a live human provide a good explanation of their meaning. But if you find yourself in a parade-of-facts lecture that probably means you can't get the information elsewhere, you'd better plan to write fast.

If you want to emphasize getting as much information into your notes as possible, your strategy is straightforward: write as fast as you can, and don't worry too much about deep understanding or phrasing things in your own words. That said, never write anything that you don't understand. You may think to yourself, "Not totally sure what she means by 'Technology innovations are usually like a pie shell with half the filling gone,' but I'll figure it out later or ask someone." It's not going to make any more sense later than it does now. And if you ask someone, "What did she mean with that pie thing?" the odds are good they'll say, "I don't remember that." Ask the speaker for clarification immediately if you can (see tip 5) or make a note to ask later (see tip 11).

What if you're thinking you need to focus on understanding? You still want to write quickly, but you need to avoid slipping into using the instructor's words. The easiest strategy is to understand what the speaker is saying, then write what you're thinking, not what the speaker said. That will ensure that you pay attention to meaning, and it can also save time. Suppose the instructor says, "Basically, in light of the fact that President Bush was completely and utterly exhausted by his campaign for reelection, there was an expectation on the part of his cabinet... or, I don't know, maybe not an expectation, maybe more of a fear... anyway, they thought that maybe the first quarter of his new term would be wasted and the so-called honeymoon period was just going to pass by before his energy returned." You should write: "Campaign exhausted Bush; cabinet worried he'd rest, waste political capital."

现在想象你是一个高中生，正在上美国政府的课程。你有一个作业：写一篇十页的论文，找一个创始人的引言，然后与美国宪法的原则进行对比。同学们都不太明白作业的要求，所以老师在课堂上通过提供他所考虑的引言样例，解释什么是“创始人”，以及他所说的“宪法中的原则”是什么意思。

这两种情况都需要通过倾听来学习，你可能需要做笔记，但这两种情况的要求有很大的区别。在写作课上，你的笔记会比较少且对你个人来说很有意义；在课堂上，不同的人会从讨论中获得各自的洞见，他们可能选择记录下来。在公民课上，你可能会希望建立一个详细的笔记并确保正确，否则一个错误可能会让你之后有很多额外的工作要做。

因此，在你坐下来听讲和做笔记之前，你需要考虑理解与捕捉细节的相对重要性。大多数时候，理解比捕捉信息更重要，因为细节都记录在其他地方；你可以从书本中获取事实，而演讲的目的是由一个活生生的人来详细解释它们的意义。但是，如果你发现你自己在在一个充满事实的演讲中，这可能意味着你无法从其他地方获得信息，你最好快速地写下来。

如果你想在你的笔记中尽可能多地获得信息，你的策略就是：尽可能快地写，不用太担心深入的理解或用自己的话来表达。不过，永远不要写下你不理解的东西。你可能会想：“我不完全确定她所说的‘技术创新通常就像一个派皮，但只有一半的馅’是什么意思，但是我会稍后弄清楚或向别人询问。”它在之后的时间里不会比现在更有意义。如果你问别人，“她那个派的事情是什么意思？”他们可能会回答，“我不记得了。”如果可以的话，立即向讲者寻求明确的答案（查看提示 5）或做个标记以便稍后询问（查看提示 11）。

那么，如果你觉得需要更加关注理解呢？你仍然需要快速写作，但需要避免滑入使用讲师的话。最简单的策略是理解讲者的意思，然后写下你的想法，而不是讲师的话。这将确保你关注意义，并且还可以节省时间。假设讲师说：“基本上，考虑到布什总统完全被他的连任竞选活动耗尽，他的内阁对他的期待... 或者，我不知道，可能不是期待，也许更多的是一种担忧... 总之，他们认为他的新任期的第一个季度可能会被浪费掉，所谓的蜜月期可能就在他恢复精力之前结束。”你应该写：“竞选活动使布什疲惫，内阁担心他会休息，浪费政治资本。”

Paraphrasing actually has another benefit: it helps memory, for reasons I' ll explain in chapter 3. For now, I' ll ask you to take my word for it.

In a sentence: If a lecture is detail heavy but easy to understand, focus on recording as much as you can; if the important content is more abstract, focus on understanding and write notes sparingly, using your own words.

TIP 8 You Should Usually Take Notes Longhand

释义其实还有另一个好处：它有助于记忆，具体的原因我会在第三章中解释。现在，我希望你们能相信我的话。

总结一句话：如果讲座的细节非常丰富，但易于理解，那么你应该尽可能多地记录下来；如果重要的内容更抽象，那么你应该侧重于理解，稀少地做些笔记，但要用你自己的话来表达。

提示 8：你通常应该手写记笔记

Should you take notes with paper and pen or with a laptop? First, note that this question assumes that you have a choice. Devices are sometimes forbidden and sometimes required in class, and in some settings a device just doesn't make sense—for example, if the lecture has a lot of figures that would be hard to capture with a device. If you do have a choice, you should again consider the relative importance of understanding versus recording a lot in your notes.

Let's start with speed. With some experience, people can type faster than they can write. That seems like a pretty important advantage, given that we keep coming back to speed as a key problem. But typing quickly can tempt you to try to record everything because it seems more possible. One experiment (widely reported in the news) showed exactly that: people taking notes with a laptop were more likely than longhand note takers to write snippets of what the instructor said word for word. But other studies have not found that effect, so it's unclear how general it is. Basically, laptops have the edge over longhand if you're very concerned about getting a lot of the lecture into your notes, especially if you can fight against slipping into dictation mode.

But that possible advantage might be canceled out (or worse) by the disadvantage of distraction. If you've got a laptop open, your email, social media, shopping, and other distractions are a click away. It is very difficult to resist the impulse to have a little look at the internet, and you're a fool if you make that distraction easy for yourself. Someone who attends a lecture and brings a device with internet access, saying to himself, "I'm just going to take notes," is like an alcoholic who goes to a bar, swearing he'll have just a few appetizers. A very general, very wise principle of human behavior is: Do Not Rely on Willpower if You Can Change the Environment Instead.

As a professor, I would happily change the environment for my students—if I could—by turning off Wi-Fi access in my classroom. I asked the IT group at the University of Virginia about the possibility, but they pointed out that even if I switched off the router in my classroom, the whole campus is saturated in Wi-Fi; students would just pick up a signal from another router.

你应该用纸和笔记笔记还是用笔记本电脑？首先，注意这个问题假设你有选择的

权利。在课堂上，设备有时被禁止，有时被要求使用，而在某些环境下，设备可能并不适用——例如，如果讲座有很多难以用设备记录下来的图表。如果你有选择的权利，你应该再次考虑理解与大量记录你的笔记的相对重要性。

让我们从速度开始。有一些经验的人，打字速度比写字速度更快。这似乎是一个相当重要的优势，因为我们一直在回到速度是关键问题。但是快速打字可能会让你试图记录下所有的东西，因为这看起来更有可能。有一个实验（广泛报道在新闻中）就是这样发现的：用笔记本电脑记笔记的人比手写笔记的人更有可能逐字逐句地记录下讲师的话。但其他研究并没有发现这个效果，所以这个观察结果是否泛化还不清楚。基本上，如果你非常担心把讲座的很大一部分都加入到你的笔记中，特别是你能抵制悄然进入口述模式的诱惑，那么笔记本电脑就会比手写有优势。

但是，可能的优势可能被分心的缺点给抵消掉（甚至更糟）。如果你打开了笔记本电脑，你的电子邮件、社交媒体、购物和其他分心的事情都只是一个点击的距离。很难抵制一览无余的冲动，如果你为自己创造那种分心的环境，你就是个傻瓜。有人去听一次讲座，带着一台可以上网的设备，自言自语地说：“我只是来记笔记的”，就像一个酒鬼走进酒吧，发誓只吃几个开胃菜一样。一个非常普遍、非常明智的人类行为原则是：如果你可以改变环境，就不要依赖自己的意志力。

作为一个教授，如果我可以的话，我会很乐意为我的学生改变环境——通过在我的教室里切断 Wi-Fi 接入。我向弗吉尼亚大学的 IT 小组询问了这个可能性，但他们指出，即使我在我的教室里关闭了路由器，整个校园也被 Wi-Fi 覆盖；学生们只会从另一台路由器上获取信号。

An alternative is to put your laptop into airplane mode. That way it's a little harder to access online fun, and you're more likely to stay with the presentation.

Another problem is that your use of a laptop may distract others. Certainly, some of my students complain about this. Human biology works against us; when you perceive something moving in your peripheral vision, your brain is wired to direct attention to the movement. We can easily see the evolutionary significance. For our distant forebears, something moving might be a threat, and it had better be checked out right away. Now, eons later, a fellow lecture attendee flips through pictures of shoes on Zappos.com and the lizard part of your brain shrieks, “WHAT’S THAT!?!”

That’s the concern, and my students do feel it’s an issue, but proving that it’s a problem in formal experiments has been harder. Again, there’s one study reporting that students watching a videoed lecture (on which they were to take notes) were distracted by someone surfing the web in front of them. That study got a lot of press, but other researchers have failed to find the same effect, so it remains unclear just how big a problem

it is.

What I've described so far is a sort of microanalysis of what might or might not happen if you use a laptop to take notes. Wouldn't it be simpler for researchers just to compare how much people learn if they take notes on a laptop or by hand? An experiment based on real life would compare the final grades of college students who use laptops to the grades of people who take notes with paper and pen. But that's an imperfect method, too. Maybe people who choose to use laptops are generally less motivated to get good grades. Or maybe easily distractible people enjoy using laptops more; who knows?

All in all, research does not provide a clear answer to the laptop/longhand notes debate. My experience as a college instructor tells me that being lured to other online activities is a serious problem. In anonymous surveys my students say my lectures are interesting, yet when a colleague observed my class a few years ago, he told me that many of my students using laptops had been off task. That prompted me to pop in on other lecture classes at my university, and I saw that the problem was extremely common. 一个替代方案是将你的笔记本电脑置于飞行模式。这样一来，访问在线娱乐就会稍微困难一些，你更可能专注于课程展示。

另一个问题是，你使用笔记本电脑可能会分散他人的注意力。确实，我有一些学生对此表示抱怨。人类的生物学机能在这里适得其反；当你察觉到你的视线周围有东西在移动时，你的大脑就会被激发去关注那个移动的东西。我们可以轻易地看到这种机能的进化意义。对于我们的远古祖先来说，移动的东西可能是一个威胁，需要立即查看。现在，几亿年过去了，一个听讲座的人在 Zappos.com 上翻看鞋子的图片，你大脑中的“蜥蜴部分”就会尖叫：“那是什么！？”

这正是我们所关心的问题，我的学生确实觉得这是一个问题，但在正式的实验中证明这是一个问题一直很困难。再次，有一项研究报告称，观看视频讲座（他们需要记笔记）的学生会被坐在他们前面上网的人分散注意力。那项研究得到了很大的关注，但其他研究者未能发现同样的效果，因此这是多大的问题还不清楚。

到目前为止，我描述的是一种关于如果你使用笔记本电脑做笔记可能会发生什么或可能不会发生什么的微观分析。如果研究者只是比较人们使用笔记本电脑还是手写笔记学到多少知识，那么是否会更简单呢？一个基于现实生活的实验证明，用笔记本电脑的大学生的最后成绩与使用纸和笔记笔记的人的成绩相比。但这也是一个不完善的方法。也许选择使用笔记本电脑的人通常对取得好成绩的动力不足。或者容易分心的人更喜欢使用笔记本电脑；谁知道呢？

总的来说，研究不提供对笔记本和手写笔记争论的明确答案。我作为大学讲师的经验告诉我，被引诱进行其他在线活动是一个严重的问题。在我几年前的匿名调查中，我的学生说我的讲座很有趣，然而当一位同事几年前观察我的课程时，他

告诉我，我的很多使用笔记本电脑的学生都在做与课堂无关的事。这促使我去观察我大学的其他讲座课程，我发现这个问题十分普遍。

So what's the bottom line? If the lecture is not a fact-heavy one where speed is essential, it's best to take notes longhand. If speed is essential, use a laptop but disable your Wi-Fi before the lecture starts. And if you find yourself distracted anyway, switch to longhand.

In a sentence: Although the research on laptop use during presentations is inconclusive, I think the presence of the internet is so distracting that you'd be wise to take notes longhand in most circumstances.

TIP 9 Evaluate Your Notes on the Spot

那么，最关键的是什么呢？如果讲座不是重点在事实性的信息，速度不是最重要的，那么最好使用手写记录。如果速度很关键，可以使用笔记本电脑，但在讲座开始前要关闭你的 Wi-Fi。如果你发现自己还是会分心，那就转向手写。

用一句话说：尽管关于在报告期间使用笔记本电脑的研究还不确定，但我认为互联网的存在非常分散人的注意力，所以在大多数情况下，你最好还是手写笔记。

提示 9：立即评估你的笔记。

I write a lot of notes to myself, and not just in classroom settings. I get ideas at odd times, and I learned in college that I quickly forget them even though they seem like brilliant revelations at the time. That was long before smartphones, so I got into the habit of carrying a small pad of paper and a pencil stub, and, yeah, people thought that was a little weird, but people already thought I was exactly the kind of guy who would carry around a notepad and pencil stub, so it didn't make that big a difference.

But it turned out that the notepad didn't solve the problem, because I was still too confident that I would remember my great insights; the notes I took were too short. I remember having an inspiration for the introduction to my senior thesis when I was hiking with friends. I

scribbled a note and later saw that I had written, “Don’ t forget about the finger puppet.” I spent a lot of time over the next few days trying to see some connection between my thesis and a finger puppet. I never got there.

I’ ve said that it often makes sense to “write what you’ re thinking” (see tip 7), but you must bear in mind that future you will be reading the note. Write your notes for future you. Future you needs context and explanation, which are not easy to provide when you are rushed during a lecture. Also, you don’ t want to go too far in the other direction, providing details when they are not needed. I remember for one of my college classes I bought a used copy of a book of John Keats’ s poetry, and it was full of the previous owner’ s notes. One line from “Ode to a Nightingale” reads “Thou wast not born for death, immortal Bird!” The last two words were circled, and written next to them was this observation: “Bird, you are immortal.” This kind of note taking may not be the best use of your time.

我经常给自己写许多笔记，而不仅仅是在课堂上。我在诸多奇怪的时刻都会产生想法，而我在大学时就知道，尽管这些想法在当时看起来像是睿智的启示，我却很快就会忘记它们。那是在智能手机出现之前的很长一段时间，所以我养成了随身携带一小本纸和一支铅笔的习惯，是的，人们觉得这有点奇怪，但人们已经认为我就是会随身带着记事本和铅笔的那种人，所以这没什么大不了的。

但结果是，记事本并没有解决问题，因为我还是过于自信，相信我会记住我的伟大洞见；我记下的笔记太短。我记得有次和朋友们一起远足时，突然有一个写我毕业论文导言的好想法。我匆匆写下了一篇笔记，后来看到我写的是“别忘了手指偶”。我在接下来的好几天里花费大量时间试图找出我的论文和手指偶之间的某种联系。但我从未发现。

我曾说过，“写下你在想什么”往往是有意义的（参见提示 7），但你必须记住，未来的你会阅读这个笔记。为未来的你写下你的笔记。未来的你需要上下文和解释，而这些在你正在听讲座时匆忙之间并不容易提供。同时，你也不想走得太远，提供不需要的细节。我记得在我大学的一门课程中，我买了一本二手的约翰·济慈的诗集，里面充满了前一任主人的笔记。“夜莺之赞”中有一句“你生而不死，不朽的鸟！”最后两个词被圈起来，旁边写着：“鸟，你是不朽的。”这种笔记记录方式可能并非你利用时间的最佳方式。

So how do you know if your notes strike the right balance between briefness and clarity? When the instructor calls for questions, evaluate whether your notes will make sense to you later. As I said in chapter 1, that’ s a good time to check your understanding: Do you see how the many facts in the lecture relate to one another and build to a larger point? You should also check your notes: Do they capture your understanding? At the very least, check for incomplete thoughts, abbreviations that make no sense,

and graphs with an unlabeled axis. But look, too, for finger-puppet notes, references that might seem clear now but might not in a few days.

I've emphasized that you have two jobs when you're learning by listening: to understand in the moment and to take notes so that you will later have cues to prompt your memory. When speakers pause, they usually refer only to the first task. They ask, "Any questions?" by which they mean, "Do you understand?" They don't ask, "How are your notes?" Check them anyway.

You can also take a few moments to evaluate your notes at the end of the lecture if you don't have to run to another appointment. This is a great time to look for holes in your notes, because the lecture is still fresh in your mind, and if a question does come up, the instructor may still be there, available to answer it.

In a sentence: Evaluate your notes as you take them, to see if they will make sense to you later.

那么,你如何知道你的笔记在简洁和清晰之间找到了正确的平衡呢?当讲师提出问题时,评估你的笔记是否能让你以后理解。就像我在第一章中所说的,这是检查你的理解力的好时机:你是否看到课程中的许多事实如何相互关联并构建出一个更大的观点?你也应该检查你的笔记:它们是否表达了你的理解?至少要查看是否有不完整的想法,没有意义的缩写,以及没有标注轴的图形。但也要查看一下指偶笔记,即现在可能看起来清楚,但几天后可能就不明了的参考。

我一直强调,当你通过听力学习时,你有两个任务:在当下理解和做笔记,以便你后来有提示来激活你的记忆。当演讲者暂停时,他们通常只提到第一个任务。他们问,“有什么问题吗?”他们的意思是,“你理解了吗?”他们不问,“你的笔记怎么样?”无论如何,都要检查它们。

你也可以在课程结束时花几分钟时间评估你的笔记,如果你不需要赶着去另一个约会的话。这是查看你笔记中空白部分的大好时机,因为课程内容还新鲜在你的脑海中,如果真的有问产生,讲师可能还在那里,可能会对此进行回答。

简单来说:在做笔记时,评估你的笔记,看它们是否能让你以后理解。

TIP 10 Don't Use a Note-Taking System

They are often called note-taking systems, but a better term is probably “note-taking formats”: they describe how to lay out ideas. For example, the mind-mapping technique has you write notes as a kind of web. Instead of writing sentences or phrases on lined paper (as in traditional notes), each entry is just a word or two. You write the main topic at the center of a blank page. Then ideas radiate outward.

There is some experimental evidence that note-taking systems help. High school and college students take better notes and get better grades when they use a system, whether it’s mind mapping, Cornell, the charting method, or one of the others. Still, there’s no evidence that one particular system is more effective than others, because the experiments almost never compare one note-taking system to another. They examine whether offering instruction in a note-taking system is better than offering no instruction on how to take notes. A likely explanation for this pattern of results is that most people take pretty bad notes and almost anything you do to get them to think more deeply about the process will help.

提示 10：不要使用笔记系统

这些通常被称为笔记系统，但可能更好的术语是“笔记格式”，它们描述了如何布局思考。例如，思维导图技巧让你以网状的方式撰写笔记。并非在有线的纸上写下句子或短语（如传统笔记那样），每个条目只有一两个词。你将主题写在空白页面的中心，然后将想法放在周围。

有一些实验性的证据表明，笔记系统确实有所帮助。当高中生和大学生使用某种笔记系统（无论是思维导图，康奈尔法，图表法，还是其他的方法）时，他们的笔记效果更好，成绩也更好。然而，并没有证据表明某种特定的系统比其他系统更有效，因为这些实验几乎从未比较过一个笔记系统与另一个笔记系统。他们研究的是提供笔记系统的教学比没有提供如何做笔记的教学要好。这种结果模式可能的解释是大部分人的笔记效果并不好，你做的几乎任何事情，只要能让他们对此过程进行更深入的思考，就能帮助他们。

I don’t recommend that you use a note-taking system, because I don’t think they are worth the cost to attention. Using a special format for notes is just one more thing for you to think about when your mental state is in near overload most of the time.

Rather than adopting a formal system, I advocate writing notes more or less the way you’re used to doing it. That way you don’t have to think about it and can devote more attention to understanding the lecture. Use phrases and broken sentences you can understand. If it helps, imagine that you’re texting someone. For organization, use a minimalist outline format

that you feel comfortable with. When I was a student, I used three levels of headings: capital letters, numbers, and then dashes.

In chapter 4, I will show you how to reorganize your notes into better written form later. To facilitate that process, I recommend that you take notes on alternate pages; in other words, leave every other page blank. You'll use the blank page to amplify your notes and reorganize them (if need be). I recommend writing your first set of notes on the left-hand page within a spread, because in this culture we write from left to right; it's going to seem more natural that the notes (which came first) are on the left and your notes on the notes appear on the right. It's a small detail but worth it. (Naturally, if you're taking notes on a laptop, editing will be easy, so this isn't an issue.)

The only note-formatting trick I advocate is learning some shorthand abbreviations. That's the subject of tip 11.

In a sentence: Don't use a special note-taking format, but leave plenty of room for future editing and annotations by writing on every other page. 我并不推荐你使用记笔记的系统，因为我认为它们不值得花费注意力。在你的精神状态已经近乎过载的情况下，使用特殊格式的笔记只是你需要思考的又一件事。

我主张以你习惯的方式来写一些杂乱无章的笔记，这样你就无需去思考它，可以腾出更多的精力去理解课程。你可以使用一些能够理解的词组和破碎的句子。如果有帮助，想象你正在和某人发短信。对于组织，使用你觉得舒服的极简主义的大纲格式。我在学生的时候，我使用了三级标题：大写字母、数字、然后是破折号。

在第4章，我将会向你展示如何在之后更好地重新组织你的笔记。为了便于这个过程，我建议你分页记笔记；换句话说，每隔一页留一张空白页。你将使用空白页来扩展你的笔记并重新组织它们（如果需要的话）。我建议你在开页的左边写下你的第一组笔记，因为在这个文化中我们是从左向右写；笔记（先来的）在左边，你对笔记的笔记出现在右边这看起来会更自然。这是一个小细节，但是值得的。（当然，如果你在笔记本电脑上记笔记，编辑会更容易，所以这不是问题。）

我唯一为笔记格式化采取的技巧是学习一些速记缩写。这就是第11项的主题。

总结句：不要使用特殊的记笔记的格式，但是通过在每隔一页写字，为未来的编辑和注释留出大量的空间。

提示 11: 使用笔记速记

As we've seen, speed matters when you're taking notes, and using some easily learned abbreviations will help. I offer some suggestions in the list below, but there's nothing magical or research based about them. If you find or invent others you like more, use them. If you have abbreviations you're familiar with from texting, use them. Also, I don't recommend trying to memorize a large set of abbreviations and then agonizing about their use while you're taking notes. That defeats the purpose. Add one or two per week or at whatever time interval feels comfortable.

Because: bc

Years: yrs

With: w/

Without w/o

正如我们所见，记笔记时速度很重要，使用一些易于学习的缩写会有所帮助。我在下面的列表中提供了一些建议，但它们并没有什么神奇的或基于研究的内容。如果你发现或创造了你更喜欢的缩写，就使用它们。如果你有来自短信的缩写，也可以使用。另外，我并不建议你试图记住一大套的缩写然后在记笔记时苦恼其用法。那会违背原有的目的。可以每周或在你觉得舒适的时间间隔中增加一到两个。

因为: bc

年: yrs

跟: w/

没有: w/o

Within: w/i

Amount: amt

Something: s/t

Somewhere: s/w

Someone: s/o

内: w/i

数量: amt

某事: s/t

某处: s/w

某人: s/o

Important: imp

Minimum: min

Maximum: max

Versus: vs

Between: btw

重要: 重

最小: 最小

最大: 最大

对: vs

之间: 之间

Example: ex or e.g.

Before: b4

Equal, equivalent, the same: =

About the same: \approx

Not equal, different: \neq

例如：例如或譬如

之前：之前

等于，相等，相同：=

大约相同： \approx

不等于，不同： \neq

Greater than, more, bigger: $>$

Less than, less, smaller: $<$

Increase, growing, improving: \nearrow

Decrease, shrinking, getting worse: \searrow

Leads to, creates: \rightarrow

大于，更多，更大： $>$

小于，较少，较小： $<$

增加，增长，改善： \nearrow

减少，缩小，变坏： \searrow

导致，创造： \rightarrow

Change: Δ

Again, repeat: \cup

None, never, not: \emptyset

And: $\&$

Regarding: re

更改: Δ

再次，重复: \cup

无，永不，不: \emptyset

和: &

关于: 关于
Though: tho

Compare with: cf

Number: #

That is: i.e.

Quarterly: $\frac{1}{4}$ ly

尽管: 虽然

与...相比: 对比

数量: #

也就是: 即

季度: 季度
Annual: ann

Look for frequently used words, and abbreviate them with a single letter. In a psychology class, S stands for “subjects,” in an education class S means “students,” and in a chemistry class it means “sulfur.” In a course on ancient civilizations you may spend just a day on the cultures of third-century-BCE Mesopotamia; M ought to have a particular meaning that day.

Occasionally it’s crucial to record the exact wording of something the instructor says, or you come up with a good paraphrase you want to write. In both cases, your mind has a fairly long string of text to write, and it’s easy to forget the ending of that string as you’re writing the first part. That’s especially true because the instructor is still talking. One trick that can help: write the first letter of each word of what you want to write, leaving space to fill in the rest later. So if you hear:

“Four score and seven years ago our fathers brought forth, upon this continent, a new nation, conceived in liberty, and dedicated to the proposition that ‘all men are created equal,’ ”

寻找常用词，并用单个字母缩写。在心理学课上，S 代表“受试者”，在教育学课上 S 代表“学生”，在化学课上则表示“硫磺”。在古代文明课程中，你可能会花一天的时间研究公元前三世纪的美索不达米亚文化；那天 M 应该具有特定的含义。

有时，记录教师所说的确切用词，或者你想要写下的好的释义是非常重要的。在这两种情况下，你的大脑需要写下一长串的文字，并且当你写下第一部分时容易忘记那个字符串的结尾。这尤其真实，因为教师仍然在讲话。有一个技巧可以帮助：写下你想写的每一个字的第一个字母，稍后再填充其余的部分。因此，如果你听到：

“四十七年前，我们的祖先在这个大陆上建立了一个新的国家，这个国家是在自由中孕育而成，并致力于‘所有人都生来平等’的主张”

你可能首先会写下这些单词的首字母，然后再慢慢填完整个句子。

you write:

4 s &7 yrs a our f b 4th u this c a new n
 c in l & d to the p that all men are c
=.

Then you go back and fill in the words, given the first-letter clues you've created.

你写：

4 s &7 岁 a 我们的 f b 4th u
这个 c 一个新的 n c 在 l & d
到 p 所有人都是 c =.

然后你回过头来填写这些词汇，根据你创建的首字母提示。

Figures and graphs can send you scrambling: they are complex and take a while to draw. You might consider taking a picture with your phone, but that takes time, and it's often frowned upon in classes. If you need to copy a figure into your notes, be sure you know what the point of the figure is and write that conclusion in words. Have a look at this figure:

A speaker might show this to make one of the following points (or others):

This company is doing a terrific job in reducing costs.

This company initially did a terrific job in reducing costs, but the reductions have slowed.

数字和图表可能会让你手忙脚乱：它们很复杂，需要一段时间来画。你可能会考虑用手机拍照，但这需要时间，并且在课堂上常常被人皱眉。如果你需要把一个图形复制到你的笔记中，一定要清楚图形的要点，并用文字写出那个结论。看看这个图形：

演讲者可能会展示这个图形来说明以下几点（或其他）：

这家公司在降低成本方面做得非常好。

这家公司最初在降低成本方面做得非常好，但降低的速度已经放缓。

This company probably cannot look forward to future reductions in costs and so must find other ways to increase profits.

If you are clear on the conclusion, you can draw the graph in a way that makes that plain and also makes it obvious whether you need to label axes or part of an axis. For example, if the speaker wants to highlight that costs have dropped by \$6 million, bracket the drop and label it “\$6 mil.” If the speaker emphasizes that cost savings slowed during the recession of 2008, mark that spot on the horizontal axis. And so on.

Although I don't recommend using a formal note-taking system, it can be very useful to add comments to your notes that will help organize them later. Use the page margin for notes to yourself about your notes. Here are a few ideas for the types of notes you might want to add, with shorthand symbols you might use.

I missed something here: ?

这家公司可能无法期待将来的成本降低，因此必须找到其他方法来增加利润。

如果你对结论得出了明确的理解，你就可以以一种明了的方式来绘制图表，并明确是否需要标注轴或轴的一部分。例如，如果演讲者想要强调成本已经下降了600万美元，就在下降部分加括号，并标注“600万美元”。如果演讲者强调在2008年的经济衰退期间，成本节省放缓，就在水平轴上标记出那个点。等等。

虽然我不建议采用正式的记笔记系统,但在你的笔记中添加评论可以在之后帮助你组织它们,这一点非常有用。在页面边缘添加对你笔记的注释。以下是你可能想添加的注释类型,以及你可能会使用的简写符号。

我在这里错过了一些东西: ?

I' m confused/missed the whole point: ??

I understood this bit but not what it connects to: ?→

I' m writing this, but I' m not sure it' s right: OK?

Key conclusion/important: *

This is my idea, not the instructor' s:

我感到困惑/完全错过了重点: ??

我明白这个部分,但不知道它与什么相连接: ?→

我正在写这个,但我不确定是否正确: OK?

关键结论/重要: *

这是我的想法,不是教练的:

Now my notes refer to the speaker again:

I think this is a digression:

The point of shorthand is that it will help you record more of a fast-moving lecture. But what if the lecture is recorded? That' s the subject of the next tip.

In a sentence: Reduce the mental burden of note taking by using your own abbreviations.

现在我的笔记再次引用了演讲者的话:

我认为这是个离题:

速记的重点是它会帮助你记录更多快速进行的演讲内容。但如果演讲被录下来了呢?这是下个建议的主题。

用一句话概括：通过使用自己的缩写来减少记笔记的精神负担。

TIP 12 Use Lecture Recordings Judiciously

Some speakers provide listeners with an outline of their talk or their slide deck. These resources provide both an opportunity and a danger. I pointed out the danger in chapter 1 (see tip 3): you will likely pay less attention during the lecture if you figure you can always review the written material the instructor has provided.

提示 12：明智使用讲座录音

一些演讲者会为听众提供他们的讲座提纲或幻灯片。这些资源既是机会也是危险性。我在第一章已经提到过这个危险性（参见提示 3）：如果你认为可以随时回顾教师提供的书面材料，那你在课堂上可能会注意力不集中。

What if a video recording will be available later? Or say you are permitted to record the audio. Since you can review the lecture later, doesn't that remove most of the pressure to write quickly?

You may fully intend to revisit a lecture later so you can supplement your notes, but you probably won't. Watching a video or listening to audio is like attending a lecture again, and that's a big investment of time.

It sounds as though I'm saying I'm pretty sure that you're lazy. Most of us are! Well, maybe not lazy but certainly busy. I've made a habit of asking my students whether they listen to the lectures they record. They mostly don't, and the reason they offer makes perfect sense: they imagine that they will at least use the recording as a backup—they will revisit the parts of the lecture that they didn't quite understand—but they later realize that it's much easier to ask a classmate (or me) for clarification. It's hard to find the relevant part of the lecture on the recording, and when they do, they often don't understand it any better upon a second listening. They need a different explanation, example, or analogy.

The availability of a recording may tempt you to skip a lecture if you'

re busy with other things. A lot of research has been conducted in the last ten years that compares the effectiveness of learning from a live instructor versus learning from video. Much of the research is poor, but what we have indicates that a live lecture has the advantage. We can imagine a few reasons this might be so. Although the idea of watching a lecture in your pajamas sounds appealing, your attention is also probably more apt to drift away if you're watching a video at home. The video drones on while you sneak out to the kitchen to grab a snack, or you figure you can just listen to the audio while you explore Reddit on another tab. Then, too, you can't pose questions to a video, nor can you benefit from the questions that others pose. Yes, I know, on some platforms you can ask questions and you can see other people's questions and the answers. But sometimes it's troublesome to access them, or someone poses a question and the instructor hasn't gotten around to answering yet, so you have to remember to check back. As noted above, we're all a little busier than we think.

So the upshot is that you should think of a lecture recording as an emergency backup or as an insurance policy. You should hope you won't have to use it, because it's an inconvenient and inferior substitute. 如果稍后会有视频录像可供查看？或者说你被允许录制音频。既然你可以稍后复习讲座，这难道不是消除了大部分快速记笔记的压力吗？

你可能完全打算稍后重看讲座以补充你的笔记，但你可能不会这样做。观看视频或听音频就像是再次参加讲座，这需要投入大量的时间。

这听起来好像我在说我相当确定你很懒。我们大多数人都是！好吧，也许不是懒，但肯定很忙。我习惯问我的学生他们是否听他们录制的讲座。他们大多数人没有，他们提供的理由非常有道理：他们设想他们至少会使用录音作为备份——他们会重温他们不太理解的讲座部分——但他们后来意识到向同学(或我)求证更容易。在录音中找到讲座的相关部分很困难，当他们找到时，他们经常在二次倾听时并没有更好地理解。他们需要不同的解释、示例或类比。

录音的可用性可能会诱使你在忙别的事情的时候跳过一次讲座。过去十年中，有很多研究比较了从现场教师和从视频中学习的效果。大部分研究的质量都很差，但我们所拥有的研究表明，现场讲座有优势。我们可以想象出几个可能的原因。虽然穿着睡衣观看讲座的想法听起来很吸引人，但你的注意力在你在家观看视频时更可能会飘忽不定。视频不断播放，而你偷偷溜出去厨房拿点心，或者你觉得你可以在浏览 Reddit 的另一个标签页时只听音频。此外，你不能向视频提问，也不能从其他人提出的问题中受益。是的，我知道，在某些平台上你可以提问，你也可以看到其他人的问题和答案。但有时候访问它们很麻烦，或者有人提出了一个问题，教师还没有回答，所以你必须记得回过头来查看。如上所述，我们都比我们想象的要忙一些。

所以，最终的结果是，你应该把讲座录音当作紧急备份或保险政策。你应该希望你不必使用它，因为它是一个不方便的、劣质的替代品。

In a sentence: Video or audio recordings lull you into thinking that you don't need to fret about capturing a lecture in your notes, but don't fall for that; you're less likely to use the recording than you think.

For Instructors

在一句话中：视频或音频记录会让你误以为你不需要在笔记中记录讲座，但是不要被这个观点迷惑；你使用录音的可能性比你想象的要小。

对于教师

I've emphasized that the disconnect between listening and writing is one of speed. The most obvious advice for instructors is to speak more slowly. It's worth asking someone about the pace of your lectures; it's hard to judge yourself and doubly so if you try to evaluate your pace at the same time that your mind is occupied by lecturing.

You can also help students by telling them what they can omit from their notes and what's essential. For the latter, stop talking and give them time to record what you've said. Likewise, if you want them to check over their notes to see if they are complete and comprehensible, periodically give them time for that.

Even if you don't provide copies of your slides to students, consider providing copies of complex figures so listeners won't spend time frantically copying them. Put a distinctive mark (say, a red dot) on each figure that you'll provide so they'll know that there's no need to copy it.

On the subject of slides, remember that listeners will likely write whatever is on a slide, probably verbatim. They use "presence on a slide" as a rough measure of importance. Generally, that should mean that you put less text on slides in an effort to get your listeners thinking more and copying less. But if you want them to write something word for word—a definition, for example—put it on a slide.

I've suggested that learners take notes longhand, based on my own

experience that the availability of internet fun close at hand is too great a temptation for most people. Should you simplify matters by making the choice for them by banning devices? Here are a few thoughts that may help with this difficult decision.

我强调过，听和写之间的脱节主要是速度的问题。对于教师来说，最明显的建议就是讲话要慢些。向他人询问你讲课的节奏是值得的；自我评估是困难的，如果你试图在讲课的同时评估你的节奏，难度就更大了。

你还可以通过告诉学生他们可以从笔记中省略什么以及什么是必要的来帮助他们。对于后者，停止讲话，给他们时间来记录你说过的内容。同样，如果你想让他们检查自己的笔记是否完整和可理解，定期给他们时间进行检查。

即使你不提供幻灯片的副本给学生，考虑提供复杂图形的副本，这样听众就不会花时间去疯狂地复制它们。在你将提供的每个图形上放一个明显的标记（比如一个红点），这样他们就知道没必要去抄写它。

关于幻灯片，要记住听众可能会写下幻灯片上的任何内容，可能是逐字地写。他们将“幻灯片的存在”作为重要性的粗略衡量标准。一般来说，这应该意味着你在幻灯片上放更少的文字，以使你的听众多思考，少抄写。但是，如果你想让他们逐字地写下一些内容——例如，一个定义——就把它放在幻灯片上。

我建议学习者用长笔记的方式记笔记，这基于我自身的经验，即网络娱乐就在手边，对大多数人来说这是个太大的诱惑。你是否应该通过禁用设备来简化问题？以下是一些可能有助于这个困难决定的想法。

First, I do think it's useful for you to set the policy. Some instructors permit laptops, stipulating that they can be used only for learning-relevant tasks. But that makes the instructor responsible for monitoring that the rule is followed, which distracts everyone.

Second, consider whether your lectures tend to be fact heavy and fast paced, in which case learners may benefit from the speed that typing affords, or whether your course tends to be slower paced and contemplative.

Third, ask your students what they think about the matter. I find I get more thoughtful responses when I pose this question at the end of the semester—that is, I ask them what my policy should be in the future; it's easier to choose a wise policy for someone else rather than oneself.

Fourth, if you ban laptops, remember that some students use them to address a motor control problem or other disability. Avoid possible embarrassment by announcing that any student who strongly prefers to use a laptop for any reason can have a conversation with you about the matter.

Finally, what about lecture notes? Again, I encourage you to consider the trade-off between the two functions of note taking. Providing an outline ensures that students will have a complete reminder of the ideas you presented, but some will likely tune out, thinking, “Eh, I’ve got an outline.” Providing a skeletal outline offers a compromise. That shows listeners the high-level structure of the lecture, which should be a significant help in understanding the main points and their organization, but it is not so complete that listeners will be tempted to daydream.

首先，我认为你制定政策是有用的。有些教师允许学生使用笔记本电脑，但规定只能用于与学习相关的任务。然而，这就使教师有责任监督这个规则是否被遵循，这会使所有人分心。

其次，考虑你的讲座是否重点繁多且节奏快速，此种情况下，学生们可能会从打字的速度中受益，或者你的课程是否通常节奏较慢且需要深思。

第三，询问你的学生他们对这个问题的看法。我发现当我在学期结束时提出这个问题时，我得到的回应更有思考性——即我问他们我未来的政策应该是什么；为别人而不是自己选择一个明智的政策会更容易。

第四，如果你禁止使用笔记本电脑，要记住一些学生是用它们来解决运动控制问题或其他残疾的。为避免可能的尴尬，宣布任何坚决希望出于任何原因使用笔记本电脑的学生都可以与你就此问题进行交谈。

最后，讲座笔记呢？同样，我鼓励你考虑在笔记功能之间进行权衡。提供提纲可以确保学生们完全记住你表达的观点，但有些人肯定会走神，想着，“嗯，我有提纲。”提供一个框架式的大纲是一种折中。这向听众展示了讲座的高级结构，这应该大大有助于理解主要观点及其组织方式，但它不会完整到听众会被引诱去做白日梦。

Summary for Instructors

Talk more slowly.

Signal when something should be written in listeners’ notes, and then pause to allow them time to write it down.

教师摘要

请说得更慢一些。

当需要听者在笔记中记录某事时,请发出信号,然后暂停以让他们有时间写下来。

Distribute copies of figures and visuals, and let listeners know which ones they don' t need to copy.

Bear in mind that students copy what' s on slides, whether doing so makes sense or not.

Forbidding learners' use of laptops may make sense in some circumstances, but there are many factors to consider, including the norms of the institution, the attitudes of the learners, the information in the lecture, and what learners will be expected to do with that information.

分发图形和视觉材料的副本,并让听众知道他们不需要复制哪些。

请记住,学生会复制幻灯片上的内容,无论这是否有意义。

在某些情况下,禁止学习者使用笔记本电脑可能有意义,但需要考虑很多因素,包括学校的规定,学习者的态度,讲座的信息,以及学习者将如何使用这些信息。

第三章 如何从实验室、活动和演示中学习

Instructors tend to do a lot of talking because it's an efficient way to communicate new information. But good presenters know that learners can listen for only so long. No matter how good the lecture, after a while listeners feel the need to move around a little or do some talking themselves. So a good speaker intersperses other activities into a lecture—a demonstration, perhaps, or small-group discussions. In other situations, the instructor does very little talking, and most of the session is learning by doing, as in a high school biology lab.

When someone lectures, it's pretty obvious what you're supposed to learn. People lecture to convey information: facts and how to do things. But activities can serve different learning purposes. That matters, because you should adopt different learning strategies depending on what you're meant to learn. In this chapter I'll show you how to learn from different types of activities.

教师习惯于大量讲解，因为这是传达新信息的高效方式。但优秀的演讲者知道，学习者只能听一段时间的讲解。无论讲解多么出色，一段时间后，听者总会觉得需要活动一下或自己讲一些话。因此，好的演讲者会在讲解中穿插其他活动——例如演示或小组讨论。在其他情况下，教师讲话很少，大部分课程是通过实践学习的，就像高中生物实验室的情况。

当有人讲述时，你应该学习什么是相当明确的。人们讲解是为了传达信息：事实和如何去做事情。但活动可以服务于不同的学习目的。这一点很重要，因为你应该根据你的学习目标采取不同的学习策略。在本章中，我将向你展示如何从不同类型的活动中学习。

Let's start by considering the three main purposes of learning activities.

The Purposes of Learning Activities

First, some activities are meant to teach you a process—that is, how to

do something better. Aristotle had this purpose in mind when he said, “Men become builders by building and lyre players by playing the lyre.” Process is what you’ re to learn during a guitar lesson or when you’ re being taught how to affix and slice a brain in a biology laboratory.

首先，让我们考虑学习活动的三个主要目的。

学习活动的目的

首先，一些活动旨在教你一个过程，也就是如何更好地做某件事。亚里士多德有这样的目的在他说，“人们通过建造成为建筑师，通过弹琴成为琴师。”在吉他课或者在生物实验室学习如何固定和切割大脑时，你需要学习的就是这个过程。

Second, you might do an activity for the experience, because doing is the best or only way to learn particular things. I can tell you that the enormous height of cathedrals makes worshippers feel awed, but my description can’ t possibly evoke the same feeling as standing in that huge, hushed space. Some things—for example, what it’ s like to work in hospice care—can’ t be learned via a lecture or a book; you must experience them.

Finally, sometimes the doing is meant to help you understand something, especially when the thing you’ re to learn is difficult to put into words. For example, when teaching about circles, an elementary school teacher might have students form a line on the playground, pick a student at one end to be the “origin,” and have the line of students walk around the origin in concentric rings. Students can memorize the formula for the circumference of a circle ($2\pi r$), but they get a better understanding of why the formula works if they see the kids near the origin taking tiny steps, while those far from the origin must run—as r increases, the circumference of the circle increases.

Now you can see the problem in learning from activities: the purpose is often not obvious to students. When students create the circumference of a circle on a playground, they might understand that this activity is meant to help them understand $2\pi r$. But they also might think that the goal is the process—an exercise in teamwork and cooperation. Or even that the purpose is the experience itself—getting outside in the sunshine and moving their bodies.

In addition to understanding what’ s to be learned, knowing where to direct your attention is also a problem when you participate in activities. Naturally, if you don’ t pay attention, you can’ t learn; if a student doing the circle-on-the-playground activity is thinking about whether the grass is making his shoes dirty, he’ ll miss the point. But the relationship

of attention and learning is even more subtle than that, and we need to clarify it to ensure that you know how to learn from activities.

其次，你可能会进行某些活动来获得相应的经验，因为做是学习某些事情的最好或唯一的方式。我可以告诉你大教堂的巨大高度使得信徒们感到敬畏，但我的描述不可能像你站在那个巨大而安静的空间时那样唤起你的感受。有些事情——例如，做临终关怀工作是什么样的——不能通过讲座或书本去学习；你必须亲自经历。

最后，有时做某事是为了帮助你理解某些东西，尤其是当你要学习的东西难以用语言表达时。例如，当教小学生了解圆时，老师可能会让学生们在操场上排成一行，选择一名学生作为“原点”，然后让这一排学生围绕原点走成同心圆。学生们可以记住圆周的公式（ $2\pi r$ ），但是如果他们看到靠近原点的孩子小步步行，而远离原点的孩子必须跑步，他们将更好地理解这个公式是如何运作的——随着半径 r 的增加，圆的周长也会增加。

现在你可以看到从活动中学习的问题：目的往往对学生们并不明显。当学生们在操场上标出一个圆的圆周时，他们可能理解这个活动是为了帮助他们理解 $2\pi r$ 的。但是他们也认为目标就是这个过程——一个磨合团队协作的练习。甚至认为目标就是体验本身——在阳光下走出去，让身体动起来。

除了理解要学习的内容，知道在何处集中注意力也是你参与活动时的一个问题。很自然，如果你不注意，你就不能学习；如果正在做操场上画圆活动的学生只想草地是否弄脏了他的鞋，他就会失去重点。但注意力和学习的关系比这更微妙，我们需要澄清它以确保你知道如何从活动中学习。

How Learning Follows Attention

Naturally, if you're not paying attention when there's something to be learned, you won't learn it. But even if you're paying attention, you usually can't pay attention to all aspects of the thing, so you will later remember only that part you did pay attention to.

Here's an example. Suppose a new family moves in next door, and I think, "I'll take them a basket of stuff to welcome them to the neighborhood." I want to put a pound of nice coffee in the basket, so I plan to buy it on my way home from work. That evening, when I drive by the grocery store, I think to myself, "Do I need anything from the market?" I conclude I don't and drive on. As I pull into my street, I see my new neighbor checking her mail, and I immediately think, "Darn it! I forgot the coffee!"

如何将注意力转化为学习

自然地，如果你在需要学习的时候没有集中注意力，那你就无法学到它。但即使你正在集中注意力，你也无法把注意力集中在所有的方面，所以你稍后只会记住你确实注意到的那部分。

这里有一个例子。假设一个新的家庭搬到了隔壁，我想，“我应该送他们一篮子东西，欢迎他们来到这个社区。”我希望在篮子里放一磅好的咖啡，所以我计划下班回家的路上买它。那天晚上，我开车经过杂货店时，我对自己说，“我需要从市场买什么东西吗？”我得出的结论是不需要，然后就继续开车。当我驶入我的街道时，我看见我的新邻居正在检查她的邮件，我立刻想，“哎呀！我忘记买咖啡了！”

How come the sight of my neighbor prompted me to remember but the sight of the grocery store didn't, even though that's where I usually buy coffee? This sort of thing can happen when there's a mismatch between the way I search for a memory and the way the memory went into the vault.

When I run out of something such as coffee, I think about it as a deficit; there's a list of staples I should always have in the house, and when one is missing, I make a mental note to make up the deficit. That's different from thinking about coffee as part of a welcome gift to new neighbors. I probed my memory by asking, "Do I have any grocery deficits?" But that morning I hadn't thought about coffee in the grocery-deficit sense; I had thought about it in the neighbor-gift sense.

The particular way that we think about things is a key contributor to what we remember. It would seem that if you think about a chair, later you'll remember having thought about a chair. That sounds obviously true, but you've just seen that it isn't. You can think of a chair as something to sit on, as something with glued joints, as a sign of status if it's at the head of a table, or as a weapon in a barroom brawl. How you think about it determines what you'll remember later. Elsewhere I've described the idea this way: "Memory is the residue of thought."

This principle is especially important when we consider learning during activities. Something as simple as coffee or a chair has lots of different features, and you've seen that you'll remember the features that you pay attention to and won't remember the others. So selecting the right features of an activity to pay attention to is essential because it determines what you'll learn from it.

为什么看到我的邻居的视觉提示会让我记住，但是看到杂货店的视觉提示却没有，即使我通常在那里买咖啡？当我搜索记忆的方式和记忆进入“保管箱”的方式不匹配时，就会发生这样的事情。

当我用完了咖啡这样的东西，我会把它当作一种赤字；我应该总是在家里有一份必需品的清单，当其中一个物品缺失时，我会在心中做个标记来弥补这个赤字。这和把咖啡当作新邻居的欢迎礼物一部分是不同的思考方式。我通过问自己，“我有没有任何杂货赤字？”来探索我的记忆。但那天早上我并没把咖啡以杂货赤字的意义来思考；我把它当作邻居礼物的一部分来思考。

我们思考事情的特定方式是我们记住什么的关键因素。看似如果你想过一把椅子，那么你以后应该记得你曾经想过一个椅子。这听起来显然是真的，但你刚看到其实不是这样的。你可以将椅子视为可以坐下的东西，视为有粘合接头的东西，如果它在桌子的头部则视为地位的象征，或者在酒吧斗殴中视为一种武器。你怎么看待它决定了你晚些时候会记住什么。我在其他地方这样描述这个观念：“记忆是思考的残留物。”

当我们考虑在活动中的学习时，这个原理尤其重要。像咖啡或椅子这样简单的东西有很多不同的特性，你已经看到你会记住你关注的特性，而记不住其他的。所以选择活动的正确特性去注意是非常关键的，因为它决定了你将从中学到什么。

Attention, Memory, and Learning by Doing

Where you should direct your attention is pretty clear when you're learning by listening. You should focus on the speaker, and she will tell you whether she wants you to think of a chair as something with glued joints, something that can replace a step stool, or whatever.

When you learn by doing, it would be ideal for the instructor to provide the same sort of direction: "I want you to do this, and while you're doing it, I want you to notice that." But a lot of times instructors don't provide the guidance because they don't understand that it would help. If you know something, it's hard to conceive that others can't easily see it or figure it out. This problem is commonly called "the curse of knowledge." If you've ever played charades, you've experienced it. To you, your pantomimed actions are so obviously someone preparing breakfast that it doesn't occur to you that they are actually compatible with another interpretation, such as performing surgery.

When a teacher asks third graders to make music by lightly striking glasses holding varying amounts of water, it seems obvious to her that the pitch

produced relates to each glass's water level. Thus, she thinks the activity needs no preparatory remarks, no setup—in fact, that telling students what to expect will diminish its power, like explaining a joke. 注意力、记忆力和动手学习

当你通过听的方式学习时，应该将注意力集中在哪里是非常明确的。你应该专注于讲话人，她会告诉你她希望你如何看待一把椅子，是视其为粘合接头的东西，还是可以替代踏板凳的东西，或者其他。

当你通过动手学习时，理想的情况是教师能提供同样的指导：“我希望你这样做，当你正在做的时候，我希望你注意那个。”但很多时候，教师并没有提供引导，因为他们并不理解这会有所帮助。如果你知道一些东西，很难设想其他人不能轻易地看出或弄清楚。这个问题通常被称为“知识的诅咒”。如果你曾经玩过角色扮演游戏，你应该经历过。对你来说，你的哑剧动作显然是某人在准备早餐，以至于你没有想到它们实际上也符合另一种解释，如进行手术。

当一个老师让三年级的学生通过轻轻敲击装有不同水量的杯子来制作音乐时，她觉得制作的音调与每个杯子的水位有关这一点显而易见。因此，她认为这项活动不需要预备性的话语，不需要设置——实际上，告诉学生们期望的结果会减弱它的力量，就像解释一个笑话一样。

WHEN LEARNING FROM ACTIVITIES

What your brain will do: It will store in memory whatever you direct attention to and fail to store whatever you don't pay attention to; when you learn by doing, there's more than one possible target of attention.

How to outsmart your brain: Decide, as strategically as you can, where you will direct your attention before the activity begins.

Where does that leave you? If you're told where to direct your attention during an activity, great. If not, you must make your best guess. This chapter tells you how to guess wisely.

当从活动中学习

你的大脑会做什么：它会将你关注的东西储存在记忆中，而对你不关注的东西则不会储存。当你通过实践学习时，关注的目标可能不止一个。

如何智胜你的大脑：尽你所能地策略性决定在活动开始前你要关注的地方。

这将如何影响你？如果在活动中有人告诉你应该关注什么，那当然很好。如果没有，你必须自己做出最好的判断。这一章会告诉你如何明智地猜测。

建议 13：在场并参与其中

If you're to learn from an activity, you need to actually participate. If you're in a private guitar lesson, you can't get away with doing nothing. But if the "doing" is a group discussion or a field trip, it's pretty easy to shirk. If the instructor thought you could learn the same thing by watching other people do the activity or by reading about it, that's probably what you'd be asked to do, because it's easier for everyone. You're being asked to do the activity because there's no other way to learn. So do the activity.

In the same vein, do the prep work expected of you. If you are asked to read something in advance, to bring something to the activity, to try something out, or to practice something you've already done—do it. Aside from the fact that ignoring the instruction means you won't be fully prepared, there's also a chance that you will feel awkward during the activity and you'll mentally withdraw.

These are pretty obvious recommendations. Less obvious but equally important is an implication of the memory research I described: if you're not present, you not only miss the opportunity for understanding, you also miss the chance to take your own notes. The notes you get from someone else will not be the same as those you take yourself. Notes are cues that will jog your memory back to the understanding you had during class, and you've seen how particular those cues can be; grocery-deficit coffee is different from neighbor-gift coffee. If you can't make it to an activity but figure you'll ask someone about it or look at the notes they took, you will be getting their cues to their memories.

"Be there" also means "Be sure you won't be distracted or need to leave in the middle." If you wear glasses, bring them. Have a spare pen. Make sure your laptop is charged. Don't come hungry. If you get cold easily, bring a sweater. Go to the bathroom before the activity. If you're a smoker

and will want a cigarette, have one right before you start. Don' t leave to take a call or answer a text.

An activity can feel like a break, like a day off from the harder days when you' re expected to learn. Don' t fall for that feeling. Be there and engage.

如果你想从某种活动中学习，你需要真正参与。如果你参加的是私人吉他课，你不能只是坐着不动。但是如果“参与”是指集体讨论或者实地考察，那就很容易不尽尽职尽责。如果教师认为你通过观看他人进行活动或者阅读相关内容就能学到同样的东西，那他可能就会让你这么做，因为这对所有人来说都更简单。你被要求参与活动，是因为没有其他方式可以学习。所以就进行这项活动。

同样的，也要做好预期的预备工作。如果你被要求提前阅读一些内容，为活动带点东西，尝试一些事情，或者练习一些你已经做过的事情——就去做。除了忽视这些指令意味着你不能做好充分的准备，你在活动中也可能会感到尴尬并选择精神上的退缩。

以上这些都是显而易见的建议。而更不明显但同样重要的是记忆研究的一个暗示：如果你不在场，你不仅会错过理解的机会，也会错过自己做笔记的机会。你从别人那里得来的笔记跟你自己做的笔记是不一样的。笔记是能够提醒你回忆起在课堂上的理解的线索，而你知道这些线索可以是多么特殊；杂货店缺乏的咖啡和邻居的礼物咖啡是不同的。如果你不能参加某个活动但想问别人或看他们做的笔记，你将会得到他们记忆中的线索。

“在场”还意味着“确保你不会被分心，或需要在中途离开”。如果你需要戴眼镜，就带上他们。备一支多余的笔。确保你的电脑充满电。不要带着饥饿来。如果你很容易感到冷，就带上一件毛衣。在活动开始前充分准备。如果你是吸烟者并且想抽烟，就在开始前抽一根。不要离开接电话或回短信。

一个活动可能会给你一个放松的感觉，好像你在更难的学习日子里休息一天。但不要被这种感觉所误导。你必须在那里并积极参与。

In a sentence: Activities make a nice change of pace, but remember, you' re there to learn, so come prepared and stay focused.

TIP 14 If the Activity Is Brief and Offers a Surprising, Interesting Experience, It' s Probably an Analogy

在一句话中：活动能带来愉快的节奏变化，但请记住，你在那里是为了学习，所以要做好准备，保持专注。

提示 14：如果活动短暂并且能带来惊喜、有趣的体验，那它可能是一个比喻。

Sometimes an instructor will have you do something as a way to help you understand an idea, especially one that is difficult to explain with words and pictures alone. Maybe the idea makes more sense when you see it in action or have a chance to explore and manipulate it yourself rather than hear about it. For example, it's not easy to describe the full range of meanings of the equals sign in mathematics. So a teacher might have children use a pan balance with digits, each weighted proportionally to its value. They can see which values make the scale balance, which changes maintain the balance and which do not, and so on. In a physics class, students might experiment with a bicycle wheel mounted with handles on the axle to help them understand angular momentum: What changes as the speed of the wheel increases?

Or consider this example. A high school history teacher asks her students to write their own version of the Declaration of Independence, a letter from the thirteen colonies to King George III. It's to be historically accurate but written in the style of a breakup letter. What's the goal of this activity? The breakup letter is an analogy. An analogy pairs something you already understand with something you are trying to understand. High school students already understand that a breakup letter has three elements: a couple, a member of the couple who wants to end it, and an explanation by that person to the other. Students know that the colonies and Great Britain had a relationship and that the colonies ended it. But most probably think of the Declaration as a sacred historical document or perhaps as "the thing that started the Revolution." They don't think of its function. Just as a breakup letter communicates "I want it over, and here's why" from one member of a couple to the other, the Declaration communicated "We're unhappy and it's over, Great Britain, and here's why."

The key to learning from an analogy is paying attention to the right features, because every analogy has features that matter and features that don't. When someone says, "Lawyers are sharks," she means that both are tough, ruthless, and frightening. She doesn't mean that lawyers have gills. Likewise, in a breakup letter the author often accepts some blame

for the split as a way of softening the blow. That part of the breakup letter analogy doesn't hold; the colonists thought everything was George III's fault.

When the activity is an analogy, focus on the mapping. The mapping is the pairing of the features of the something you already understand with the features of the something you are trying to understand. In this case, it's thinking, "The person breaking up is the thirteen colonies. The person being broken up with is Great Britain. The breakup letter is the Declaration of Independence."

Obviously, if you are unsure about the mapping, ask. As I've said, instructors often want you to experience an activity before they explain it. They figure that part of the learning process is your exploring a bit, thinking things over. That's fine, but you don't want the learning episode to end before you've understood the point. If there was reading or some other work you were supposed to do to prepare for the activity, thinking back on that will likely help you figure out the mapping.

有时候，教师会让你做某些事情，以帮助你理解一个概念，尤其是那些仅用语言和图片很难解释的概念。也许这个想法在你看到它实际操作或者有机会自己去探索和操作它时会更有意义，而不只是听别人告诉你。例如，用语言描述数学中等号的所有含义并不容易。所以，老师可能会让孩子们使用一个与其价值成比例的带数字的平衡秤，让他们看看哪些数值会让天平保持平衡，哪些变化可以保持平衡，哪些不能等等。在物理课上，学生们可以试着用转轮做实验，观察当轮速增加时会发生什么变化，以此来理解角动量。

再比如这个例子，一位高中历史老师让她的学生写自己版本的独立宣言，也就是十三个殖民地给乔治三世的一封信，这封信要历史准确但写起来要像是一封分手信。这个活动的目标是什么？分手信就是一个类比。类比把你已经理解的东西与你试图理解的东西配对。高中生已经知道一封分手信有三个元素：一对情侣，希望结束关系的一方，以及这个人向另一半的解释。学生们知道殖民地和大不列颠有一段关系，而且是殖民地结束了这段关系。但是大多数人可能会把独立宣言看作是一份神圣的历史文档，或者看作是“发起革命的东西”。他们没有考虑到它的功能。就像分手信中一个情侣的一方向另一方传达“我想结束了，原因如下”的意思，独立宣言也是在告诉大不列颠，“我们不高兴了，这段关系结束了，原因如下”。

通过类比学习的关键是要关注正确的特点，因为每个类比都有重要的特点和不重要的特点。当有人说“律师就像鲨鱼”时，她的意思是他们两者都很强硬，无情和可怕。她并不是说律师有鳃。同样，在一封分手信中，作者常常会接受一些分手的责任，以此来缓和分手的打击。这部分在分手信的类比中并不成立；殖民地人认为所有的错都是乔治三世的。

当活动是一个类比时，把注意力集中在映射上。映射是把你已经理解的事物的特

点与你试图理解的事物的特点配对。在这个例子中，像这样思考，“想要结束的那一方是十三个殖民地。被结束关系的那一方是大不列颠。分手信就是独立宣言。”

显然，如果你对映射感到不确定，就去问。正如我所说，教师通常希望你先体验一下活动，然后再解释它。他们认为学习过程的一部分就是你去探索，思考一些事情。这是可以的，但是你不希望在你还没有理解要点之前，学习情景就结束了。如果有阅读或者其他你应该做的事情以备好这个活动，回想一下那些事情可能会帮助你理解映射。

Another thing to keep in mind during this sort of learning activity is probably more important: don't get distracted. Learning activities are meant to be engaging, but sometimes irrelevant parts of the analogy are really fun to think about. For example, you can imagine that students writing the breakup letter from the thirteen colonies could get really caught up in the format and spend a lot of time thinking of jokes from romantic comedies they've seen. I've heard about a middle school math activity in which the teacher pushes the desks to the edge of the room and uses carpet tape to create a graph grid on the classroom floor. Then the teacher writes a linear equation on the board and the students create a line on the graph; each student represents a point on the line, and they stand on the graph with their hand on the shoulder of the next "dot" to create the line. I can see that the teacher wants them to better visualize the line (compared to drawing it on paper or a computer), but there's the potential for some middle school kids to devote a lot of attention to the hand-on-the-shoulder bit.

Activities are meant to add a bit of zest to your learning experience. Go ahead and be zesty. Just figure out what the activity is supposed to teach you before it's over.

In a sentence: A brief activity that makes you say "Cool!" is probably meant to illustrate some abstract idea you've studied, so make sure you understand how the activity explains the idea.

在这类学习活动中需要记住的另一件事可能更重要：不要分心。学习活动本应具有吸引力，但有时类比中无关的部分往往很有意思。例如，你可以想象学生们在写十三个殖民地的分手信时，可能会对格式非常投入，花很多时间想浪漫喜剧中的笑话。我听说过一个中学数学活动，老师将课桌推到房间的边缘，用地毯胶带在教室地板上创建一个图表网格。然后，老师在黑板上写下一个线性方程，学生们在图表上创建一条线；每个学生都代表线上的一个点，他们站在图表上，手放

在下一个“点”的肩上，以此来创建线条。我可以看出，老师想让他们更好地想象线条（与在纸上或电脑上画出来相比），但有可能会有一些中学生过多地关注手放在肩上的那部分。

活动的目的是为你的学习体验增添一些趣味性。尽情享受吧。只是在活动结束前，找出活动是为了教你什么。

总结一下，让你觉得“太酷了”的简短活动，往往是为了解释你已经学过的一些抽象思想，所以要确保你了解这个活动是如何解释那个想法的。

TIP 15 If the Activity Comes with a Script, You’ re Supposed to Learn Either Skills or Concepts

Some activities come with a script, a set of steps you’ re supposed to follow. For example, several years ago the University of Virginia developed a new web-based platform on which faculty would view applications for its graduate program. I attended a half-day training session to learn the new system, and although there was some lecturing, I spent most of the time on my laptop, using the system. But I was not left to poke around and try it out. A sequence of tasks was set for me. I was given a script. Most laboratory courses follow the same game plan: students conduct an experiment, and they are given step-by-step instructions on how to carry it out.

What’ s the purpose? One purpose is to make the learning more memorable. In theory, I could have learned the new application system by memorizing a manual. But enacting the steps is another instance of “Memory is the residue of thought”: it’ s best to put information into memory the same way you plan to take it out. I think the same applies to science labs. Part of the purpose is to learn techniques and methods, such as how to use a potentiometer or how to culture bacteria. You can read about it, but you learn faster if you do it.

提示 15：如果活动附带剧本，那么你应该学习的是技能或概念

有些活动会附带一个剧本，一个你应该遵循的步骤集。例如，几年前弗吉尼亚大学开发了一个新的基于网络的平台，教师可以在上面查看其研究生项目的申请。

我参加了半天的培训，学习新系统，虽然有一些讲座，但我大部分时间都在笔记本电脑上，使用这个系统。但我不被允许随便试试看。我有一系列的任务要做，我被给了一个脚本。大多数实验课程都遵循同样的游戏计划：学生进行实验，他们得到一步步的指示如何执行。

这样做的目的是什么呢？一个目的是使学习更加难忘。从理论上讲，我可以通过记忆手册来学习新的申请系统。但是执行步骤是“记忆是思考的残留物”的另一个实例：信息最好以你打算取出的方式放入记忆。我认为同样的适用于科学实验室。部分目的是学习技术和方法，比如如何使用电位计或如何培养细菌。你可以阅读关于它，但如果你做，你会学得更快。

Other times, a scripted activity has a different purpose, namely to teach you higher-level thinking techniques. You are expected to learn something beyond the specifics of the activity itself. For example, the instructor of a science laboratory may want students to learn something about the scientific method. But expert scientific thinking is complicated. That's why there is a script. If you simply gave people chemicals and equipment and said, "Find out what happens if you try to recrystallize benzoic acid in acetic acid," they wouldn't learn much. You have to walk them through the idea of crafting a hypothesis, creating an experiment to test the hypothesis, and interpreting the results in light of the hypothesis.

So how can you maximize your experience if you are learning with this sort of activity?

First, avoid the typical thinking pitfalls. The most common is to focus on the outcome of the activity rather than the process. It's understandable; you've been given a script, so you think that doing a good job means following the script. If I follow the script correctly, I'll get the expected outcome. So is my benzoic acid recrystallizing? That's the right priority if you're trying to fix your dishwasher by following the steps in a YouTube video. But the real goal of dissecting a frog in biology lab is not to create a well-dissected frog; it's to learn, so focus on the process of what you are doing.

Another pitfall is to think of very little at all. The activity gives you a script to follow, so you mindlessly follow the script, executing instructions but not thinking about why you're doing them.

What should you focus on? The main point of an activity is either to learn a technique that requires physical practice or to engage high-level thinking strategies such as the scientific method. These two purposes are obviously quite different—one is concerned with details and the other with the big picture—so it's essential to know what you're supposed to get out of it. Again, the obvious thing to do is ask the instructor.

(If the instructor says, “Both,” you’ re in the hands of an amateur. You can’ t think about two complicated things at the same time.) If the instructor refuses to tell you, you can probably get a good idea from the script: if the directions include a great deal of detail about how to execute steps, it is a technique activity. If it includes questions and/or directions that could apply to many different tasks, it is a big-picture activity. Either way, let that be your focus as you do it.

有时，剧本化活动有一个不同的目的，即教你高级思维技巧。你要学习的是超越活动本身的具体内容的东西。例如，一个科学实验室的教师可能希望学生学习关于科学方法的知识。但是，专家级的科学思维是复杂的。这就是需要剧本的原因。如果你只是给人们提供化学物品和设备，然后说：“试着用醋酸重新结晶苯甲酸，看看会发生什么”，他们学不到什么。你必须引导他们理解制定假设、设计实验测试假设、并根据假设解读结果的思路。

那么如果你是通过这种活动学习，你如何才能最大限度地提升你的学习体验呢？

首先，避免常见的思考陷阱。最普遍的一个就是关注活动的结果而非过程。这是可以理解的；你得到一个剧本，所以你会认为如果能按照剧本去做，就能得到预期的结果。我是否按照剧本的指示呢？我的苯甲酸是否正在重新结晶？如果你试图通过遵循 YouTube 视频中的步骤来修理你的洗碗机，这是正确的优先策略。但是生物实验室解剖青蛙的真正目标不是创作一个解剖得很好的青蛙；而是听学习，所以要专注于你所做之事的过程。

另一个陷阱是几乎不去思考。活动给了你一个剧本来遵循，所以你机械地执行指示，而没有去思考为什么你正在执行它们。

你应该关注什么？活动的主要目的是要么学习需要实际操作的技术，要么是参与高级思维策略，如科学方法。这两个目标显然完全不同，一个关注细节，另一个关注大局。因此，了解你应该从中获得什么是至关重要的。再次强调，最直接的方法就是询问教师。（如果教师回答“两个都是”，你就落入了业余人士的手中。你不能同时思考两个复杂的事情。）如果教师不肯告诉你，你可以从剧本中大概得到答案：如果指示包含大量关于如何执行步骤的详细信息，那么这是一个技术性活动。如果它包含的问题和/或指示适用于许多不同的任务，那么它是一个大局思维的活动。无论哪种方式，让它成为你做这件事的焦点。

In a sentence: If you’ re given step-by-step instructions, you’ re probably supposed to learn either the smooth execution of the steps themselves or something very high-level and abstract that the steps illustrate—figure out which one.

TIP 16 For Projects, Pick the Problem with Care, Seek Feedback Along the Way, and Reflect at the End

在一句话中：如果你收到逐步指导，你可能需要学习步骤本身的顺利执行，或者步骤所说明的非常高级和抽象的东西 - 弄清楚其中的哪一个。

提示 16：对于项目，精心选择问题，沿途寻求反馈，并在结束时进行反思。

When you're a student, learning by doing sometimes means solving an open-ended problem—that is, one that doesn't have a single right answer. I don't mean a paper-and-pencil problem that takes half an hour, I mean a project that you work on for weeks and that usually results in a tangible product. For example, a student nearing the end of an accounting course might be told, "Find a small business in town and help it set up a system for its inventory, its tax obligations, or its payroll." I have three suggestions for how to maximize your learning when undertaking this sort of project.

First, select your project based on what you want to learn, not what you want to accomplish. It's hard not to be really concrete when you're brainstorming project ideas, because your proposal must be concrete. So you think, "I wonder if I can make a robotic inchworm?" or "I saw a video of Jimmy Kimmel making a rocket out of a Pringles can" or "I'd really like to use the 3D printer." You might commit to a project that results in a cool product but is boring to work on. What if the robotics problem ends up being pretty much snap-together parts? Or you're interested in animal welfare, so you decide to make a video to increase awareness of animal testing in the cosmetics industry—which ends up in your having to spend most of your time learning how to edit videos. So you want to think about process as you choose your project: Will the process emphasize the elements you are hoping to learn about?

When you think about your learning goals, remember that you may not need to stick to traditional academic facts and skills. (Naturally, you'll want to consult with the instructor about this.) Maybe you want to learn how to manage your time better, so you pick a project that places frequent and inflexible demands on your schedule, such as creating and caring for a complex aquatic environment. Or maybe you've had trouble working with

other people in the past and want to develop your skills as a team member. Craft that goal into your project, perhaps by volunteering at a local charity.

Second, when you are in the middle of your project, be sure you get feedback. It's hard to create your own feedback; you may be able to tell that something is going wrong but not know why. Too often my students think they're expected to hand in the completed project at the end, without any guidance along the way. You should seek input from the instructor and from others who might help. The usefulness of feedback is another reason (if you needed one) to stay on schedule; you can't expect to get feedback at the last minute, much less act on it. (I'll have more to say about planning in chapter 10.)

Third, when you've finished the project, pull your thoughts together and reflect. Do so in light of the learning goal you set. Did you learn what you had hoped to? Did you learn something you didn't expect to? I urge you to jot down a note or two as you reflect. At the time, it feels as though the lessons learned will stay with you, but don't count on it. The best-case scenario is to use the experience to make your next project a better learning experience; reflecting on it right afterward and recording your reflections may make the difference.

作为学生，通过实践学习有时需要解决开放式问题，也就是没有唯一正确答案的问题。我说的不是需要半个小时才能解决的笔头问题，而是你需要花几周时间来完成的项目，通常会有一个实物作为成果。例如，一名即将完成会计课程的学生可能会被告知：“找一个城里的小企业，帮助它建立起库存、税务或工资账的管理系统。”我有三条建议，以帮你在进行这种项目时最大限度地提高学习效果。

首先，你应根据你想学什么来选择你的项目，而不是你想完成什么。在头脑风暴项目的时候，你必须非常具体，这是非常难的。你可能会想，“我能不能制造一个机器人毛毛虫？”或者“我看到吉米·基梅尔用 Pringles 罐制作火箭的视频”或者“我真的想用 3D 打印机。”你可能会承诺一个可以得到很酷的产品的的项目，但是做起来却很无聊。如果机器人问题最后只是拼凑各个部分呢？或者你对动物福利感兴趣，所以你决定制作一个视频来提高人们对化妆品行业动物测试的认识——结果你发现大部分时间都在学习如何编辑视频。所以在选择项目的时候，你需要考虑过程：这个过程是否强调了你希望学习的元素？

当你考虑你的学习目标的时候，你需要记住，你可能不需要坚持传统的学术知识和技能。（当然，你需要向你的教师咨询这一点。）也许你想学习如何更好地管理你的时间，所以你选择了一个需要经常且严格遵守时间安排的项目，比如创建并维护一个复杂的水生生态环境。或者你以前在与他人合作方面遇到过困难，想提高你的团队合作能力。将这个目标融入你的项目，也许可以通过在本地慈善机构做志愿者来实现。

其次，当你处在项目的中间阶段时，一定要获得反馈。很难自我反馈；你可能能意识到有些地方出了问题，但可能不知道原因何在。我的学生们经常误认为他们需要在结束时提交已完成的项目，而无需在过程中获得任何指导。你应该寻求老师和其他可能帮助你的人的意见。获得反馈的有效性是另一个（如果你需要的话）按计划进行的原因；你不能期望在最后一刻获得反馈，更不用说行动了。（我会在第 10 章中对计划进行更多的讨论。）

第三，当你完成项目后，整理你的思想并进行反思。你应该根据你设定的学习目标进行反思。你学到了你希望学到的东西吗？你学到了你没想到的东西吗？我强烈建议你在反思时做些笔记。当时，你会觉得学到的东西会留在你的心里，但不要指望这样。最好的情况是用这次经历使你的下一个项目成为更好的学习经验；在项目结束后立即进行反思，并记录你的反思可能会产生影响。

In a sentence: Pick your project based on what you want to learn, not the product you want to produce, get feedback along the way, and take the time to reflect on the process afterward.

TIP 17 When the Purpose Is the Activity Itself, Know the Difference Between Experience and Practice

在整句中：选择项目时应基于你想要学习的内容，而不是你想生产的产品；过程中要获取反馈，并在事后花时间反思整个流程。

提示 17：当目标本身就是活动时，了解经验和实践的区别。

Sometimes you must do to learn because the doing is the thing to be learned; learning by listening or reading won't work. Athletics and the playing of musical instruments are obvious examples, but this category also includes:

Writing clearly

Interacting socially

Being a good team member

有时候，你必须通过做来学习，因为“做”就是需要学习的事情；仅通过听或读是无法学习的。体育和演奏乐器是显而易见的例子，但这个类别也包括：

清晰的写作

社交互动

成为一个好的团队成员

Giving a speech

Leading a group

Lots of bits and pieces go into these skills, and for that reason they take years to master. They contrast with the simple skills referenced in tip 15, which can be learned in hours—something such as operating a microtome or taking blood pressure.

Aristotle was right in saying that the doing is vital—a lyre player must play the lyre—but it's not quite as simple as that. I've done plenty of things for decades without improving: driving a car, for example, or baking cakes or typing. How is it possible that I keep doing these things, yet I don't improve? Simple: experience is not the same thing as practice.

发表演讲

领导一个团队

这些技能需要许多细枝末节的部分，因此需要多年才能掌握。它们与在第 15 条建议中引用的简单技能形成鲜明对比，后者只需几个小时就可以学会，比如操作微切机或测量血压。

亚里士多德曾经说过，做事是至关重要的——一位琴师必须弹奏琴——但情况并非如此简单。例如，开车、烘焙蛋糕或打字，这些我做了几十年却没有进步。我是怎么一直做这些事情，却没有进步呢？原因很简单：经验并不等同于实践。

The reason you do an activity will usually determine what you're thinking about while you're doing it, and that determines whether or not you learn while you do it. I drive my car to get to places, and my friend Adam plays guitar for the pleasure of his friends. But these purposes—to achieve a practical result or to give pleasure—do not lead to the improvement of complex skills. When I bake, I'm not trying to get better at baking, because I'm happy enough with the results, so I don't think about trying to improve. And as you now know, what you think about is very important

to what you learn.

Psychologists studying complex skills have developed more specific principles than “Think about it” in order to maximize your improvement:

You must focus on one aspect of the skill at a time. Complex skills have a lot of components, and you can’t think about all of them at once. You can’t practice “writing well,” but you might practice “choosing vivid words” or “varying sentence structure.”

How should you select the one aspect of the skill to work on? For some skills, there’s an accepted order: in learning to play piano, you start with scales and simple time signatures. For skills where there is not an accepted sequence, start with what seems elementary to you but you’re inept at. Work on that until you’re good at it, then work on the next component of your incompetence.

How do you know what you’re inept at? It may be obvious—when playing golf, my tee shots often hook—but it may not be obvious why. Feedback is vital, not just on the outcome but on what you’re doing that makes the outcome unsatisfactory. You might get good enough feedback by observing yourself, but you’ll probably need someone who’s better at the skill to observe you and tell you what you’re doing wrong.

你做一项活动的原因通常会决定你在做的时候在想什么，这也将决定你在做的过程中是否会有所学习。我开车是为了到达目的地，我的朋友亚当弹吉他是为了给他的朋友们带来快乐。但是这些目的——达到实际的结果或带来快乐——并不能带来复杂技能的提高。当我烘焙时，我并不在想要进步，因为我对结果已经很满意，所以我并不想要改进。正如你现在知道的，你在想什么对你学到什么非常重要。

研究复杂技能的心理学家们已经制定了比“想一想”更具体的原则，以便最大限度地提高你的进步：

你必须一次专注于技能的一个方面。复杂的技能有很多的组成部分，你不能同时考虑所有的部分。你不能练习“写作”，但你可能练习“选择生动的词语”或者“变化句子结构”。

你应该如何选择要练习的技能的一个方面呢？对于某些技能，有一个公认的顺序：学习弹钢琴，你从刻苦练习音阶和简单的拍子开始。对于没有公认次序的技能，可以从你觉得基础但自己却不擅长的地方开始。在你擅长它之后，再开始练习下一个你不擅长的部分。

你怎么知道你不擅长什么呢？可能很明显——比如打高尔夫球时，我的开球经常

因为挥杆不当而偏离方向——但为什么会这样可能并不明显。反馈是非常重要的，不仅仅是对结果的反馈，还有你在做什么使结果不满意的反馈。你可能通过自我观察得到足够好的反馈，但你可能需要一个在这项技能上比你更擅长的人来观察你，告诉你你做错了什么。

It's not enough to confirm via feedback "Yup, I'm terrible at that bit." You need to generate and try out new ways to do it. Up until now, when you have noticed yourself using the same word repeatedly in an essay, you have hauled out the thesaurus and picked another word. But people have said that those substitute words feel a bit off. Your strategy to improve your word choice isn't working, so now what will you try?

You have to concentrate on what you're doing. That sounds like throwaway advice, but it's probably the most important difference between intentionally practicing something and simply doing it. Experience enables you to do things without much effort; you've done them so often that you're on autopilot, and it seems as though you're scarcely thinking about the process at all. But when you practice, you focus on one aspect of the skill, try out new methods to do it, and monitor the results. That's hard mental work. In fact, if you don't find practice tiring, you're probably not doing it right.

You need to plan for the long haul. Complex skills take a long time to master. How much practice you will need depends on which skill you're working at and the efficiency of your practice sessions, but you should be thinking in terms of years, not weeks or months.

You may find this list a bit depressing, given that I've just said becoming good at something is really hard work and takes a really long time. I offer some ideas on motivation in chapter 10, but also keep in mind that there's an amazing prize at the end of that long, hard road. And, of course, there's pleasure in achieving smaller goals along the way.

仅靠反馈确认“是的，我在这方面的确很糟糕”是不够的。你需要创建并试验新的方法来做事。到目前为止，当你注意到自己在文章中重复使用相同的单词时，你总是拿出辞海挑选另一个单词。但人们表示那些替代词感觉有点不对劲。你提升单词选择的策略并未起作用，那么现在你将尝试什么？

你需要专注于你正在做的事情。这听起来像是随意的建议，但这可能是有意练习某事和简单做某事之间最重要的区别。经验使你能够轻松地做事；你做得如此频繁，以至于你处于自动驾驶状态，你几乎不用考虑整个过程。但当你练习的时候，你会专注于技能的一个方面，尝试新方法来做，监控结果。这是艰难的脑力工作。实际上，如果你觉得练习不累，那你可能没有做对。

你需要长期规划。复杂的技能需要很长时间才能掌握。你需要多少练习取决于你正在提升哪项技能以及你的练习效率，但你应该按年而不是周或月来考虑。

你可能会觉得这个列表有点压抑，因为我刚刚说过，擅长某事是非常辛苦的工作，需要很长时间。我在第十章中提供了一些关于动力的想法，但也记住那条漫长并艰难的道路尽头有一个惊人的奖励。当然，沿途实现较小目标也会带来快乐。

In a sentence: If the purpose of the activity is to improve your performance of the activity, simply doing it repeatedly isn't enough; improvement requires deliberate practice.

TIP 18 If the Main Point of the Activity Is the Experience, Plan What to Observe

在一句话中：如果活动的目的是提升你在此活动中的表现，仅仅重复做这个活动是不够的；改善需要有意识的练习。

提示 18：如果活动的主要目的是体验，那么应计划要观察什么。

Some activities are irreplaceable for learning. Riding along with police for an overnight shift, visiting an inpatient psychiatric ward, observing a platoon under fire: these are all examples of activities you could read about at length but still would not have much of a feel for until you were part of them. Such experiences can be life-changing.

The depth of the experience gives this sort of learning its appeal, but it can also be the drawback. The environment may be so absorbing that you watch as though you were at a movie. Later, it's hard to say much about what you saw and heard, other than that it was compelling.

You can minimize the chance of that happening by developing an advance plan of what you hope to learn. If you accompany an attorney as she confers with clients who are awaiting trial in jail, you might focus on how she talks to them about the future. If you're shadowing a physician, perhaps

you want to focus on the way she explains complicated medical ideas to people without training.

If a learning experience is part of your schooling, there's likely an assignment coupled with it. You'll be asked to write about your thoughts or answer specific questions about your experiences. If so, the assignment should influence what you observe. Think about the assignment before you go to be sure that you'll be able to complete it, based on your experience.

Often the assignment is vague, something such as "Write a two-page reaction paper describing your experience." In that case, try this: write down your thoughts before you go. What do you expect to see? What do you expect to feel? To what would you compare the place you're to visit? Do you think you'll want to return? What do you think the people will be like? What will they be doing? I still recommend selecting something to focus your observations on—the people, the locale, something—but these predictions will make it easier to shape a reaction paper. You can write about the contrast between what you expected and what you experienced. 有些活动对于学习来说是不可替代的。例如，和警察一起经历深夜的值班，访问住院精神病病房，观察士兵在战火中的行动：这些都是你可以多读书籍却觉得感觉依然不足，一旦你成为其中一员才能真正体验的活动。这些经历可能会改变你的人生。

这种学习的吸引力在于它的深度体验，但这也可能是它的缺点。环境可能会使你完全沉浸其中，就像在看电影一样。后来，你发现很难描述你看到和听到的内容，除了强烈的吸引力。

你可以通过预先制定你希望学习的内容，来尽量降低这种情况的发生。如果你陪同律师去和等待在监狱中接受审判的客户会面，你可能会关注她如何和他们谈论未来。如果你跟随医生，或许你想关注她如何向没有接受过医学培训的人解释复杂的医学想法。

如果一个学习经历是你学业的一部分，那么它可能会伴随着一个任务。你将被要求写下你的想法，或回答关于你经历的具体问题。如果是这样，那么这个任务应该影响你要观察什么。出去之前就想好任务，确保你将根据经验完成它。

任务往往很模糊，类似于“写一篇两页的反应论文，描述你的经验。”在这种情况下，试试这个：在你去之前就写下你的想法。你期望看到什么？你期待会感觉如何？你会把你要访问的地方跟什么比较？你认为你会想要再次返回吗？你认为那里的人会是是什么样子？他们会在做什么？我仍然建议选择某个焦点来观察—人，地方，或其他东西—但这些预测会使你更容易写作反应论文。你可以写关于你的期望和实际体验之间的对比。

In a sentence: If the purpose of the activity is to experience something

because you cannot learn about it any other way, plan for what you will observe, because the experience may be so absorbing that you' ll otherwise take little away from it.

TIP 19 Don' t Forget to Take Notes as You' re Experiencing

在整句中：如果此活动的目的是为了体验某样东西，因为你无法通过其他方式了解它，那么请为你将要观察的事物做好规划，因为这种体验可能会让你如此专注，以至于你可能无法从中获得太多。

提示 19：别忘了在经历过程中做笔记

Unfortunately, the advantage of learning activities — they are interesting!—also makes you less likely to take notes. You may be so engaged in what you' re doing that you forget to jot down your thoughts about it. Even if you do remember that you' re supposed to take notes, doing so may seem unnecessary because the activity seems unforgettable.

More likely, you' ll remember some of what happened and your emotional reaction to it. What you' re likely to forget are the insights you had. If you' re observing a preschool classroom, for example, you' ll remember that a little girl smacked a little boy who accidentally knocked down the block tower she was building, and the double meltdown that followed. You might remember that she was the same little girl who couldn' t wait for everyone else to be given their cookies (as she was supposed to do) before eating her own. What you' ll forget is your thought that those two issues might be connected and your intention to ask your instructor about it. (They are both examples of difficulty controlling impulses.)

Take notes—during the activity if that' s possible or right afterward if not. Remember the memory function of note taking: it will sharpen your focus and force you to verbalize what you' re learning. You will likely be tested on the content you were to learn during the activity or be asked to write about it, so you' ll need to take notes as a reminder of what you learned.

Tips 14 through 18 emphasized that instructors select learning activities for different purposes and that the purpose of each should guide what you direct your attention to during the activity. Note taking during an activity will probably be hurried, so it's wise to write the purpose of the activity at the top of the page. That will help you remember to pay attention to and take notes on that particular aspect of the experience. And if you're worried that you'll forget to take notes, consider setting your phone to vibrate every ten or fifteen minutes as a reminder.

不幸的是，学习活动的优点——它们是有趣的！——也使你更不太可能做笔记。你可能会被你正在做的事情所吸引，以至于忘记记录下你的想法。即使你确实记得你应该做笔记，但做笔记可能因为活动看起来难以忘记而显得多余。

更可能的是，你会记住发生的一些事情和你对它的情感反应。你可能会忘记的是你的见解。例如，如果你正在观察一个幼儿园的教室，你会记得有个小女孩打了一个无意间撞倒她正在堆的积木塔的小男孩，以及随后引发的双方崩溃。你可能会记得她就是那个在每个人都得到饼干（她应该这么做的）之前就开始吃自己饼干的小女孩。你会忘记的是你认为这两个问题可能存在关联的想法，以及你想向你的教练提问的决心。（这两个例子都是控制冲动的困难。）

做笔记——如果可能的话，在活动进行中进行，如果不行，就在活动结束后立即进行。记住做笔记的记忆功能：它会加强你的注意力，并迫使你用语言表达你正在学习的内容。你可能会在活动期间需要学习的内容上被考试，或者被要求写关于它的作文，所以你需要做笔记来提醒你学到了什么。

第 14 条到第 18 条的提示强调教师选择学习活动的不同目的，应当指导你在活动中关注什么。在活动中做笔记可能会很匆忙，因此在纸的顶部写下活动的目的是明智的。这将帮助你记住关注特定方面的体验并做笔记。如果你担心会忘记做笔记，可以考虑将你的手机设置为每 10 分钟或 15 分钟振动一次，以此作为提醒。In a sentence: Taking notes during a learning activity may feel awkward and unnecessary, but you should do it anyway, if not during, then right afterward; the laws of forgetting aren't suspended when you learn this way.

TIP 20 Look at Things from the Instructor's Perspective

在一句话中：在学习活动中做笔记可能会感到不自在和不必要，但是你还是应该做，如果不是在学习活动中，那就是在学习活动后立即做；当你以这种方式学习

时，遗忘的规律并未暂停。

提示 20：从教师的角度看待问题。

Assigning learning activities to be performed in class makes many instructors nervous, for a few reasons. First, we feel that we're surrendering control. When an instructor is lecturing, he knows he's teaching. He's up there imparting information. But when an instructor gives students something to do, it feels more as though he's hoping they will learn something but can't be sure they will. More than that, an instructor often doesn't even know if students are doing the task he set.

Second, it's hard to come up with good activities. Students must find the activity interesting and challenging but not too difficult, and they must learn something from it. Even activities that were successful in one class may not work with another; the students may differ in their knowledge or interests. In truth, most of the time instructors have no idea what happened. We just know that the 9:30 class killed it and for the 2:30 class it was a dud.

Third, instructors feel anxious during activities because they must juggle a lot of demands on their attention. The instructor tries to monitor everyone's progress, help individuals (or groups), keep her eye on the clock, and judge whether things are going as planned or she needs to supplement the activity with an explanation.

As a learner, you will get more out of the activity if the class goes smoothly, and there are ways you can help ensure that that happens beyond the obvious steps of paying attention and making an honest attempt to do the activity.

First, be understanding if the instructor seems preoccupied by whether or not you're doing what you're supposed to be doing. It may seem as though we don't trust you, but actually we're just nervous. We want things to go well, and for many activities it's really hard to tell whether you're engaged or not.

将学习活动分配给课堂进行让许多教师感到紧张，原因有几个。首先，我们感觉我们正在放弃控制。当教师在讲课时，他知道他在教书。他在那里传递信息。但是，当教师给学生一些事情去做时，他更多的感觉是希望他们能学到一些东西，但不确定他们是否真的能学到。更甚者，教师往往甚至不知道学生们是否在完成他设定的任务。

其次，设计好的活动很困难。学生必须觉得这个活动有趣而且充满挑战性，但又不至于太难，他们必须从中学到一些东西。即便是在一个班级里获得成功的活动在另一个班级里也可能不奏效；学生的知识或兴趣可能有所不同。事实上，大多数时候，教师们根本不知道发生了什么。我们只知道 9:30 的班级做的很好，而 2:30 的班级就很差劲。

第三，教师在进行活动时感到焦虑，因为他们需要同时处理很多事情。教师尝试监控每个人的进度，帮助个人（或小组），注意时间，并判断事情是否按计划进行，或者是否需要辅助活动进行解释。

作为一名学生，如果课堂进展顺利，你将从活动中获得更多。而你可以以更多不仅仅是注意力和诚实尝试完成活动的方式来帮助确保这一目标的实现。

首先，如果教师似乎过于担心你是否按照他的指示行事，请理解他们。这可能让人觉得我们不信任你，但实际上我们只是紧张。我们希望一切顺利，在许多活动中，真的很难判断你是否参与其中。

Second, if the instructor forgets to tell you the purpose of the activity, ask politely. Obviously, the phrasing matters. “Hey, what’s the point of this?” sounds hostile, so maybe try “What should we pay special attention to?”

Third, let the instructor know whether or not you feel as though you’re learning. If you’re worried that it will seem as though you’re evaluating the instructor, here’s a simple way to provide this feedback. Tell the instructor (1) what you’ve done (so we know that you’re trying) and (2) what you think it means (so we know that you’re thinking). Something like “I did this, and then I did that, and then this thing here happened. So, based on all that, it seems like I should conclude thus. Does that make sense?” In other words, don’t just say, “I don’t get it.” Let the instructor decide whether or not you are getting it. This feedback is very helpful to us, because if a bunch of people don’t understand, we can provide more explicit guidance or abandon the activity altogether and try something else.

In a sentence: Conducting learning activities makes instructors nervous; you can make an activity run more smoothly if you provide feedback about how it’s going and how the instructor might help you.

首先，如果老师忘记告诉你这个活动的目的，请礼貌地询问。显然，用词很重要。“嘿，这有什么意义？”听起来咄咄逼人，所以你可以试着问“我们应该特别注

意什么？”

其次，让导师知道你是否感觉自己在学习。如果你担心这会让人觉得你在评价导师，这里有一个简单的方式来提供这个反馈。告诉导师(1)你做了什么(这样我们就知道你在努力)和(2)你认为这意味着什么(这样我们就知道你在思考)。比如，“我做了这个，然后我做了那个，然后这里发生了这件事。所以，基于所有这些，我似乎应该得出这个结论。这合理吗？”换句话说，不要只是说，“我不懂。”让导师决定你是否理解。这种反馈对我们非常有帮助，因为如果有很多人不理解，我们可以提供更明确的指导，或者放弃整个活动，尝试其他方法。

简而言之：进行学习活动会让导师紧张；如果你提供关于活动进行情况以及导师如何帮助你的反馈，就可以使活动进行得更顺利。

For Instructors

There' s a consistent theme in this chapter: tell learners what they are supposed to get out of the activities you set for them, and tell them how to get it. That' s the best and easiest way to maximize the value of an activity for your students.

Let' s look at what this advice might include. Earlier, I advised students to “be there,” and part of that includes doing the reading or whatever other preparatory activities you' ve set—but, naturally, students don' t always complete such assignments. You might consider a quiz (or other assessment) that encourages preparation. I make it easy—just show me that you got the main point—and low stakes so it' s not stressful, but if a student never does the readings, the points add up.

When it comes to a scripted activity such as a science lab, it' s especially important to talk with students about the learning goal. If they need not worry about the activity “coming out right,” what should they focus on? They will know they are learning the right thing only if they know the goal and if you tell them how they can know that they are “getting it.”

对教师

本章中有一个一致的主题：告诉学生他们应从你设定的活动中得到什么，以及如何得到它。这是最好也是最简单的方式，可以最大化活动对你的学生的价值。

让我们看看这个建议可能包括什么。之前，我建议学生“到场”，并且其中一部分包括做阅读或者你设定的任何其他准备活动 - 但是，自然，学生并不总是完成这样的任务。你可以考虑一个鼓励准备的测验（或其他评估）。我让它变得简单——只要向我展示你得到了主要观点——并且风险低，所以不压力，但是如果

一个学生从不做阅读，这些分数会累积起来。

当涉及到像科学实验室那样的剧本化活动时，与学生讨论学习目标尤为重要。如果他们不需要担心活动“出成果”，那么他们应该关注什么？他们只有在知道目标，以及你告诉他们如何知道自己“得到了”时，才会知道他们正在学习的东西是正确的。

In addition, be certain that your materials support the learning goal you describe. If the lab directions are unclear or incomplete, it's natural that students will devote a lot of attention to the method; they are trying to figure out what to do. If you want them to think about big-picture stuff, you need to ensure that they either already know the small-picture stuff cold or that the lab directions provide good guidance.

For projects, be aware that the average American student has little or no experience with them. He will be a rank beginner in things such as selecting a project goal, planning and scheduling, responding flexibly to unexpected problems, and so on. You probably ought to view project planning and execution as a large piece of what you're teaching. Students need to be shown how to break a project down into manageable steps, and they'll need feedback on each step.

The same is true of group projects; most students have little experience working in groups and therefore don't know what it takes to be a good group member. Unsurprisingly, then, students typically worry about other students carrying partial responsibility for their grades and fear that they will end up doing other students' work. A popular meme on social media a few years ago showed a pie chart titled "What Group Projects Teach Me," with a tiny sliver of the circle labeled "The Material," another sliver labeled "Group Skills," and the bulk of the circle taken up by "How Much I Hate Other People."

To calm students' fears about grades, I recommend some formal mechanism of accountability. Here's my approach. At the end of the project, students rate one another (and themselves) on (1) the difficulty of the task undertaken, (2) how hard the person tried, and (3) the quality of the work contributed. I tell students that these assessments may change individual grades, and it seems to make students take their responsibilities more seriously.

Activities are great: students find them engaging, and there are things that are best learned through an activity. But don't fall prey to the idea that because students will be doing something (and you won't be lecturing), this sort of instruction means less work for you. In my experience, setting up an activity, guiding it, and assessing its

effectiveness demands much more work than lecturing does.

此外，请确保你的教材支持你描述的学习目标。如果实验室的指示不清晰或不完整，学生自然会花大量的精力去研究方法，他们正在努力弄清楚要做什么。如果你希望他们去思考更大的事物，那么你需要确保他们对细节有深入的理解，或者你的实验室指示提供了好的引导。

对于项目，要知道普通的美国学生对项目基本没有什么经验。他在选择项目目标、计划和调度、灵活应对意外问题等方面都是初学者。你可能应该把项目规划和执行视为你教学的重要部分。学生需要学习如何将项目分解为可管理的步骤，他们需要对每一步都有反馈。

对于团队项目也是如此，大多数学生在团队工作方面的经验很少，因此他们不知道怎样才能成为一个好的团队成员。所以，学生通常会担心其他学生在他们的成绩中负责一部分，并担心他们最后会做其他学生的工作。几年前，社交媒体上流传的一种名为“团队项目教给我什么”的饼状图，其中只有很小的一部分标注为“材料”，另一部分标注为“团队技能”，大部分则被“多么讨厌别人”占据。

为了平息学生对成绩的担忧，我建议采用一些正式的问责机制。这是我的方法：在项目结束时，学生互相评价（包括自我评价）：（1）承担的任务的难度，（2）这个人的努力程度，和（3）所做贡献的质量。我告诉学生，这些评价可能会改变个人的成绩，这似乎让学生更认真地对待他们的责任。

活动是很好的方式：学生会觉得它们很吸引人，有些东西最好通过活动来学习。但是不要陷入这样的想法，即因为学生将会做一些事情（你不会讲课），这种教学方式意味着你的工作会减少。根据我的经验，设置一个活动、引导它并评估其效果，比讲课需要更多的工作。

Summary for Instructors

Tell students what they are to learn from the activity. Tell them what to pay attention to.

If the activity requires preparation, consider a preactivity quiz or other assessment of students' preparation.

给教师的总结

告诉学生他们将从这项活动中学习到什么。告诉他们应该注意什么。

如果活动需要准备，可以考虑进行预备活动的测验或对学生准备情况的其他评估。

If students worry about doing the activity “the right way,” and that’s not what you want them to focus on, give them explicit instructions for the activity and give them a concrete way to know whether the activity is going okay. Or convince them that the outcome doesn’t matter.

If you assign a project, assume that you need to teach students how to manage a project.

If you assign a group project, assume that you need to teach students how to be good group members. Also assume that you need to assuage fears that some students will shirk.

如果学生担心如何正确进行活动，而这并不是你希望他们关注的，那么给他们明确的活动指示，并给他们一个具体的方式来判断活动是否进行得好。或者说服他们结果并不重要。

如果你布置一个项目，请假定你需要教学生如何管理一个项目。

如果你分配一个小组项目，请假定你需要教学生如何成为好的小组成员。同时，也需要假定你需要消除一些学生会逃避责任的恐惧。

CHAPTER 4 How to Reorganize Your Notes

第四章 如何整理你的笔记

A 2007 survey of college students showed that about half agreed with this statement: “My notes are disorganized and hard to understand.” In my experience that probably means that about half of students don’t realize that their notes are disorganized.

I’m only sort of kidding. Even if you carefully follow the advice I offered in the last two chapters, your notes will probably be just okay, because, as I’ve emphasized, taking notes is a difficult mental task. You need to revisit your notes to make them more useful.

2007 年对大学生进行的一项调查显示，大约一半的学生同意这个说法：“我的笔记杂乱无章，难以理解。”根据我的经验，这可能意味着大约一半的学生并没有意识到他们的笔记是混乱的。

我只是开玩笑。即使你仔细遵循我在最后两章提供的建议，你的笔记可能也只是勉强过得去，因为，正如我强调的，记笔记是一项困难的心理任务。你需要重新查看你的笔记，使它们更有用。

Remember that in chapter 1 I explained that listeners are likely to notice novel facts and definitions as things they should record in their notes. They also get broad themes because they are repeated, but they often miss the connections among facts and ideas.

In chapter 1 I also explained why good organization is so important to understanding, so it's obvious that one reason to revisit your notes is to ensure that you understand everything. But there's another important consequence of good organization: it makes content much easier to remember.

Good Organization Helps Memory

请记住，在第一章中，我解释了听众往往会注意到新奇的事实和定义，认为这些是他们应该在笔记中记录的内容。他们也会得到广泛的主题，因为这些主题被重复了，但他们往往会遗漏掉事实和观点之间的联系。

在第一章中，我还解释了良好的组织对于理解为什么如此重要，所以，重新查看你的笔记的一个原因显然是为了确保你理解了一切。但良好的组织还有另一个重要的结果：它使内容更容易记住。

良好的组织有助于记忆

A classic experiment illustrates the importance of good organization to memory. A group of subjects was told that they would be shown twenty-six words and should try to remember them. Half of the participants saw the words logically organized as a tree diagram, similar to the figure below.

The other half of the subjects saw the identical set of words, also arranged in a tree diagram, but their positions in the diagram were

randomized so that the organization made no sense.

Everyone had been told to remember the words and not to worry about their organization. Nevertheless, people seeing the organized version remembered 65 percent of the words, and those seeing the unorganized version remembered just 18 percent. Organization creates links among the bits and pieces of what you're trying to remember.

Here's another example. Suppose I asked you to remember this list of words: 一个经典的实验说明了良好组织对记忆的重要性。有一组受试者被告知他们将会看到二十六个单词，应该尽量记住它们。一半的参与者看到的单词以逻辑清晰的方式组成了一颗树形图，与下面的图形相似。

另一半的受试者看到的是完全相同的单词集，也是按照树状图排列的，但是他们在图中的位置被随机化，使得组织结构没什么意义。

所有人都被告知记住单词，不用担心它们的组织。然而，看到有组织版图的人记住了 65% 的单词，而看到无组织版图的人只记住了 18% 的单词。组织会在你试图记住的各种信息碎片之间建立链接。

这里还有另一个例子。假设我让你记住这个单词列表。

Apple Bears Dogs First Leaves Male Next Phone Pilots Smoke

The task would be much easier if you organized them into a sentence, even one that doesn't make much sense.

First, dogs smoke apple leaves; next, pilots phone male bears.

首先，狗烟烟苹果叶子；接着，飞行员给雄性熊打电话。

If I can remember "pilots," that's a cue to remember what the pilots were doing: phoning. And if I can remember that they were phoning, that's a cue to remember who they were phoning: bears. And so on.

If reorganizing your notes after class is such a good idea, how come no one does it? In part because evolution has left you with a bias about what is worthy of attention. The brain thinks you should attend to novel things. Familiar things are safe—if they have not been a threat in the past, they are unlikely to pose a threat in the future. Thus, we see no need to pay attention to the familiar. We know what the familiar thing is, we know

it won't do anything to us, and therefore your brain wants to move on. That's why you quickly grow impatient if you look over the notes that you took at a presentation earlier the same day. "Yes, yes," you think, "I know all this." Your brain tells you to seek new information. But this is a case when learners would benefit from disregarding the brain's impulse to seek out what is novel.

WHEN REORGANIZING YOUR NOTES

What your brain will do: It will conclude that there is no point in reviewing and reorganizing your notes because the content seems familiar.

How to outsmart your brain: Ignore your brain; you know that both the information and the organization are incomplete.

如果我能记住“飞行员”，那么这将提示我记住飞行员在做什么：打电话。如果我能记住他们在打电话，那就能提示我记住他们在给谁打电话：熊。等等。

如果课后整理笔记这么好，为什么没有人这么做呢？部分原因是因为进化使你对值得关注的事物有所偏见。大脑认为你应该关注新的事物。熟悉的事物是安全的——如果它们过去没有构成威胁，那么在未来也不太可能构成威胁。因此，我们觉得没有必要关注熟悉的事物。我们知道熟悉的事物是什么，我们知道它不会对我们造成任何伤害，因此你的大脑想要继续寻找新的事物。这就是为什么你如果快速翻看一天中早些时候在一场演讲上做的笔记，你会很快感到不耐烦。“是的，是的”，你会想，“我都知道”。你的大脑告诉你去寻找新的信息。但这是学习者从中受益的一个情况，应该忽视大脑寻找新鲜事物的冲动。

当你整理笔记时：

你的大脑会做什么：因为内容看起来熟悉，它会得出没有必要复习和整理笔记的结论。

如何骗过你的大脑：忽视你的大脑；你知道信息和组织都是不完整的。

People often see reorganizing their notes as a waste of time; it seems like a prelude to the real work of studying. But reorganizing your notes doesn't just make it easier to study; the process of reorganizing notes is itself studying. Reorganizing forces you to manipulate information and think about meaning, and, as you saw in chapter 3, you remember what you think about.

But how exactly are you supposed to reorganize your notes? Let's take a look.

人们经常将整理笔记视为浪费时间，它看起来像学习的前奏曲。但是，重新整理你的笔记不仅使学习变得更容易；整理笔记的过程本身就是学习。整理迫使你操纵信息，思考意义，正如你在第三章中看到的，你会记住你思考的内容。

但是，你应该如何重新整理你的笔记呢？让我们来看看。

TIP 21 Find Connections Among Elements of Your Notes

In chapter 1 I emphasized the likelihood that you' ll miss the deep structure of a lecture when you listen to it; ideas that have some connection (B was caused by A or B is an example of A) may be separated in time, and you may miss their relationship even if you are listening for such connections. In this chapter I' ve pointed out that appreciating the organization of the material not only is essential to fully understanding it but also aids memory. You want to be sure that you have grasped all aspects of the material' s organization. Explicitly re-creating the full logical structure of the lecture is the best way to do that.

Typically, this structure forms a hierarchy: one main point of the lecture with three to seven subpoints, each with supporting evidence. For example, you might attend a lecture with the theme “The Myth of the American West Arose in the Late Nineteenth Century” with three main subpoints, each corresponding to a false belief held by American easterners: (1) The West was seen as a foreign country, even though it had extensive communication and commercial ties with the East; (2) the population of the West was thought to be primarily white, even though immigration was very diverse; and (3) easterners thought the West was built by rugged individuals without support from cities, electricity, or industry, when all three actually played important roles in changing the West. Each subpoint has examples, references to conclusions drawn from other lectures, explanations, and so on.

提示 21：寻找你笔记元素之间的联系

在第一章中，我强调了你在听讲时可能会错过讲座的深层结构的可能性；有一些连结的想法（B是由A导致的，或B是A的一个例子）可能在时间上被分离，即使你在寻找这样的连结，你也可能错过它们的关系。在这一章中，我指出了欣赏材料的组织结构不仅对于完全理解它是必要的，而且也能帮助记忆。你希望确保你已经把握了所有材料组织的方面。明确地重新建立讲座完整的逻辑结构是最好的方法。

这种结构通常形成一个层次结构：一个主要的讲座点和三到七个子点，每个子点都有支持的证据。例如，你可能参加一个以“19世纪晚期的美国西部神话”为主题的讲座，这个讲座有三个主要的子点，每个子点都对应美国东部人所抱有的一个错误的信念：（1）西部被视为一个外国，尽管它与东部有广泛的通信和商业联系；（2）人们认为西部的人口主要是白人，尽管移民非常多样化；（3）东部人认为西部是由坚韧的个人无需城市、电力或工业的支持而建立的，而实际上这三者都在改变西部起到了重要的作用。每个子点都有例子，对其他讲座得出的结论的引用，解释等。

It's a good idea to draw a tree diagram rather than just think about the organization. Trying to see it in your mind's eye will be overwhelming—there's too much information, so you'll forget facts and confuse yourself. Commit the idea to paper or draw it on a computer screen using boxes to represent statements such as “The myth of the American West arose in the late nineteenth century.” Use lines to connect related statements. For example, the statement “The population of the West was thought to be primarily white” is connected to the statement “The myth of the American West arose in the late nineteenth century” because it's an example of that broader theme.

I encourage you to think about two things as you're trying to figure out the boxes and the lines that should make up this sort of hierarchy. First, the statements in the boxes should be specific. For example, the theme of the day is not “The American West”; it's much more specific. People tend to fall back on generalities when they learn something new, partly because, being general, they are safer. For example, if I ask my students to write an outline for a paper, they often make the first entry of the outline “Introduction.” In my experience, students think that generalities sound more academic, more learned. Actually, the opposite is true. Your instructor is going to present the content with a particular point of view. You won't get a sequence of disconnected facts but an argument that builds to a conclusion.

Second, when you build the hierarchy, be specific about why you are connecting statements. I suggest you label the lines linking the boxes; typical links would be:

Provides evidence

Example

将信息绘制成树状图而不只是思考其组织结构是个好主意。只试图用你的思维眼睛去看待它会很令人不知所措 - 信息太多，你会遗忘事实并混淆自己。将这个想法记在纸上，或者使用方框代表诸如“美国西部神话在 19 世纪晚期兴起”这样的陈述在电脑屏幕上绘制它。使用线条连接相关的陈述。例如，该陈述“西部人口被认为主要是白人”与“美国西部神话在十九世纪晚期兴起”的陈述相连，因为它是更广泛主题的例证。

我鼓励你在试图找出应构成此类层次结构的方框和线条时考虑两件事。首先，方框中的陈述应具体。例如，今天的主题并不是“美国西部”；实际上是更具体的。当人们刚刚学到新知识时，他们容易依赖总括的陈述，部分原因是因为这些陈述相对来说比较安全。例如，我要求我的学生为论文写个大纲，他们通常会把大纲的第一条是“简介”。根据我的经验，学生们认为泛化的陈述听起来更学术化，更有学问。实际上，恰恰相反。你的讲师会从特定的角度来呈现内容。你不会得到一系列无关的事实，而是一个通向结论的论点。

其次，在构建等级结构时，要明确你为何连接这些陈述。我建议你标记连接方框的线条；典型的连接可能会是：

提供证据

示例

Elaboration

Cause

Logical implication

Reorganizing your notes provides still another advantage. It can be hard to see connections between an instructor's lectures and the readings. As I mentioned in chapter 1, the instructor usually tries to straddle a line between offering completely new content in a lecture (which can confuse students) and restating what's in the readings (which strikes students as pointless and boring). Hence, there is often some overlap, but only some. With the reorganization of your notes completed, you'll have a bird's-eye view of the lecture; that's the time to consider how the lecture relates to the readings. (I'll discuss how to get the most from readings—including how to take notes on readings—in chapter 5.)

整理你的笔记还有另一个优势。课堂讲授与阅读资料之间的联系有时候可能难以看清。正如我在第一章中提及的，教师通常会尝试在提供全新的讲座内容（可能会让学生感到困惑）与重复阅读内容之间找到平衡（这可能会让学生觉得无意义且无聊）。因此，他们往往会有一些重叠，但只是一些。当你完成笔记的重整，你将从鸟瞰的角度看待讲座；这时，你可以考虑讲座如何与阅读资料相关。（我将在第 5 章中讨论如何从阅读中获取最大的效益，包括如何记阅读笔记。）

In a sentence: You' ve tried to understand how the ideas of a lecture were organized as you took notes, but that effort was probably incomplete; after the lecture, draw a diagram that illustrates how the main ideas of the lecture related to one another.

TIP 22 Spot Holes in Your Notes

在一句话中：你尝试着理解讲座的思想是如何组织的，当你做笔记时，但这种努力可能是不完整的；讲座结束后，画出一张图表，说明讲座的主要思想是如何相互关联的。

提示 22：寻找你笔记中的漏洞

After you' ve built a tree diagram representing the logic of the lecture, you' re in a better position to identify what' s missing from your notes. You' re obviously better off trying to recall this missing information sooner rather than later. Ideally, then, you' ll do this reorganization of your notes the same day that you took them.

The missing information that you ought to flag falls into one of two categories: facts and connections. You will already have jotted notes to yourself during the lecture when you missed something the lecturer said or you didn' t understand the point of a long explanation. You will not have noticed everything you missed, but it' s a start.

Building your tree diagram of the lecture should make other missing information evident. For example, maybe you have a fact recorded in your notes and you have no idea why it was mentioned—it' s marooned, disconnected from everything else. There, in a lecture on the book of Elijah in the Bible, is the definition of a wadi, along with an explanation

of how wadis form. You dutifully wrote it down, but you don't know why the instructor brought it up.

In addition to missing connections, look for missing content. If your notes say, "5 types of map usually used 4 surveying," you'd better have five listed, not four. Look, too, for the number of supporting points for generalizations the instructor made. Suppose your notes say, "Fall of Roman Empire often dated 476 because emperor gone—FALSE. Cult, econ life cont." Okay, so cultural and economic life continued after the emperor was overthrown. But that's just one bit of evidence that dating 476 as the fall is inaccurate. You should be suspicious that your notes list only one source of support for such a broad statement; it is likely that the lecturer offered more.

Write questions about your notes on Post-its and place them so they protrude from the pages. You'll recall that I suggested you write on every other page of your notebook (see tip 10). The purpose is for you to have plenty of blank space to add missing information close to where it belongs in the lecture—information you may have once you answer the queries on your Post-its.

在你构建了代表演讲逻辑的树状图后，你就更有可能找出笔记中缺失的内容。尽快回忆这些遗漏的信息显然更为有利。理想的情况是，你在抄写那天就对笔记进行整理。

你需要标记的缺失信息可以归为两类：事实和联系。在听讲时，如果错过了讲师所说的话或没理解一条长解释的要点，你应该已经潦草地写下几个提醒自己的笔记。你可能没注意到错过的所有内容，但这是一个开始。

构建演讲的树状图应该能明显看出其他缺失的信息。比如，你可能在笔记中记录了一个事实，却不知道它为何会被提及——它就像失联了，与其他所有事物无关。例如，在讲到《圣经》中以利亚书的一堂课上，有对瓦地的定义，还有对瓦地形成方式的解释。你认真的写下了，但你不知道为何老师要提及这个。

除了找出缺失的联系，还要找出缺失的内容。如果你的笔记写着“通常用于测量的 5 种地图类型”，你最好是列出了五种，而不是四种。也要注意讲师给出的概括所支持的点的数量。假设你的笔记写道，“罗马帝国的垮台通常定在 476 年因为皇帝离开——错。文化，经济生活继续。”好吧，所以在皇帝被推翻后，文化和经济生活还在继续。但这只是一个证据，说明将 476 年作为罗马帝国灭亡的年份是不准确的。你应该怀疑你的笔记只列出了对如此大的观点的一个支持来源；讲师可能提供了更多。

在便签上写下关于你笔记的问题，并把它们放在突出在页面上的位置。你会记得我建议你在笔记本的每一页（参见提示 10）上都写下来。这样做的目的是让你有足够的空白空间，在接近它在演讲中应该出现的地方，添加缺失的信息——

旦你回答了你贴纸上的问题，你可能会得到这些信息。

If you took digital notes, you can type your questions directly in your notes, right where you noticed the missing information. To make the questions easy to find later, add the letters “TK” at the end of each question, then you can simply search the file for “TK.” (“TK” represents “to come” but is also used because the letter sequence appears in very few words and thus is easy to search for. Pick another letter pair if you take a course on the Atkins diet.)

How do you get answers to these questions? Assigned readings may be one source, but the instructor may mention details that don’t appear in the readings. Be careful with sources not assigned by the instructor, because there may not be universal agreement on the “facts” you’re looking for. The definition of psoas muscle will be the same in most sources, but the answers to “Why is 476 the wrong date for the fall of the Roman Empire?” will not.

Your next step should be to consult with other people who took notes on the lecture. If you’re concerned about how to reach out to fellow students, keep reading.

In a sentence: Use the lecture organization you’ve derived to identify what your notes are missing, both facts and connections.

如果你是用电子方式做笔记，你可以直接在你发现缺失信息的地方打上你的问题。为了方便以后找到这些问题，可以在每个问题的末尾添加“TK”这两个字母，然后你可以通过搜索文档中的“TK”来找到这些问题。（“TK”代表“to come”，但也可以方便搜索，因为这个字母组合在少数单词中会出现。如果你正在学阿特金斯饮食法，可以选择其他的字母组合。

如何得到这些问题的答案？指定的阅读材料可能是一个来源，但是讲师可能会提到一些阅读材料中没有提到的细节。在查阅非指定的资源时要谨慎，因为你要找的“事实”可能并没有普遍的共识。例如，关于髂腰肌的定义在大多数材料中是相同的，但对于“为什么公元 476 年并非罗马帝国的衰落之年？”这个问题的答案却可能会有所不同。

你接下来应该做的是咨询其他参加过讲座的人的笔记。如果你不知道如何与同学接触，就继续阅读吧。

简单来说：利用你获得的讲座组织方式，找出你的笔记中缺少的事实和关联。

TIP 23 Consider Note Taking to Be a Team Sport

I expect it's obvious how a study group can be useful to improve your notes: you can compare the organization that you derived (see tip 21) to the ones that others came up with and decide whether yours can be improved. You can also fill factual gaps in your notes that you've identified (see tip 22). Each lecture attendee may miss 50 percent of the content, but each person will miss different things. Here are a few tips on organizing a study group.

提示 23: 将记笔记视为团队运动

我想你应该很明白，学习小组怎样能提高你的笔记效果：你可以将你的思考组织（参见建议 21）与其他人的进行比较，看看你的是否需要改进。你也可以填充你的笔记中已经发现的实信息的缺漏（参见建议 22）。每个听课的人可能会遗漏掉 50% 的内容，但每个人漏掉的内容会不同。以下是一些组织学习小组的建议。Meeting weekly typically makes sense, as one week's worth of lectures is usually a good volume of notes to tackle in a single session. In addition, if you try to meet on an as-needed basis, you'll probably struggle to find a meeting time.

Three to six people is a good group size. You want some variety in perspectives, but with too many participants you might observe what psychologists call "diffusion of responsibility." That's when people don't do what they're supposed to because, the group being large, each person figures that someone else will meet the responsibility.

Identifying potential group members is easy if you know some people in the class. If you don't, you have a few options. You can, of course, simply approach people you meet, or there may be an electronic blackboard for the class on which you can post messages to solicit interest in a study group. You can also ask the instructor to make an announcement that people interested in forming a group should stay for a few minutes after class to organize one.

Identifying people you'll be happy to work with is another matter, and of course some people are better group members than others. When it comes to group members not following through (not showing up, failing to prepare,

or ignoring group communications), laziness is much worse than incompetence. People will forgive others when they don't contribute much if it seems that they are trying hard. But if they simply seem not to care, there's resentment.

The best way to handle this issue is to address members' responsibilities at the start. Set some basic ground rules concerning expectations: how often you will meet, what sort of preparation everyone is supposed to do, if it's okay to use your phone during sessions, who will lead sessions, and so on. If you have this conversation the first time the group meets, one or two people may roll their eyes, thinking, "This seems a little intense." Maybe it is (and certainly, you can be pleasant about these issues), but people can have widely different expectations about how such a group functions, and making expectations clear from the start will make the group's work much smoother.

每周开会通常是有意义的，因为一个星期的讲座通常是一个好的笔记量，可在一次会议中处理。此外，如果你试图按需要的基础开会，你可能会发现很难找到一个会议时间。

三到六个人是一个好的小组规模。你希望有一些观点的多样性，但是如果参与者太多，你可能会观察到心理学家所称的“责任的扩散”。那是当人们不去做他们应该做的，因为小组很大，每个人都认为其他人会承担责任。

如果你在课堂上认识一些人，那么识别潜在的小组成员就很容易。如果你不认识，你有几个选择。你当然可以简单地接触到你遇到的人，或者课堂上可能有一个电子黑板，你可以在上面发布消息，吸引对学习小组感兴趣的人。你也可以让教师宣布对组建小组感兴趣的人应在课后留下几分钟进行组织。

确定你愿意一起工作的人是另一回事，当然，有些人更适合作为小组成员。在小组成员未能跟进（未出席、未准备或忽视小组通信）的问题上，懒惰比无能更糟糕。如果他们似乎在努力，人们会原谅他们即使他们没有做出很多贡献。但是，如果他们似乎根本不在乎，就会有怨恨。

处理这个问题的最好方法是在开始时讨论成员的责任。设定一些基本的期望规则：你们将多久见一次面，每个人应该做何种准备，会议期间是否可以使用手机，谁将领导会议，等等。如果你在小组第一次会议时进行这个讨论，一两个人可能会翻白眼，认为，“这看起来有点激进。”也许是（当然，你可以对这些问题持愉快的态度），但人们对这样一个团体如何运作可能有很大的期望差异，从一开始就明确期望会使小组的工作更加顺畅。

I've said that missing a lecture but "getting the notes" is no substitute for being there. The notes you're reading are memory cues that someone else created for their own use. But your instinct that someone else's notes are better than nothing is absolutely right. And getting notes from

three people is better than getting them from one.

That said, don't make this a set arrangement. In other words, don't divide assigned work among group members, who then share their efforts. Think of your team's efforts as an added benefit that will improve your thinking, not as a way to reduce your workload. Creating outlines is not busywork that enables the real work of studying; it is studying—it's a cognitive task that will help you understand and remember course content. Getting an outline from someone else does not require mental effort from you and will not yield the same mental benefit.

In a sentence: Join or organize a study group to help fill gaps in your notes and fine-tune their organization.

我曾说过，错过一次讲座但“获取笔记”无法代替亲自在场。你正在阅读的笔记是别人为自己使用而创建的记忆提示。但是，你认为别人的笔记总比没有好的直觉绝对正确。而且，从三个人那里获取笔记比从一个人那里更好。

也就是说，不要让这成为固定的安排。换句话说，不要在组员之间分配指定的工作，然后分享他们的努力。将你的团队的努力视为一种额外的好处，可以提高你的思考能力，而不是减轻你的工作负担。制作大纲不是为学习创造真正工作的繁忙工作，而是学习——这是一个能帮助你理解和记住课程内容的认知任务。从别人那里获取大纲对你来说不需要付出心理努力，也不会产生同样的心理好处。

总之一句话：加入或组织一个学习小组，以帮助填补你笔记中的空白并精细调整他们的组织。

TIP 24 When Getting Help with Your Notes from the Instructor, Ask Focused Questions

I've suggested that you not only show up to lectures, listen carefully, and work hard to take good notes but also reorganize your notes (the same day if possible) and review and further refine them with others. Despite all of this effort, you might still find yourself unclear on some points. That's the time to talk to the instructor. This prospect makes some students nervous, and it's true that instructors vary in how welcoming they are. We're all required to say something like "Come see me with questions anytime!" but some instructors may as well have a sign hanging

around their necks saying “Leave me alone.” Here’s how to placate a grumpy instructor if you need to ask questions.

The key is preparation. Suppose I just spent forty-five minutes lecturing about the retina, and you come to my office and say, “So... the retina. I really didn’t get that.” That’s kind of depressing for me, because I don’t get the impression that you’ve done anything to try to understand. Focused questions show that you’re doing your part to learn. Be prepared to (briefly) tell the instructor what you did understand and what pieces are missing for you. Remember I said that if someone in your study group is struggling, you’re fine with it so long as you think they are trying? Instructors are the same and probably more so.

Students sometimes bring questions to instructors not because they really need help but because they think it makes a good impression—they’re showing interest! Others with the same motive pop in just to chat about topics unrelated to the course or to offer some flattery about how fascinating we make the content.

提示 24：当你在找教师寻求笔记方面的帮助时，提出有针对性的问题

我曾经建议，你不仅要去听讲座，仔细听讲，努力做好笔记，而且还要重新整理你的笔记（如果可能的话，当天就做），和其他人一起回顾和进一步完善它们。尽管你付出了所有这些努力，但你可能还是会对一些点不太清楚。那就是去找教师谈话的时候。这个前景让一些学生感到紧张，确实，教师对此的接纳程度各不相同。我们都必须说一些像“有任何问题随时来找我！”这样的话，但有些教师可能在脖子上挂着一个“别打扰我”的牌子。如果你需要提问，这里有如何安抚一个不爽的教师。

关键是准备。假设我刚讲了四十五分钟的视网膜，然后你来到我的办公室，说，“所以..... 视网膜。我真的不明白。”这对我来说有点沮丧，因为我没有感觉到你有任何努力去理解。有针对性的问题显示出你正在尽自己的努力去学习。准备好（简短地）告诉教师你理解了什么，以及你缺少哪些信息。还记得我说如果你的学习小组中有人在挣扎，只要你认为他们在努力就没问题吗？教师也是一样，可能更甚。

有时候，学生提问并不是因为他们真的需要帮助，而是因为他们认为这会留下好印象——他们表现出了兴趣！其他有着同样动机的人会只是过来闲聊与课程无关的话题，或者给我们敷一些关于我们如何让内容变得有趣的奉承。”

Students aren't completely wrong; it's useful if the instructor likes you. But if you're going to suck up, suck up by being a model student. Be the student carrying a hyperorganized notebook with a dozen Post-it notes peeping out, each bearing a question about the course content. Or come with a set of questions about career opportunities in our field. Even if we suspect that you're playing a part, at least you're playing the right part. We're not going to raise your grade just because we like you, but if something goes wrong and you need a deadline extended, or if you later want a letter of reference, it helps if the main thing we remember about you is that you were earnest about the right things.

In a sentence: If you feel shy about asking the instructor for help in filling your note-taking gaps, come prepared to describe what you did understand; good preparation is the surest way to earn an instructor's goodwill.

TIP 25 OPTIONAL: Make Your Notes Look Good

学生们并不完全错误，如果讲师喜欢你，那是有益的。但是如果你打算去奉承，那就通过成为一个模范学生来奉承。成为那个带着一个超级有组织的笔记本的学生，笔记本上探出了十几个便利贴，每个便利贴上都写着关于课程内容的问题。或者带一套关于我们领域职业机会的问题。即便我们怀疑你在扮演一个角色，至少你在扮演正确的角色。我们不会因为喜欢你就提高你的分数，但是如果出了问题你需要延长截止日期，或者你以后想要一封推荐信，如果我们对你的主要记忆是你对正确的事情充满热忱，那会有所帮助。

简言之：如果你对请教讲师来填补你的笔记空白感到害羞，那就做好准备来描述你所理解的内容；良好的准备是赢得讲师善意的最稳妥的方式。

提示 25：让你的笔记看起来好看

Based on social media posts, the most common way that students review their notes is rewriting or embellishing them to make them more attractive. Search YouTube, Tumblr, or Pinterest, and you'll find thousands of resources (some of them with millions of views) devoted to techniques to make class notes pretty. Gorgeous fonts, page borders, fancy section

dividers, boxes you can draw around headers—the energy and creativity people put into the task is impressive. But does it help you learn?

From a cognitive point of view, we'd predict that the act of copying itself does nothing to improve your understanding or memory. In chapter 2 I mentioned that trying to write notes that capture a lecture word for word can lead to shallow understanding; the words go straight from ear to pen, so to speak. The same can be true when you copy your notes; you rewrite the words without thinking about what they mean, whereas it's thinking about meaning that helps memory. My students who like to copy their notes tell me they think it helps their memory, and that's probably because they are thinking about the meaning as they copy. But copying is less efficient than the methods of learning we'll examine in chapter 6.

You might couple the copying/beautifying of your notes with the reorganization that I advocated in tip 21. I think the people who enjoy this process would argue that having attractive notes makes them more eager (or at least more willing) to study later. Again, I know of no research on the matter. So if you feel that drawing borders and boxes and using multicolored headings is helping you, I'm not going to deny it. Just be aware that simply rewriting won't help your memory or understanding; it's other cognitive processes that you're engaging while you copy that are providing the cognitive benefit, and there are more straightforward, reliable ways of engaging those cognitive processes.

根据社交媒体的帖子,学生复习笔记的最常见方式是重写或装饰他们的笔记以使它们更具吸引力。搜索 YouTube, Tumblr 或 Pinterest, 你会发现数以千计的资源(其中一些浏览量达到数百万)致力于美化课堂笔记的技巧。华丽的字体,页边框,花里胡哨的章节分隔线,可以画在标题周围的框——人们在这个任务上投入的精力和创造力令人印象深刻。但这真的能帮助你学习吗?

从认知的角度来看,我们会预测,复制的行为本身并无法提高你的理解能力或记忆力。在第 2 章中,我曾提到试图把讲座的内容逐字逐句地记下来可能会导致理解浅显;这些词直接从耳朵到笔,可以这么说。复制笔记时也可能出现同样的问题;你在重写这些词时没有考虑它们的含义,而考虑含义反而有助于记忆。喜欢复制笔记的学生告诉我,他们认为这样做有助于他们的记忆,这可能是因为他们在复制的时候在思考这些词的含义。但复制的效率比我们在第 6 章将要探讨的学习方法要低。

你可能会把复制/美化你的笔记与我在第 21 个提示中提倡的重组结合起来。我认为喜欢这个过程的人会坚称,有吸引力的笔记会让他们更愿意(或者至少更乐意)之后去学习。再次强调,我并不知道有关这个问题的任何研究。所以如果你觉得绘制边框,使用多色标题等方式对你有所帮助,我不会否认。只是要知道,单纯地重写并不能帮助你的记忆或理解;你在复制时参与的其他认知过程才能提供

认知上的益处，有更直接，可靠的方式来参与这些认知过程。

In a sentence: Beautifying your notes won't help with your comprehension or memory, but if you enjoy the process or the result, there's certainly no harm in doing so.

For Instructors

You know that your students' notes aren't perfect, but you also know that they will be reluctant to review them as I suggest. How can you help? 在一句话中：美化你的笔记并不会帮助你理解或记忆，但如果你喜欢这个过程或结果，那么做就完全没有害处。

对教师

你知道你的学生的笔记并不完美，但你也知道他们将会不情愿按照我建议的方式去复习他们的课堂笔记。你该如何帮助他们？

One obvious measure is to alert students to the problem. Most don't realize how spotty their notes are, so spend fifteen minutes of one class meeting outlining the problem. You might start with a low-stakes pop quiz during which students are allowed to access their notes and where all the questions come from a single lecture. Once students see that their notes are incomplete, describe the methods in this chapter by which they can address the issue. You could also consider having frequent open-notes quizzes to motivate students to keep their notes current and complete.

You can facilitate the creation of study groups by announcing during class that interested students might stay a few minutes after the lecture for this purpose. That's easy for you, but leaves out students who can't stay or who missed class that day. Emailing everyone is a more reliable method; you can either collect the names of those interested and then email the list to them or use a website or app (for example, GroupMe) that serves this purpose.

But if you know your students' notes are incomplete, shouldn't you do something to ensure that they can learn all of the content? I don't think there is a single right answer to this question; each option has advantages and disadvantages, as listed in the table below.

Possible Solution

Advantage

一个明显的解决办法是向学生们警告这个问题。大多数学生并没有意识到他们的笔记是多么的不完整，所以请在一次课堂会议中花费十五分钟来概述这个问题。你可以开始一个低风险的突击测验，学生在此过程中可以查阅他们的笔记，所有的问题都来自一个单纯的讲座。一旦学生们看到他们的笔记是不完整的，就描述出本章中他们可以用来解决问题的方法。你还可以考虑经常进行开放笔记的小测验，以激励学生保持他们的笔记的更新和完整。

你可以通过在课堂上宣布有兴趣的学生在讲座后可能需要多待几分钟来创建学习小组。这对你来说是容易的，但却排除了那些不能留下或那天错过课程的学生。向每个人发送电子邮件是一种更可靠的方法；你可以收集那些有兴趣的人的名字，然后将名单通过电子邮件发送给他们，或者使用一个网站或应用程序（例如，GroupMe）来达到这个目的。

但是，如果你知道你的学生的笔记是不完整的，你不应该做些什么以确保他们能学到所有的内容吗？我认为这个问题没有一个唯一正确的答案；每个选项都有优点和缺点，如下表所示。

可能的解决方案

优点

Disadvantage

Do nothing.

Is easy for you. In truth, most schools don' t expect you to support note taking, because most people don' t realize it' s a problem.

Some students don' t learn as much as they might. Gives an edge to students who write fast and to those who start the class already familiar with some of the content.

缺点

什么都不做。

对你来说很简单。实际上，大多数学校并不指望你支持做笔记，因为大多数人并不意识到这是个问题。

有些学生没有学到他们可能会学到的东西。对于动笔速度快的学生和已经对课程内容有一定了解的学生具有优势。

If recitation/review sessions exist, use them for clarification and the answering of questions.

Is easy for you. You get feedback from recitation section leaders about students' confusion.

Recitation sessions could be put to other uses, e.g., discussion or application of ideas.

如果存在复习/讨论课程，请利用它们进行澄清和回答问题。

这对你来说是容易的。你可以从复习课程的领导者那里获得对学生困惑的反馈。

复习课程可以被用于其他目的，比如讨论或应用想法。

Count on a textbook or other readings to fill gaps.

Students feel confident that they have a backup in written materials.

Because lectures and reading overlap, motivated students may be bored in class, and unmotivated students may skip.

Answer questions about content via an online forum.
依靠教科书或其他读物来填补空白。

学生们对于拥有书面材料作为备份感到自信。

因为讲座和阅读材料有重叠部分，因此有动力的学生可能会在课堂上觉得无聊，而没有动力的学生可能会选择跳过。

通过在线论坛回答关于内容的问题。

Provides feedback to you about students' understanding. Ensures that students get the content right.

Is time-consuming for you.

If students' notes are so incomplete, perhaps we shouldn't plan for them to learn in classroom situations where they get just one shot at understanding. Maybe the bulk of learning should happen via reading or video, which students can review as often as they wish. Wouldn't that greatly reduce or eliminate holes in students' notes (and their understanding)?

A lot of college instructors got a crash introduction to that method during the COVID-19 pandemic. We had to record lectures because many of our students were in different time zones, so lecturing live was impractical. A few students thrived under the arrangement, but most had a lot of trouble motivating themselves to watch the videos.

为您提供反馈，了解学生对内容的理解情况。确保学生准确掌握课程内容。

这对您来说将会耗费大量时间。

如果学生的笔记如此不完整，也许我们不应该计划让他们在只有一次理解机会的课堂情况下学习。或许大部分的学习应该通过阅读或视频进行，学生可以随意回顾。这不是能大大减少甚至消除学生笔记中的空白（以及他们的理解）吗？

大量的大学教师在新冠病毒大流行期间对这种方法有了深入的了解。我们不得不记录讲座，因为我们的许多学生处于不同的时区，实时讲课是不切实际的。少数学生在这种安排下繁荣发展，但大多数学生在激励自己观看视频方面存在很多困难。

Naturally, this was not a fair test of the method, because the students were under enormous stress during the pandemic. But it wasn't the first time recorded lectures had been tried. There was a big push for this method around 2010. At that time, the argument was that if students learned the basic content at home, via video, they could work problems or have a discussion in class, when the professor was there to help. But then, as during the pandemic of 2020 - 2021, a lot of students didn't watch the videos.

Students seem to want a live person to explain content despite the note-taking challenge that comes with a lecture. We must address the inadequacy of the notes students take as best we can.

Summary for Instructors

自然,这并不是对这种方法的公正测试,因为学生在疫情期间承受着巨大的压力。但这并不是第一次尝试录制讲座。大约在 2010 年左右,这种方法很受推崇。当时的观点是,如果学生们能在家通过视频学习基础内容,那么他们就可以在课堂上当教授在场的时候解决问题或进行讨论。但是,就像在 2020-2021 年的疫情期间,很多学生并没有看这些视频。

尽管讲座带来记笔记的挑战,但学生似乎希望有一个活生生的人来解释内容。我们必须尽力解决学生们笔记不足的问题。

Use the tips from chapters 1 and 2 to ensure that students get as many facts and as much of the organization as possible.

Let students know that their notes are probably incomplete and disorganized; they won't be motivated to improve them if they don't perceive the problem. Consider low-stakes, open-notes quizzes for this purpose.

Facilitate the formation of student study groups.

Consider carefully how, if at all, you will supplement students' notes after lectures; there are advantages and disadvantages to each choice.

利用第 1 章和第 2 章的建议,确保学生尽可能多地获得事实和组织知识。

让学生明白,他们的笔记可能不完整且杂乱无章;如果他们不认识到这个问题,就不会有动力去改善它。可以考虑为此目的设定低风险、开放式笔记测验。

帮助学生形成学习小组。

如果你打算在讲课后补充学生的笔记,那么必须仔细考虑你会如何做,每个选择都有其优点和缺点。

第五章 如何阅读难懂的书

It seems obvious why textbooks are hard to read. The material is dense; there's a lot of information packed into relatively few words. Authors often feel obligated to give you a broad, complete understanding of a topic rather than to weave an interesting story from selected details. Teachers are ready to assign a textbook, even if it's boring; it's seen as a regrettable but unavoidable problem.

教科书之所以难阅读，原因似乎很明显。这种材料是密集的；相对少的文字中包含了大量的信息。作者常常觉得有义务给你一个主题的全面、完整的理解，而不是从选择的细节中编织一个有趣的故事。老师准备指定一本教科书，即使它是无聊的；这被看作是一个遗憾但无法避免的问题。

But there's a more subtle reason that it's hard to stay engaged when you read a textbook. To find out why, read this paragraph, one you might find in a typical high school textbook.

The Manhattan Project was the United States' effort to produce a nuclear weapon, and it was the largest construction enterprise in the history of science. Because of its sensitive nature, a massive effort was made to keep the project secret. Famous scientists traveled under aliases; Enrico Fermi was known as Henry Farmer, for instance. And all telephone conversations at the test sites were monitored. Despite those efforts, historians agree that it probably would have been impossible to keep the secret if not for the fact that the project was of relatively small size.

Did you notice that the last sentence contradicted the first? Embedding a mistake or contradiction into a text and seeing whether readers notice it is a common research technique to measure comprehension. Readers are asked to judge each text on how well it's written and explain their rating.

Readers are very likely to notice a word they don't know. They are also very likely to notice if the grammar of a sentence is wrong. But they are much less likely to notice when two sentences contradict each other. Forty

percent of high school students missed the contradiction in the paragraph above. To put it another way, if readers simply understand each sentence on its own, they figure they are doing what they're supposed to do. 但阅读教科书时难以保持专注的更微妙的原因。要了解原因，阅读这段可能在典型的高中教科书中找到的段落。

曼哈顿计划是美国制造核武器的努力，这是科学史上规模最大的建设企业。由于其敏感性，人们做出了巨大的努力来保守这个计划的秘密。著名的科学家使用了化名旅行；例如，恩里科·费米被称为亨利·法默。所有的测试站点的电话对话都受到了监控。尽管有这些努力，历史学家同意，如果不是因为该计划规模相对较小，那么保守秘密可能是不可能的。

你有没有注意到最后一句话与第一句话相矛盾？将错误或矛盾嵌入到文本中，并看读者是否注意到，这是一种常用的研究技巧来衡量理解力。要求读者评价每段文字的写作水平并解释他们的评级。

读者很可能会注意到他们不知道的单词。他们也很可能会注意到一个句子的语法错误。但是，他们不太可能注意到两个句子之间的矛盾。有百分之四十的高中生没有注意到上面那段文字的矛盾。换句话说，如果读者只是单独理解每个句子，他们就会觉得他们正在做他们应该做的事。

Coordinating meaning across sentences is crucial to reading comprehension, because sentences can take on quite different meanings depending on the surrounding context. For example, consider a simple sentence, "Maxim waved," in different contexts:

Ann walked into the pizza parlor, looking for her friends. Maxim waved.

The boat slowly circled the wreckage, looking for survivors. Maxim waved.

"Oh, my God, that's my husband!" Kate whispered. "Don't do anything that would attract his attention!" Maxim waved.

跨句子的协调含义对于阅读理解至关重要，因为句子的含义会根据周围的情境产生很大的不同。例如，考虑一个简单的句子，“马克西姆挥了挥手”，在不同的上下文中：

安走进披萨店，寻找她的朋友。马克西姆挥了挥手。

这艘船慢慢地围着残骸转，寻找幸存者。马克西姆挥了挥手。

“哦，我的天，那是我丈夫！”凯特低声说。“不要做任何会引起他注意的事！”马克西姆挥了挥手。

In one way the sentence always means the same thing—the physical act of waving by Maxim—but the more important meaning—why Maxim waved and the likely consequences of his action—is very different. It can be appreciated only if you interpret the sentence in light of what you’ve already read.

In chapter 1 I said that lectures are hard to understand because they tend to be organized hierarchically, so related ideas may be separated in time. I also said that you can’t benefit from a lecture if you just sit down as though you’re a member of an audience about to watch a movie, expecting an entertaining story. The problem is that we’re biased to listen exactly that way.

The same problem applies to reading textbooks. Writers organize the material hierarchically, so readers often need to connect what they’re reading now to something they read a few pages ago. But readers, like listeners, expect a simple format. We first learn to read storybooks. Stories are easy to understand because the structure is simple and linear: A causes B, which causes C, and so on. Textbooks are more like lectures in their hierarchical format and challenging content. Yet just as we tend to sit down in a lecture and expect to be entertained, so, too, we sit down to read a textbook and expect that the author will make our job easy. You need a different approach to reading such content.

WHEN READING TO LEARN

What your brain will do: It will read the way you read for pleasure, because that’s familiar to you and it’s not obvious that it won’t work. You’ll read making minimal effort to coordinate ideas, trusting that the writer will make the connections explicit and easy to follow.

在某种程度上，这句话的含义总是相同的，即麦克西姆的挥手动作。但更重要的含义——为什么麦克西姆挥手和他的行动可能产生的结果——却大不相同。只有当你从你已经阅读的内容出发，去解读这句话时，这一点才能得到理解。

在第一章中，我说过，讲座往往难以理解，因为它们往往是按照层级结构组织的，所以相关的想法可能在时间上被分开。我还说过，如果你只是坐下来，像是一个准备看电影的观众那样，期待一个娱乐性的故事，那么你无法从讲座中受益。问题是我们倾向于那样倾听。

同样的问题也适用于阅读教科书。作者以层级方式组织材料，因此读者往往需要将他们现在阅读的内容与他们几页前阅读的内容联系起来。但是，读者就像听众一样，期待一个简单的格式。我们首先学习阅读故事书。故事很容易理解，因为结构简单且线性：A 导致 B，B 导致 C，依此类推。教科书的结构和内容更像讲座，

挑战性更大。然而，正如我们倾向于坐在讲座里等待被娱乐一样，我们也倾向于坐下来阅读教科书，期待作者会让我们的工作变得容易。你需要一种不同的方法来阅读这样的内容。

当阅读以学习

你的大脑会做什么：它会像你为了快乐而阅读的方式去阅读，因为这对你来说是熟悉的，而且并不明显这样做是不行的。你会尽可能少地努力去协调想法，相信作者会把联系阐述得明确且容易理解。

How to outsmart your brain: Use specialized strategies for comprehension that fit both the kind of material you' re reading and the goals you have for reading it.

Learning by reading is a substantial challenge, but with a few strategies under your belt, you can be much more successful in connecting the ideas as the author hoped you will.

如何智胜你的大脑：使用专业策略来理解你正在阅读的内容及你阅读它的目标。

通过阅读学习是一个重大的挑战，但有了一些策略的帮助，你会在理解作者希望你理解的思想方面更成功。

TIP 26 Don' t Do What Most People Do: Just Read and Highlight

Let' s start with the most common tactic people use when reading with the intention of learning. They open the book and start reading. When something strikes them as important, they mark it with a neon highlighter. They believe that the act of highlighting will help affix the information in their memory and that highlighting creates a ready-to-use study guide. Later, they believe, they can refresh their memory by rereading what they' ve highlighted.

This is a terrible plan. It does not address people' s habit of failing to coordinate meaning across sentences and paragraphs. How can you be sure that you are highlighting the most important information if your

understanding is hit-or-miss in the first place? Furthermore, even if you understand everything quite well, how can you be sure that you are a good judge of what is important enough to highlight as you read the content of a topic you know little about for the first time?

提示 26: 别和大多数人做一样的事情：仅阅读和做标记

让我们从人们阅读时最常见的策略开始谈起。他们打开书开始阅读。当有些东西引起他们的注意或他们认为是重要的，他们就用荧光笔做标记。他们相信通过做标记的行为会帮助他们记住信息，而且做标记可以创建一个现成的学习指南。他们认为，以后可以通过重读他们做标记的内容来刷新他们的记忆。

但这个计划十分糟糕。它没有解决人们在协调句子和段落含义上容易犯错的习惯。如果你一开始就理解得一塌糊涂，那么你怎么能确定你做标记的是最重要的信息呢？另外，即使你理解得很好，当你第一次阅读你所知甚少的话题内容时，你怎么能确定你有足够的判断能力去确定什么内容是足够重要，值得你在阅读时做标记呢？

Both problems—you may not understand as well as you think and you may judge importance poorly—suggest that people don't highlight the most important information. Researchers have tested that prediction with a simple, clever method. They went to a college bookstore and bought ten used copies of the textbook for each of three courses. If spotting the most important content were easy, everyone should have highlighted the same material. But the researchers found little overlap in what students had highlighted. That's why I've used boldface type for the important points in this book; I've done the highlighting for you.

Please note that this advice doesn't mean “never highlight.” Highlighting might be fine if you are reading about a topic you already know a lot about. If you've been a political consultant for twenty years and you're reading a briefing on a recently concluded statewide campaign, your deep knowledge of the topic means that you will read the document with good comprehension and your knowledge will also make you a good judge of what information in the document is important.

A college student reading the same document as part of a political science course lacks the necessary background knowledge, but there's another reason the political consultant reads the document with better comprehension: she knows what to expect. She knows the type of information such a document usually contains, and she knows the function it's meant to serve. The novice doesn't.

If you have even a vague idea of what to expect when you read, that will make you read differently. You'll notice and remember different details, for example. A chapter on the Human Genome Project, the effort to map all the genes in human DNA, might focus on any of several aspects of such a complex topic. It might describe the expected economic benefits to the pharmaceutical industry or the project's impact on gene therapy. It might describe the politics of the government's funding such a huge project. Knowing the author's goal before you begin reading gives you a start on evaluating which ideas in the chapter are most important.

Thus, highlighting is not the only flaw in the “just read and highlight” approach. “Just read” is also a bad strategy, because you shouldn't plunge into a text without some preparation.

这两个问题——你可能并不如你想的那么理解，你可能判断重要性的能力不佳——表明人们可能没有突出最重要的信息。研究者们用一种简单而巧妙的方法测试了这个预测。他们去大学书店买了三门课程的教材的十本旧版。如果寻找最重要的内容很容易，那么每个人都应该标注相同的材料。但研究者发现，学生们所标出的内容几乎没有重叠。这就是为什么我在这本书中用粗体标示重要的要点；我已经为你标注了。

请注意，这个建议并不意味着“永远不要标注”。如果你正在阅读关于你已经非常了解的主题，标注可能是没问题的。例如，如果你已经做了二十年的政治顾问，并且你正在阅读一份关于最近结束的州级竞选活动的简报，你对这个话题的深入了解意味着你会对这份文件有很好的理解，而你的知识也使它能够判断这份文件中什么信息是重要的。

一个大学生阅读同一份文件作为政治科学课程的一部分缺乏必要的背景知识，但政治顾问更好地理解文件的另一个原因是：她知道要预期什么。她知道这类文件通常包含哪些信息，她也知道它的功能。新手则不知道。

如果你在阅读时即使有模糊的预期，你的阅读方式也会不同。例如，你会注意并记住不同的细节。一章关于人类基因组计划（即绘制人类 DNA 所有基因的努力）可能集中在这个复杂主题的几个方面。它可能描述对制药行业预期的经济利益，或者该项目对基因疗法的影响。它可能描述政府资助如此巨大项目的政治性。在开始阅读之前知道作者的目标可以帮助你评价章节中最重要的想法。

因此，“只读和标记”方法中的标注并不是唯一的问题。“只读”也是一个不好的策略，因为你不应该在没有做一些准备的情况下深入阅读一篇文章。
Now let's consider what you should do.

In a sentence: Reading and highlighting is a poor strategy because it fails to provide a framework for understanding before you read and it leads you to decide that some material is more important than other material, even

though you have little basis for that judgment.

TIP 27 Use a Reading Strategy That Fits Your Goal

现在我们来考虑你应该做什么。

以一个句子来表达：阅读和高亮是一种糟糕的策略，因为它在你阅读之前没有提供一个理解的框架，也会让你认为某些材料比其他材料更重要，尽管你对此的判断缺乏合理的依据。

提示 27：选择适合你目标的阅读策略

Tip 26 emphasized that you can't just start reading; that's like attending a lecture as if it were a movie. You need to bring something to the process rather than just wait for the author to intrigue you. At the same time, the advice "Read actively" is nearly useless. You may earnestly set the goal "I'm really going to think as I read, and I'm going to connect ideas," but it's just too easy for your attention to drift.

The solution is to set a concrete task to be completed as you read. The best known is called SQ3R, which has been around in various versions since the 1940s. SQ3R is an acronym for these steps:

Survey: Skim the reading, looking at the headings, subheadings, and figures. Get a rough idea of what it's about. This is how you'll determine, for example, that an article about the Human Genome Project is about its economic consequences, not the ethical implications of sequencing human DNA.

Question: Before you read, pose questions that you expect the reading to answer. Headings can be especially useful for this task; for example, if you see the heading "Marr's Contribution to the Philosophy of Science," the obvious question to ask is "What was Marr's contribution to the philosophy of science?"

提示 26 强调你不能只是开始阅读，那就像把讲座当成电影一样。你需要对阅读过程做出贡献，而不是只是等待作者引发你的兴趣。同时，“积极阅读”的建议

几乎无用。你可能会忠实地设定目标，“我真的会在阅读时思考，并将想法联系起来”，但你的注意力很容易就会漂移。

解决方案是在阅读时设定一个具体的任务完成。最知名的被称为 SQ3R，这种方法自 20 世纪 40 年代以来的各种版本中一直存在。SQ3R 是以下步骤的首字母缩写：

浏览：浅读阅读材料，查看标题，副标题和数据。了解大致的内容。例如，你将通过此方式确定有关人类基因组项目的文章是关于其经济后果，而不是对测序人类 DNA 的道德含义。

提问：在阅读之前，提出你期望阅读能回答的问题。标题对于这个任务特别有用；例如，如果你看到标题“Marr 对科学哲学的贡献”，很明显可以提出的问题是“Marr 对科学哲学的贡献是什么？”

Read: Keeping in mind the rough idea of the article's content you developed when you surveyed the reading, it's time to actually read. And now you have a concrete task to be completed as you read: look for information that answers the questions you've posed.

Recite: When you've finished each section, recite what you've learned as if you were describing it to someone else. Summarize it and decide if it answers any of your questions.

Review: Reviewing is meant to be an ongoing process in which you revisit the content, focusing especially on the questions posed and the answers you derived.

Research confirms that using SQ3R improves comprehension, and it's easy to see why. I've explained why you shouldn't just plunge into a reading; if you first consider what it's about and why you're reading it, you will actually read it differently. The Survey and Question parts of SQ3R get you to do exactly that. I also emphasized that it's essential to build meaning across sentences, and reading with the questions in mind also helps accomplish that.

阅读：当初我们进行预览阅读时，已经大致了解了文章的内容，现在我们正式开始读书。同时，你在阅读时已经有了具体要完成的任务：寻找能回答你提出的问题的信息。

背诵：当你每读完一个章节时，就像为别人解说一样复述你所学到的。总结一下，看看它是否能回答你的问题。

复习：复习应该是一个持续的过程，你需要重温内容，特别关注你提出的问题以及你得出的答案。

研究证明，使用 SQ3R 的阅读方法可以提高理解能力，原因很明显。我们解释过，你并不能只深入阅读，如果你首先考虑它是关于什么以及你为什么要阅读它，实际上你会有不同的阅读方式。SQ3R 法中的浏览和提问部分可以让你做到这一点。我还强调，构建句子之间的连贯性是至关重要的，带着问题去阅读也可以帮助实现这一点。

The Recite step of SQ3R ought to help you pull your thoughts together and retain content, but even more, it's a check of your comprehension. Remember that people can easily fool themselves into thinking they understand when they don't. Reciting will help you better evaluate your comprehension.

The one drawback to the SQ3R method is that you may slip into “just reading” without thinking much. Here's a trick that might help: after you've posed your questions (and before you start reading), place some blank Post-it notes in the text—maybe one at the end of each section. They'll serve as visual reminders that you should stop, try to summarize the section you've just read, and think about whether the section answered any of the questions you posed.

SQ3R is useful and it's the best known of this sort of strategy, but there are others, including KWL (think about what you Know; what you Want to know; what you've Learned), SOAR (Set goals; Organize; Ask questions; Record your progress), and others. It's no accident that most reading strategies have two important properties in common: they get you to think about your goal for reading before you start and connect the pieces of the reading by asking big-picture questions.

If these strategies seem like overkill, let me offer an alternative with just one step that may be an easy start to this kind of work. Instead of posing questions in advance, pose and try to answer questions as you're reading, especially “Why?” questions in response to stated facts. For example, when you read, “The president can propose legislation, but a member of Congress must introduce it if it's to become a bill,” you might ask, “Why must a member of Congress introduce it?” “Why?” questions tend to lead you to deeper principles and connections, in this case perhaps to the idea of the balance of powers among the three branches of the US government.

The advantage of this method is its flexibility—you don't commit yourself to a set of questions before you've started reading. In addition, it'

is easy to adapt this strategy to readings that tell you how to do something rather than telling you a bunch of facts. How-to information tends to occur in stages, so you can ask, “Why does this step come next?” The disadvantage of this method is that you can’t pose a question to yourself every time the author states a fact—that would slow you down too much—so effective question posing takes some practice.

SQ3R 的复述步骤应该能帮助你整理思维并记住内容，但更重要的是，它是你理解能力的检验。记住，人们很容易欺骗自己，让自己认为他们理解了但事实上并未理解。复述将帮助你更好地评估你的理解能力。

SQ3R 方法的一个缺点是你可能会陷入“只是阅读”而没有多想的状态。这里有一个小技巧可能会有所帮助：在你提出问题后（并在你开始阅读之前），在文本中放一些空白的便利贴，可能每个部分的结尾都放一个。这些将作为视觉提醒，提醒你该停下来，试着总结你刚才读过的那一部分，并思考这一部分是否回答了你提出的任何问题。

SQ3R 是有用的，并且它是这种策略中最知名的，但还有其他的，包括 KWL（思考你知道什么；你想知道什么；你学到了什么），SOAR（设定目标；组织；提问；记录你的进步），等等。这并非意外，大多数阅读策略有两个共同的重要特性：在你开始阅读之前让你思考你阅读的目标，并通过提出大问题连接阅读内容的各个部分。

如果你觉得这些策略过于复杂，那么我可以提供一个只有一个步骤的替代方案，这可能是开始这种工作的一个简单的开始。与其提前提出问题，不如在你阅读的时候提出问题并试图回答问题，尤其是对于陈述事实的“为何？”问题。例如，当你读到“总统可以提出立法，但如果它要变成法案，国会的一个成员必须提出它”，你可能会问，“为什么必须是国会的一员提出它？”“为什么？”问题往往会引导你深入到更深层次的原则和联系，此例中可能会引导你理解美国政府三个部门之间权力的平衡。

这种方法的优点是它的灵活性——你没有在开始阅读之前就把自己局限在一套问题中。此外，很容易将这种策略应用到告诉你如何做而不是告诉你一堆事实的阅读中。如何做信息往往是分阶段的，所以你可以问，“为什么下一步是这样？”这种方法的缺点是你不能每当作者陈述一个事实时就向自己提一个问题——那会让你阅读的速度太慢——因此有效地提问需要一些练习。

Again, there’s no definitive evidence that one strategy is superior to another. What the evidence shows is that using a strategy is better than not using one.

In a sentence: Good reading strategies prompt you to think about the content and set concrete goals for what you’re to learn before you read, and to connect ideas as you read.

TIP 28 Take Notes as You Read

再次强调，没有确凿的证据表明一种策略比另一种策略更优秀。但是，证据显示，使用策略总比不使用策略好。

一句话总结就是：好的阅读策略可以在你阅读之前引导你思考内容，并为你要学习的东西设定具体的目标，同时帮助你在阅读时联系各种想法。

提示 28：阅读时记笔记。

Whenever I meet with a student who is struggling in one of my classes, I always ask her to bring her notes. Everyone has notes they've taken in lectures, but most people do not take notes on the readings. Surveys bear out my experience. People don't take notes on readings because they figure that highlighting serves the same purpose. But we've been over why it doesn't.

Taking notes on readings serves the same functions as taking notes during a lecture: it helps keep you mentally on task, and the notes will help refresh your memory later.

But there are differences in the note-taking process when you're reading. The most important is that you, not the speaker, control the pace. You can read as quickly or slowly as you want, and you can revisit older content or peek at what's to come later. This removes one of the main concerns about using a laptop to take notes while reading. During a lecture there is the risk that the urge to keep pace with the speaker will prompt you to go into dictation mode. Since that problem is irrelevant when reading, I would be more likely to take notes on a laptop because they are so much easier to edit than handwritten notes and later to search for information. Naturally, you may have other reasons to prefer paper: you find social media hard to resist, for example, or you need to draw a lot of figures in your notes. Or you simply like paper better. It's up to you.

每当我遇到某个课程中挣扎的学生时，我总是要求她带来她的笔记。每个人都有在讲座中做的笔记，但大多数人不对阅读材料做笔记。调查结果证实了我的经验。

人们不对阅读材料做笔记，因为他们认为使用高亮就可以起到同样的作用。但我们已经讨论过为什么它不能这样做。

对阅读材料做笔记与听讲座做笔记有同样的作用：它可以帮助你保持心神专注，同时这些笔记在后来还能帮助你刷新记忆。

但阅读时做笔记的过程中有所不同，最重要的是你可以控制阅读的速度，而不是听讲者。你可以自由控制阅读速度的快慢，随时回顾旧的内容或提前看到后面的内容。这消除了在使用笔记本电脑做笔记的主要担忧。在听讲座时，你可能会因为想跟上讲话者的速度而开始做口述笔记。但是，由于阅读时不会出现这种问题，我更倾向于在阅读时使用笔记本电脑做笔记，因为电子笔记比手写笔记更容易编辑和查找信息。当然，你可能因为其他原因更喜欢使用纸质笔记：比如你发现社交媒体难以抵抗，或是你需要在笔记中绘制大量数据。或者你就是更喜欢纸质笔记。这一切都取决于你。

How should you begin? In particular, how should you prep for taking notes? The same way you prep for reading, by posing questions at the start. But how can you craft good questions about a text you haven't read? The author may give you a good overview in the first few paragraphs, or perhaps there are questions at the end of the reading that provide some guidance. Or maybe the instructor, God bless her, told you what she hoped you'd get out of the reading. Write these at the very top of your notes, so you can keep them in mind as you read.

If the reading includes headings and subheadings, you might write those in your notes; they can serve as a skeletal outline. As you read, complete the outline. For each subheading, write a summary and about three other statements. These statements might include, for example:

An important qualification to the summary

A comment on how this section relates to the main section

How the section answers one of the questions you posed for the reading as a whole

你应该如何开始呢？特别是，你应该如何准备记笔记呢？你应该像准备阅读一样，从提出问题开始。但是如何才能对你还没读过的文章提出好的问题呢？在文章的开头几段，作者可能会给你一个很好的总览，或者在阅读的最后可能有一些问题提供了一些指导。或者，教师也可能告诉你她希望你从阅读中得到什么。把这些写在你笔记的最顶部，这样你在阅读时就能记住他们。

如果阅读内容包括了标题和副标题，你也许可以在你的笔记中写下这些，它们可以作为框架大纲。当你阅读的时候，填充这个大纲。对于每个副标题，写一个摘要和大约三个其他的声明。这些声明可能包括，例如：

对摘要的重要修饰

关于这一部分如何与主要部分相关的评论

这一部分如何回答你为整个阅读设置的其中一个问题。

An implication of the summary for something else the author concluded

You should also include any new vocabulary terms and their definitions. As much as possible, use your own words, not the author's; as was true of lectures, there's no point in taking dictation. You need to manipulate the material mentally.

As you consider exactly what to record in your notes, you might think ahead to how you will use them. If you'll later be tested, consider that there are different types of test questions. I'll have more to say about this in chapter 6, but for the moment, consider the difference between short-answer and essay questions. Each emphasizes different types of content. Answers to the former are necessarily short and often call for definitions, dates, or examples to be categorized. Essay exams, of course, pose broad questions, so you had better understand themes and how things connect. If you know how you will be tested, pay special attention to the content that's vital for that type of assessment.

When you've finished reading and taking notes, you may be delighted to be through with the job. Actually, you're not quite done. Once you've completed the reading, you should look over your notes to be sure you're satisfied. Did you answer the questions you posed? Are you still convinced that they were the right questions? Do you think your notes are good enough that even if you set them aside for a few weeks, rereading them will enable you to recover all of your insights into the content?

你应该还包括任何新的词汇术语及其定义。尽可能地使用你自己的语言，而不是作者的语言；就像讲座一样，做笔录没有任何意义。你需要对材料进行精神上的处理。

当你考虑到底应该在笔记中记录什么内容时，你可以预想一下你将如何使用它们。如果你以后会被测试，那么注意有不同类型的测试题。我将在第6章中详细讨论这个问题，但就目前而言，考虑一下简答题和论述题的区别。每种题型都强调不同类型的内容。答案对前者来说必定是简短的，经常需要定义、日期或例子进行分类。当然，论述题测试你对主题的理解和各种事物之间的联系。如果你知道你将会如何被测试，那么就要特别关注对那种评估至关重要的内容。

当你看完读物并做完笔记后，你可能会很高兴终于完成了任务。实际上，你还没有完成。读完之后，你应该检查你的笔记以确保你满意。你有回答你提出的问题吗？你是否仍然确信这些是正确的问题？你是否认为你的笔记足够好，以致于即使你将它们放一边几个星期，重读它们也能让你恢复对内容的所有洞察？

Finally—and you don't have to do it right now—if there's a lecture associated with the reading, you should consider how the two relate. If you are virtuous and completed the assigned reading before the lecture, you can try to anticipate. If the lecture has passed, don't let this task be forgotten.

In a sentence: Take notes on the thoughts generated by your reading strategy; doing so will help ensure that you don't mentally drift into casual reading, and the notes will, of course, be useful for reviewing later.

TIP 29 Allocate Significant Time to Reading

最后一点——你不需要立即做——如果阅读内容有关联的讲座，你应该考虑两者之间的关系。如果你足够尽责，先完成指定的阅读任务，再去尝试预测讲座的内容。如果讲座已经结束，不要忘记这个任务。

用一句话来说：记录你阅读策略产生的想法，这样可以确保你不会在阅读中心不在焉，当然，这些笔记在以后复习时也会非常有用。

提示 29：分配充足的时间阅读

It's difficult to read texts on complex topics written by authors who are not afraid to bore their audience. What's more, you're taking multiple classes, and you also have work around the house (and possibly a job) to do. So if reading makes you feel overwhelmed, you should know that you're not alone.

Most school-related tasks—giving a presentation, for example, or taking an exam—carry immediate, obvious consequences if you fail to prepare. But the cost of failing to read something you ought to is usually delayed,

so that's the task that is postponed or abandoned.

Some study guides suggest that that's a good idea, and they offer methods to figure out which readings to neglect as well as tactics for skimming those you do take on. Let's start by debunking a couple of common tricks meant to allow you to skip readings.

First, speed reading is not a thing. You can waggle your hand from the top to the bottom of the page, but you literally cannot read that fast. Lots and lots of studies have been conducted over the decades showing that people who claim to be speed reading are skimming, and as you'd expect, if you skim difficult, unfamiliar material, you won't understand it very well.

阅读那些敢于让读者感到厌倦的作者撰写的复杂主题文本往往很困难。更何况，你正在上多门课程，还要在家里（可能还有工作）做事。所以，如果阅读让你感到无法应对，你应该知道你并不孤单。

大多数与学校相关的任务——比如做演讲，或者参加考试——如果你没有准备好，将立即带来明显的后果。但不阅读你应该阅读的东西的代价通常会延后，因此，这项任务往往会被推迟或放弃。

一些学习指南建议这是个好主意，它们提供了方法来确定哪些阅读任务可以忽略，以及如何略读那些你选择的阅读任务。让我们从揭穿几个常见的使你可以跳过阅读的技巧开始。

首先，速读并不是一种事情。你可以从页面的顶部晃动你的手到页面的底部，但你实际上无法那么快地阅读。几十年来，许多研究显示，声称在速读的人其实在略读，不出所料的是，如果你在略读困难和不熟悉的材料，你就无法理解它。

Second, if the readings include learning aids such as chapter outlines, chapter previews and summaries, boldface or italicized terms, or practice test questions, don't try to use these learning aids as a replacement for reading the text. The funny thing about these features is that there's very good research evidence that they work. Publishing companies paid to have high-quality research conducted; researchers had people read textbook chapters (with or without the learning aids), and they found that people who used the learning aids understood and remembered more than those who did not.

But the psychologists Regan Gurung and David Daniel pointed out that students "in the wild" will not necessarily use such materials the same way they were used by students in the laboratory. Gurung and Daniel suggested that some students use learning aids not to supplement the reading but to avoid it. They read the summary, look at the boldface terms,

and then try to answer the practice test questions to see whether they understand enough to skip the reading.

Now, everyone has times when their schedule backs up or something unexpected happens. I can understand doing selective skimming of a reading when your planning fails you. But as I indicated at the start of this chapter, planning to skip readings strikes me as foolish. I've seen study skills books in which the author encourages the reader to adopt this strategy for "secondary" readings. Guessing which readings will be the important ones is like trying to second-guess the stock market; it's not very likely to pay off.

I suggest that you allocate "significant" time to reading. What does that mean in practical terms? In college, you'll often hear "three hours of preparation for each hour in class." A typical college course load calls for 12.5 hours of class time per week, so that rule of thumb means around another 37 hours of preparation outside class (which breaks down to 5.5 hours a day), totaling about 50 hours of work per week total. So a lot, but nothing outrageous. That said, people vary in how quickly they read, and obviously some readings take longer to get through than others.

Although even a rough figure of how much time you'll need is difficult to pin down, you should recognize that reading is the chief way that you will learn in college and beyond. It is worth reading carefully, both to learn now and to develop the knowledge, skills, and habits that will make you a successful reader in the future.

其次，如果阅读文本包括学习工具如章节大纲、预览、总结、黑体或斜体术语、或预习测试问题，不要试图用这些学习工具来代替阅读原文。关于这些功能，有趣的是有丰富的研究证据表明它们是有效的。出版公司支付高额费用进行高质量的研究；研究者让人们阅读教科书章节（有或没有学习工具），他们发现使用学习工具的人理解和记忆的内容比不使用的人多。

然而，心理学家 Regan Gurung 和 David Daniel 指出，学生们在实际情况下使用这些资料的方式不一定与实验室中的学生一样。Gurung 和 Daniel 认为有些学生使用学习工具不是为了补充阅读，而是为了避免阅读。他们只是看总结，查看黑体词汇，然后试图回答预习测试问题，看是否可以理解足够跳过阅读。

当然，每个人都有时候时间紧张或遇到意外情况。我可以理解当你的计划失败时，你会选择性地浏览阅读材料。但就如我在本章开头所指出的，打算跳过阅读我认为是不明智的。我看过一些学习技巧的书，作者鼓励读者对"次要的"阅读采取这种策略。但猜测哪些阅读会是重要的就像是预测股市一样；成功的可能性并不大。

我建议你分配"重要的"时间来阅读。实际上这是什么意思呢？在大学里，你经常会听到"每课时要准备三小时"。一个典型的大学课程负荷每周要求 12.5 小时的

课堂时间，所以这个经验法则意味着需要额外的 37 小时在课外准备（相当于每天 5.5 小时），总计每周大约需要投入 50 小时。所以这是个大数目，但还算合理。人们阅读的速度不同，显然有些阅读材料需要花更长时间来阅读。

尽管要确定你需要多少时间是困难的，但你应该认识到阅读是你在大学以及在以后的生活中学习的主要方式。值得你仔细阅读，既为了现在的学习，也为了发展能使你在未来成为成功读者的知识、技能和习惯。

In a sentence: Just as I encouraged you to recognize that listening to a lecture is hard work, so, too, is reading; be sure you schedule enough time to give it the attention and mental effort it requires.

For Instructors

在一个句子中：就像我鼓励你认识到听讲座是一项艰难的工作一样，阅读同样也是；确保你安排足够的时间来给予它需要的注意力和精神性努力。

对于教师

Instructors can help students learn to absorb more from their reading. The techniques you use can follow those I' ve outlined for students.

First, even middling readers don' t see a need to improve. So you might consider a demonstration like the one at the start of the chapter that used the Manhattan Project passage. Clip six paragraphs from materials that you' re not assigning but that match the subject matter of the class. For two of the six paragraphs, rewrite a sentence so that it contradicts an earlier statement. For each paragraph students should provide separate ratings for how well written and how easy to comprehend they find it. Collect their responses and see if they have spotted the contradictions.

Second, students will benefit from your modeling the reading strategy. Devote some class time to demonstrating how you would implement it for one of the assigned readings. Even better, stretch this exercise to several readings where you initially provide very explicit instruction in strategy implementation and then offer less support while providing feedback on their attempts.

Even if your students are adept readers, you should tell them the goal for each reading you assign. What do you expect they will learn from it?

How does it relate to other readings or topics in the class?

Once your students understand what it takes to read a text deeply, be sure that other policies in your class align with the expectation that they will do that work. If you demand deep reading, you should respect the fact that it's time-consuming. It's fair to trade breadth for depth, so assign fewer pages.

教师可以帮助学生学会从阅读中吸收更多的知识。你使用的技巧可以参考我为学生概述的方法。

首先，即使是普通读者也不觉得需要提高自己的阅读理解能力。因此，你可能会考虑试试我在本章开始时对曼哈顿计划文章片段的示例。从你未分配但与课程内容相关的材料中剪下六段，将其中两段的一句话改写，使其与前文矛盾。学生应对每一段的书写质量和易于理解的程度进行单独评分。收集他们的反馈看看他们是否发现了这些矛盾。

其次，学生将从你的阅读策略建模中受益。请在课堂上花些时间演示你将如何为一项指定阅读实施这种策略。更好的做法是，将这个练习扩展到多个阅读内容中，你最初提供非常明确的策略执行教学，然后在提供反馈的同时提供较少的支持。

即使你的学生是熟练的读者，你也应该告诉他们你为每次阅读设定的目标是什么。你希望他们从中学到什么？这与课程中的其他阅读或主题有何关系？

一旦你的学生理解了如何深度阅读一篇文章，你应该确保你的课程的其他方针与他们做出这种工作的期望相匹配。如果你要求深度阅读，你应该尊重这是很耗时的事情。为了深度，你可以考虑减少阅读页数，这是公平的。

The message that you expect deep reading should also be reinforced by your expectations in class and on assessments. If you say you want students to read deeply but classroom discussions skim the surface, students will quickly perceive what you really expect. In my experience students love class discussions that go deep—they are so accustomed to courses that require only that they absorb information that they are excited to feel they understand something in greater depth. Admittedly, they are a little less enthusiastic about assessments that probe deep understanding, but that's another way that instructors communicate the importance of getting beyond assembling facts in memory: they give tests that require analysis.

Summary for Instructors

No matter how experienced your students are, don' t assume they know how to comprehend difficult texts; you may need to teach reading strategies. 你期望的深度阅读的信息，也应该通过你在课堂和评估中的期望进行强调。如果你说你希望学生进行深读，但课堂讨论只是浅尝辄止，学生很快就会察觉到你真正的期待是什么。在我个人的经验中，学生们喜欢深入的课堂讨论——他们已经习惯于那些只需要吸收信息的课程，当他们感觉到他们理解某个事物的深度时，他们会感到兴奋。他们对于深入了解的评估可能会不那么热衷，但这也是教师传达“超越记忆中的事实拼凑的重要性”的另一种方式：他们会进行需要分析的测试。

教师要注意的是，无论你的学生有多么有经验，都不应该假定他们知道如何理解难度较大的文本；你可能需要教授阅读策略。

If your students are overconfident about their ability, consider a classroom demonstration to show them that they understand less than they think they do.

Teach students the strategies described in this chapter, but assume that they will need you to model the process.

Be explicit about why you assign each reading and what students are to get from it.

If you want students to read deeply, be sure that the rest of the course aligns with that expectation. For example, the number of pages assigned should be reasonable, and assessments should probe for deep reading, not factoids.

如果你的学生对自己的能力过于自信，可以考虑在课堂上进行示范，向他们展示他们理解的其实比他们认为的要少。

教给学生本章节描述的策略，但是假定他们需要你来演示过程。

对于每次分配的阅读任务，你都要明确说明你的分配原因以及学生应该从中得到什么。

如果你希望学生进行深度阅读，确保课程的其他部分也符合这个预期。例如，分配的阅读页数应该合理，而且评估应该探索深度阅读，而不是仅仅是事实点。

第六章 如何备考

This chapter seems to be the first in the book that's really about learning—that is, getting stuff into memory. But although it may have seemed that so far we've talked about preparation for learning more than learning itself, you've already encountered two powerful principles of memory: memory is the residue of thought and organization helps memory.

这一章似乎是全书中首个真正关于学习的章节——就是如何将知识信息放入记忆中。虽然到目前为止，我们似乎更多的在讨论学习的准备工作而非学习本身，但你已经接触到两个关于记忆的强大原则：记忆是思考的残留物，而组织有助于记忆。

Those ideas reappear in this chapter, but we'll make the heaviest use of a third principle: probing memory improves memory. If you want to cement something into your memory for the long term, it's actually better to test yourself than to study. Let's consider a typical experiment that illustrates the phenomenon.

Experimenters give one group of students a textbook chapter to read and study for an hour. The subjects come back two days later, they are given the same chapter, and again they read and study. Two days after that, they return to the lab and take a test on the content.

For a second group of students, the first and third sessions are identical, but during the second session they take a test on the content instead of studying. The test uses different questions from the ones on the final test, but it covers the same concepts.

The people who take the test during the second session do better on the final test than those who study during the second session, by around 10 to 15 percent.

This is called retrieval practice. Retrieval is a term researchers use for the process of pulling something out of memory, and the learning benefit comes, obviously, from practice in retrieving something. Retrieval practice works for all ages and all subjects, but there are two

limitations you should know about.

这些观点在本章中再次出现，但我们将最大限度地利用第三个原则：探索记忆可以提高记忆。如果你想将某件事长期铭记在记忆中，实际上进行测试要比学习效果更好。让我们来看一个典型的实验，阐述了这种现象。

实验者让一组学生阅读并学习一章课本上的内容一个小时。两天后，受试者再次得到同一章节，并再次阅读和学习。再过两天，他们返回实验室并对内容进行测试。

对于第二组学生，第一和第三个阶段是相同的，但在第二个阶段，他们对内容进行测试，而不是学习。测试使用的问题与最后测试的问题不同，但它涵盖了相同的概念。

在第二次会议中进行测试的人在最后的测试中比在第二次会议中学习的人做得更好，大约提高了 10 到 15 个百分点。

这被称为检索练习。检索是研究者用来描述从记忆中提取某物的过程的术语，显然，学习效益来自于检索某物的练习。检索练习适用于所有年龄和所有主题，但你应该知道有两个限制。

First, feedback matters. If you take a test for the purpose of learning, you should find out immediately whether or not you got each item correct. If you can't remember or answer incorrectly, you should get the right answer zapped into your memory right away. Second, retrieval practice works only for what's tested. In other words, if you read an article about Peter the Great that contains, say, thirty facts about him and then take a test on ten of those facts, your memory has improved for those ten facts but not for the other twenty.

Retrieval practice is also a good example of an effective study method that feels as though it's not working. In the introduction, I offered an analogy to exercise: if you want to be able to do a lot of push-ups, it obviously helps to practice push-ups, but it's better to do really difficult push-ups, such as the ones where you propel yourself off the floor and clap your hands while in the air. Naturally, you won't be able to do as many of these push-ups; you must keep in mind that it's the best practice in the long run even though it feels difficult and you observe that you're not having much success. Your brain will tell you to pick exercises that feel easier and that you can accomplish more readily. That's the challenge of using retrieval practice to commit things to memory: it's hard, and you fail a lot. But it's the right exercise to get things to really stick with you.

WHEN COMMITTING THINGS TO MEMORY

What your brain will do: It will seek memorization techniques that feel easy and that seem to lead to success.

How to outsmart your brain: Use techniques that yield long-lasting memory—organizing, thinking about meaning, and retrieval practice—even though they feel difficult and seem less productive in the short run.

首先，反馈很重要。如果你参加测试是为了学习，你应该立即了解你是否正确回答了每一项问题。如果你记不住或者回答错误，你应该马上记住正确答案。其次，检索练习仅对被测试的内容有效。换句话说，如果你读了一篇关于彼得大帝的文章，该文章包含了他的三十个事实，然后对其中的十个事实进行测试，那么你对这十个事实的记忆有所提高，但对其他二十个事实的记忆并没有提高。

检索练习也是一种有效的学习方法，虽然可能会让你感到它没有起作用。在引言中，我提供了一个对比锻炼的比喻：如果你想要做很多俯卧撑，很明显，练习俯卧撑有帮助，但是，做一些难度较大的俯卧撑更有帮助，比如你需要在空中鼓掌的俯卧撑。你一定不能做很多这样的俯卧撑；你必须明白，尽管这种锻炼感觉困难，你也发现你并没有取得很大的成功，但从长远来看，这是最好的练习方式。你的大脑会告诉你选择那些感觉容易并且可以更快实现目标的练习。这是使用检索练习记忆事物的挑战：它很难，你也经常会失败。但这是让事物真正留在你脑海中的正确练习方式。

当你想记住事物时：

你的大脑会做什么：它会寻找那些感觉容易并且看似能带来成功的记忆技术。

如何智胜你的大脑：使用可以产生持久记忆的技术，如组织思维、思考意义和检索练习，尽管它们感觉困难并且在短期内看起来不太有成效。

In this chapter we’ ll look at specific tasks you can set for yourself that exploit the three principles of learning I’ ve described. We’ ll start by looking at commonly used study strategies that are ineffective.

TIP 30 Avoid These Commonly Used Strategies

在这一章中，我们将看看你可以设定的一些特定任务，这些任务利用了我所描述的三个学习原则。我们将首先看看那些常用但无效的学习策略。

提示 30: 避免这些常用的策略

Have a look at this list of memorization strategies. How many do you use?

Repeating information to yourself

Reading over your notes

Rereading the textbook

看一下这些记忆策略的列表，你使用了多少？

反复对自己说信息

温习你的笔记

重新阅读教材

Copying your notes

Highlighting your notes

Creating examples of concepts

Summarizing

Using flash cards

复制你的笔记

高亮你的笔记

创建概念实例

总结

使用记忆卡

Outlining

Taking a practice test

Surveys of college students show that these are the most commonly used study strategies. We can evaluate them in light of the three powerful principles of memory we've discussed:

Memory is the residue of thought, so thinking about meaning will help.
大纲制定

进行模拟测试

大学生调查显示，这些是最常用的学习策略。我们可以根据我们讨论过的三个强大的记忆原则来评估它们：

记忆是思考的残留物，所以思考意义将有所帮助。

Organization helps memory.

Retrieval practice cements information in memory.

Some of the strategies on the list—summarizing, outlining, creating examples of concepts—look pretty good in terms of getting you to think about meaning. Others—for example, reading over your notes, rereading the textbook, and highlighting your notes—don't guarantee that you'll think about meaning. When it comes to organization, summarizing and outlining look promising, but most of the others don't. How about retrieval practice? Using flash cards definitely capitalizes on that principle. Taking a practice test is on the list, but it turns out that people don't use practice testing as a way of studying but as a way of figuring out whether they can stop studying. (And they don't use practice testing the right way for this purpose, as we'll see in chapter 7.)

So some of these strategies are good ones, but unfortunately, the least useful strategies—reading over your notes and rereading the textbook—are the most commonly used.

组织有助于记忆。

检索练习可以在记忆中固化信息。

列表上的一些策略——如总结、列纲要、创建概念的例子，这些看起来在让你对意义进行深思方面相当不错。然而，其他一些策略——例如重读自己的笔记、重新阅读教科书和标记你的笔记，并不能保证你会思考这些内容的含义。在当涉及

到组织时，总结和列纲要看起来很有希望，但大多数其他方法则不行。那么检索练习呢？使用闪卡绝对可以充分利用这个原则。进行模拟测试也在此列，但是事实证明，人们并不把模拟测试当作是学习的方式，而是作为判断是否可以停止学习的方式。（并且，他们并没有正确的使用模拟测试达到这个目的，我们将在第七章中看到）

因此，这些策略中有一些是好的，但不幸的是，最没有用的策略——重读自己的笔记和重新阅读教科书——却是最常被使用的。

Now, there' s nothing to say that you can' t read over your notes with deep concentration, thinking about the content and making connections as you go. It' s just hard to do. Indeed, experiments show that rereading tends not to help memory much. The psychologists Aimee Callender and Mark McDaniel asked college students to read two-thousand-word sections of textbook chapters or articles from the magazine Scientific American. People were told that their understanding and memory would be tested later with a quiz or by writing a summary. Some people read the text once, and some read it twice. For the most part, rereading did not help. But rereading is—you guessed it—easy. So you can understand why learners drift toward this strategy.

In a sentence: The most commonly used strategies are ineffective for memorization.

TIP 31 Keep in Mind That Preparing to Study Is Studying

现在，这并不是说你不能深入地专注于阅读你的笔记，思考内容，并在过程中建立联系。这只是很难做到。实际上，实验显示反复阅读并不能很好地帮助记忆。心理学家艾米·卡伦德和马克·麦克丹尼尔要求大学生阅读课本章节或《科学美国人》杂志文章的两千字节段落。人们被告知他们的理解和记忆将在后来通过测验或写摘要的方式进行测试。有些人只读了一次，有些人读了两次。大部分情况下，阅读并没有帮助。但反复阅读是易于实施的。所以，你可以理解为什么学习者会倾向于采用这种策略。

简言之：最常用的策略对记忆是无效的。

提示 31：请记住预备学习就是学习。

I've urged you not to use some study strategies because they aren't a good use of your time; they don't align with the principles of memory we've discussed. The best way to commit information to memory is to think about what it means and make meaning-based connections among all the bits of what you are to learn. Thus, you might suppose that when listing the study strategies you should use, I'm going to say that you should set yourself tasks such as outlining and summarizing.

But I'm not going to say that, because by the time you try to commit things to memory, you should have already thought about meaning and organized the material.

That's the kind of thinking I suggested you do in chapters 1 through 5. I presented the tips in those chapters as helping you to understand new content, and they surely will. To understand ideas, you have to understand how they are organized. And to understand how content is organized, you have to think about what it means.

我曾经劝告过你不要使用某些学习策略，因为他们并不是你时间的好投资，它们并未与我们讨论过的记忆原则相符。把信息记住的最好方法是思考其含义，并在你需要学习的所有内容中建立以意义为基础的连接。因此，你可能会认为，当列出你应该使用的学习策略时，我会说你应该为自己设定诸如制作大纲和摘要的任务。

但我不会这么说，因为当你试图记住事物的时候，你应该已经思考过它的含义并对资料进行了组织。

这就是我在第 1 到第 5 章中建议你做的那种思考。我将这些章节中的建议作为帮助你理解新内容的方法，它们确实会有所帮助。要理解想法，你必须理解它们是如何被组织的。要理解内容是如何被组织的，你必须思考它的含义。

But let me remind you of one other principle of memory, this one from the introduction: whether or not you want to learn is irrelevant. All that matters to memory is the mental work that you do, not whether you hope to learn from that mental work. If you follow the tips in chapters 1 through 5, it doesn't matter whether you do so intending to learn; they will still prompt the type of mental activity that is terrific for learning, so learn you will.

The students in my classes who struggle usually don't do the things described in chapters 1 through 5. They also don't really see the point in doing all that stuff. They don't understand that these activities are not simply preliminaries to the real work of memorizing; they are part

of that work.

My students who don't do very well think that "keeping up" in a course means attending lectures and completing the reading on time. It's not until they prepare for an exam that they really think about what all the content means, try to organize it, and try to fill gaps in their understanding. That is dangerously late to undertake that work. Worse, some of my struggling students don't even work on understanding at that point; they just start trying to memorize.

The mental activities that help you understand are study activities, too, and so by the time an exam rolls around, the information you need to learn will likely already be in your memory. You'll still need to study, but you'll have a head start. And the fact that you have something in memory means you can capitalize on one of the most powerful study methods: retrieval practice.

In a sentence: The tips in chapters 1 through 5 are designed to help you thoroughly understand what you hope to learn, but in so doing they also provide an excellent start for getting content into your memory and should not be considered optional.

但是让我再提醒你一个关于记忆的原则，这个来自于简介部分：你是否想要学习是无关紧要的。对记忆来说最重要的是你所做的精神工作，而不是你希望从这种精神工作中学习到什么。如果你按照第1章到第5章的提示去做，无论你是否打算学习，它们都会激发出有利于学习的心智活动，所以你肯定会学到东西。

在我的课堂上，通常过得不好的学生都没有按照第1章到第5章中描述的方式去做。他们也不明白为什么要做这些事情。他们不理解这些活动不只是记忆真正工作的前期准备；它们本身就是那项工作的一部分。

我那些做得不好的学生认为“跟上”一门课程意味着参加讲座和按时完成阅读。直到他们准备考试时，他们才真的思考所有内容的含义，试着整理它，试着填补他们理解的空白。这实在是太晚了。更糟糕的是，我一些挣扎的学生甚至在那个时候都不致力于理解，他们只是开始试图记住。

帮助你理解的心智活动也是学习活动，所以到考试时，你需要学习的信息可能已经在你的记忆中了。你仍然需要学习，但是你已经有了一个良好的开端。并且，事实上你有些东西在记忆中意味着你可以利用最强大的学习方法之一：检索练习。

总的来说，第1章到第5章的技巧旨在帮助你深入理解你希望学习的内容，但是在此过程中，它们也为将内容放入你的记忆中提供了极好的开始，这些技巧不应被视为可选择的。

TIP 32 Prepare a Study Guide

I recommend that you write a study guide in question-and-answer format so you can capitalize on retrieval practice. Put into more familiar terms, it will be a massive deck of flash cards. Massive, because the purpose is not only to give you an effective way to study, it's to ensure that everything you need to know is collected in one place. If you're systematic about building the study guide, no exam questions will surprise you. There are three steps to creating and using this sort of study guide.

提示 32: 准备学习指南

我建议你以问答格式编写学习指南，以此来充分利用检索练习。用我们更熟悉的话来描述，就像是一副巨大的记忆卡片。这里的“巨大”，不仅意味着提供你一种有效的学习方式，而且还确保你需要知道的一切都集中在一个地方。如果你在制作学习指南方面有条不紊，那么任何考试题都不会使你感到惊讶。创建并使用这种学习指南有三个步骤。

Step 1: Prepare. Be sure you are clear about the nature of the test. Ask yourself:

Which lectures will be covered? Which readings?

Has any information been provided about the percentage of questions coming from lecture versus reading?

What format of questions will be posed (e.g., short answer, multiple choice, essay)?

How many questions will there be? Does it sound as though time will pose a problem for you?

步骤 1: 准备。请确保你对考试的性质有明确的了解。问自己:

涵盖哪些讲座？涵盖哪些阅读？

是否有任何关于来自讲座和阅读的问题所占比例的信息？

将提出什么样的问题格式（例如，简答，选择题，论文）？

会有多少个问题？你是否觉得时间对你来说会是个问题？

Will you have access to any information during the test (for example, formulas or constants during science tests)?

Are any aids allowable? A calculator? A sheet of paper to write on? Are you allowed to ask anyone to clarify questions during the test?

If previous tests are available, look over the questions. Unless you're sure that the test is the same every year, don't be too concerned about the content. Pay attention to the types of questions posed. Are they straightforward requests for definitions or demands that you apply what you've learned in new contexts? Do they test your understanding of broad themes or your ability to memorize every last seemingly insignificant detail? Are they phrased in a straightforward way, or do they seem unnecessarily tricky? Every test has a range of different question types, but a scan of prior exams may give you a sense of what's typical and what's considered fair game.

All of this preparation should be done with your study group. That way you'll be confident that you aren't confused about the information the instructor provided (such as what will be covered), and you'll have multiple judgments about the subjective stuff (such as what old exams are like).

你在考试时可以获取任何信息吗（例如，科学考试中的公式或常量）？

允许使用任何辅助工具吗？计算器？可以写东西的纸张？考试期间你可以向任何人求助以澄清问题吗？

如果有之前的考试题，看一看问题。除非你确信每年的考试都是一样的，否则不要过于关注内容。注意问题类型。他们是否直接要求定义或需要你将所学应用到新的环境中？他们是测试你对大主题的理解还是你对每一个看似无关紧要的细节的记忆能力？他们的表述方式是否直接，或者他们看上去不必要地棘手？每份考试都有各种不同的问题类型，但是扫描以前的考试可能会让你了解哪些是典型的，哪些是公平的游戏。

所有这些准备都应该与你的学习小组一起完成。这样你会对教师提供的信息（比如将要涵盖的内容）感到自信，并且你会对主观的东西（例如，旧考试是什么样）有多个判断。

Step 2: Write the study guide. You can use index cards (the traditional flash card medium) if you like or a pad of paper, posing questions on the left-hand side of the page and answers on the right. Or use a digital platform specifically designed for writing flash cards. Studies have compared digital and paper flash cards, and there's no definitive evidence favoring one or the other.

Go through the revised version of your class notes and your notes on the reading, and write questions about all of the content. Plan to learn everything in the flash card deck but nothing else. That's how complete you want this resource to be.

Your focus on the levels of organization in lectures and readings will pay off again as you write your questions. Pose questions at multiple levels of organization and between levels: the lowest level of the hierarchy ("When was the Battle of Saratoga fought?"), the midlevel ("What was the role of the Battle of Saratoga in France's support of the colonies in the War of Independence?"), and the highest level ("Why did France support the independence of the colonies?"). The proportion of questions at each level should vary depending on the type of test—more low-level for multiple choice, more high-level for essay.

Can you really write a flash card for a high-level idea? Sure. Even if the exact question doesn't appear on the test, at least you are thinking about broad themes in the content. Obviously, you are not going to write an essay on the back of your flash card; just write a skeletal outline of what your answer would be. Even if you're preparing for an essay exam, you should still have some low-level questions about definitions, dates, and the like. You'll want to include those in your essays, and it's easier to memorize such factoids if you devote a separate question to each.

It's a good idea to pose questions in both directions—that is, to have one question asking for the definition of a term—e.g., "What is opportunity cost?"—and another that asks for the term, given the definition: "What's it called when choosing something means you lose a potential gain from the other alternatives that you didn't choose?" You would think that memorizing a question in one direction would mean that you automatically know the answer when the question is posed the other way, but memory doesn't always work that way. If I ask, "What word comes to mind first if I say pepper?" you might say "Salt," but other answers are also common, including "Hot" and "Chili." But if I ask, "What goes with the word salt?" you're very likely to say, "Pepper." If you study only one direction and the question is asked the other way, that's how you miss the question and think, "How is that possible? I knew that!"

步骤 2：编写学习指南。你可以使用索引卡（传统的抽认卡介质）或者一张纸，将问题写在页面的左手边，答案写在右边。或者使用专门设计用来编写抽认卡的数字平台。有研究比较了数字和纸质抽认卡，没有确凿的证据证明何者更优。

温习你对课程笔记的修改版本和你对阅读的笔记，并对所有的内容编写问题。计划学习抽认卡套中的所有内容，但不要求其他任何内容。你希望这个资源能有这么完整的功能。

你对课堂和阅读中组织层次的关注将再次在你编写问题时得到回报。在多个组织层次和层次之间提出问题：等级最低的层次（“萨拉托加战役是什么时候打的？”）、中等级别（“萨拉托加战役在法国支持殖民地独立战争中的角色是什么？”），以及最高等级（“为什么法国支持殖民地的独立？”）。每个级别的问题比例应视测试类型在多少选择题和更多高级的论文而定。

你真的可以为一个高级概念写一个抽认卡吗？当然可以。即使确切的问题没有出现在考试中，至少你正在思考内容的大观念。显然，你不会在你的抽认卡背面写一篇论文；只需要写出你的答案的概略结构就行。即使你正在准备论文考试，你也应该有一些关于定义、日期等的低级别问题。你会想在你的论文中包含这些内容，如果你为每个问题分开记忆，那么记忆这些小事实在更容易。

提议从两个方向提问是个好主意——即，有一个问题询问术语的定义——例如，“什么是机会成本？”——和另一个问题询问给定定义的术语：“当选择某件事意味着你失去了可能从你没选择的其他替代物中获得的收益，这叫什么？”你可能会认为记住一个方向上的问题意味着当问题用另一种方式提出时，你自动知道答案，但记忆并不总是这样工作。如果我问，“如果说胡椒，你会首先想到哪个词？”你可能会说“盐”，但其他答案也很常见，包括“热”和“辣”。但如果我问，“什么词与‘盐’相关？”你很可能会说，“胡椒”。如果你只学习一个方向，而问题是另一种方式提出，那就会错过问题，并想，“这怎么可能？我知道那个！”

In technical courses, generate examples of the types of problems you're expected to know how to solve. You should also have some explanation questions, e.g., “Why is potential energy and not kinetic energy important in this problem?” Maybe you want to add some questions that extend what you've learned, for example, applying concepts to new or real-world conditions. (Your review of previous exams can help you figure out the usefulness of including such questions in your study guide.)

If the exam will include only short-answer or multiple-choice questions, you should be pretty focused on memorizing facts. Your study guide should still include questions that prompt you to meaningfully connect facts to one another, not only because you might be tested on them but also because thinking about the connections will make everything more meaningful, and more meaningful content is easier to remember.

Step 3: Commit answers to memory. How long will it take to memorize everything in your study guide? It depends on how much information it contains, obviously, and different people find memorizing more or less difficult. Writing the study guide is a whole lot better than not writing it, and finishing it two days before the exam is better than finishing it the day before the exam. You can continue from there—every day earlier that it's done is a day you can spend a little time reviewing. The main problem, then, is one of planning, a topic so important that I devote all of chapter 10 to it.

We'll discuss the nuts and bolts of getting stuff into the memory vault shortly, but first I want to warn against a tempting shortcut.

In a sentence: Make your study guide as complete as possible so there won't be any surprises on the exam.

在技术课程中，生成你预期应知道如何解决的问题类型的例子。你还应该有一些解释性问题，例如，“为什么这个问题中重要的是势能而不是动能？”也许你想添加一些扩展你所学的问题，例如将概念应用到新的或现实世界的条件中。（你对之前考试的回顾可以帮助你弄清楚在你的学习指南中包含这样的问题的用途。）

如果考试只包括简答或多选题，你应该非常专注于记忆事实。你的学习指南应仍然包括提问，这些提问可以使你有意地将事实相互连接，不仅因为你可能会在上面考到，也因为思考这些连接将使一切变得更有意义，而更有意义的内容更容易记住。

第三步：记住答案。记住学习指南中的所有内容需要多长时间？这取决于它包含了多少信息，显然，不同的人发现记忆更容易或更难。编写学习指南比不编写要好，而在考试前两天完成比在考试前一天完成要好。你可以从那里继续——每提前一天完成都是你可以花一点时间复习的一天。所以，主要问题是计划问题，这个话题如此重要，以至于我把整个第 10 章都用来讨论它。

我们将很快讨论如何把东西放入记忆库的具体细节，但首先我想警告你不要尝试一个诱人的捷径。

一句话：尽可能完善你的学习指南，这样在考试中就不会有任何意外。

TIP 33 Avoid Found Materials

提示 33：避免使用找到的材料

Going through all of your notes on lectures and readings and creating questions for all that content sounds like a lot of work. It is. Online vendors sell outlines and flash card decks for textbook chapters and specific college courses; you might also simply get these things from a friend who took the course. You can buy practice tests and other test-prep materials for standardized tests such as licensing exams. Collectively, I call them “found materials”: content offered to you as relevant but something that was created not by you, nor by whoever wrote the exam.

I strongly recommend you steer clear of found materials.

For one thing, found materials often aren't very good; they contain errors and omissions. Even the materials that come from textbook publishers should be viewed cautiously. They are seldom written by the textbook author, and the instructor may not have thought much about the supplementary materials when she chose the textbook; if you are thinking of using them, ask the instructor whether they will be useful to you. And whether found materials were written by a professional or a fellow student, they may no longer be applicable. I'm constantly updating my classes, and for that reason a deck of questions that was perfect last year won't be perfect this year.

Most important, remember that writing a study guide is an excellent way to commit content to memory. That's why I told you not to split the job of creating the study guide among the people in your study group. And that's why I don't want you to use one created by a stranger.

Next up: How can you commit the content in your guide to memory?

把所有讲座和阅读的笔记过一遍，并为这些内容制定问题，这听起来像是一项繁重的工作。确实很繁重。网上的供应商出售教科书章节和特定大学课程的提纲和记忆卡片套装；你也可以从已经上过此课程的朋友那里得到这些东西。你可以购买标准化考试如资格考试的模拟试卷和其他考试准备材料。总的来说，我称之为“找到的材料”：为你提供的相关内容，但并非你创作的，也不是考试出题者制作的。

我强烈建议你避开这些找到的材料。

首先，找到的材料往往质量不高；他们包含错误和遗漏之处。即使是来自教科书

出版商的材料也需要谨慎对待。它们往往不是由教科书作者写的，教师在选择教科书时可能并没有深思其补充材料；如果你打算使用它们，问问教师它们对你有多大的帮助。不论找到的材料是由专业人士还是同学编写的，都可能已经不再适用。我经常更新我的课程，所以去年完美的一套问题卡片今年就不一定完美了。

最重要的是，记住，编写学习指南是将内容记住的绝佳方法。这就是为什么我告诉你不要把创建学习指南的任务分摊给你的学习小组的其他人。这也是为什么我不希望你使用一个由陌生人创建的指南。

下一步：如何将指南中的内容记住？

In a sentence: Don' t use study materials created by someone else; they' re often inaccurate or incomplete, and creating your own is an excellent way to study.

TIP 34 Pose and Answer Meaningful Questions to Get Memories to Stick

在一个句子中：不要使用别人创建的学习材料。它们常常不准确或不完整，自己创建学习材料是一种非常好的学习方式。

提示 34：提出并回答有意义的问题，以便记忆更牢固。

Okay, you have your sizable, maybe somewhat frightening flash card deck. What' s the best way to learn the answers to all of the questions you' ve posed?

Before I talk about strategies, let me cut short one destructive thought you might have. Don' t tell yourself (or me), “I have a terrible memory.” Almost everyone feels they have a bad memory, because we notice when memory lets us down. Unless you' ve been diagnosed with a memory problem by a doctor, your memory is just fine. Yes, I know you have a friend who seems to remember everything with no effort—everybody has a friend like that. Don' t compare your memory to the memory of that friend. Yours is good enough; it' s a matter of putting it to work.

It' s much easier to remember meaningful content than meaningless content.

Movie plots are so easily recalled because each scene is connected to other scenes—thinking about Buzz Lightyear falling out the window reminds you that Buzz and Woody end up stranded on the road, which reminds you that they catch a ride on the Pizza Planet truck, and so on. A random list of digits is hard to remember because the numbers aren't connected.

To capitalize on this property of memory, make the answer to each question meaningful, even if the question itself is not a “meaning” question. For example, a question in your study guide may be “What were the years of the Era of Good Feeling in the United States?” If you're having trouble remembering the answer (1817 - 1825), make it a meaning-based question by asking “Why?” or “How?” Why does it make sense that the Era of Good Feeling occurred at that time? The year 1817 was shortly after the end of the War of 1812, and there was a strong feeling of nationalism because Americans thought they had won the war. Also, those years coincided with the presidency of James Monroe, who emphasized unity by appointing people from across the political spectrum to government posts.

Asking a “Why?” or “How?” question can make what seems to be an arbitrary link between a question and answer into a meaningful link and it will connect what you're trying to learn to other information that you are trying to master. If you're having trouble finding a good “why” or “how” link, go back to your notes. If you still can't find one, check in with your study group.

好的，你有了你的大幅度，可能有些可怕的抽认卡套装。那么，学习你所提出的所有问题的答案的最佳方法是什么呢？

在谈论策略之前，让我先打断你可能有的一个消极想法。不要告诉自己（或我），“我有个糟糕的记忆力。”几乎所有人都觉得他们的记忆力很差，因为我们注意到记忆力在我们失效时。除非你被医生诊断有记忆问题，否则你的记忆力应该很好。是的，我知道你有一个似乎不费吹灰之力就能记住所有事情的朋友 - 每个人都有这样的朋友。不要把你的记忆力与那个朋友的记忆力比较。你的记忆力足够好了；关键是要把它运用起来。

记住有意义的内容比无意义的内容要容易得多。电影剧情之所以容易记起，是因为每个场景都与其他场景联系在一起 - 想到巴斯光年从窗户掉下来，就会提醒你巴斯和伍迪最终在路上流落，这又会让你想起他们是在披萨星球卡车上搭了顺风车，等等。记住随机的数字列表是很困难的，因为数字之间没有联系。

为了利用这种记忆特性，使每个问题的答案都有意义，即使问题本身不是一个“有意义”的问题。例如，你的学习指南中的一个问题可能是“美国感觉良好时代的年份是哪些年份？”如果你很难记住答案(1817 - 1825)，那么通过问“为什么？”或“怎样？”将其变为一个有意义的问题。为什么“感觉良好时代”会在那个时候出现呢？1817年正好是1812年战争结束后的不久，美国人认为他们赢得了战

争，由此产生了强烈的民族主义情绪。此外，这些年份也正好是詹姆斯·门罗的总统任期，他通过任命各个政治派别的人员担任政府职务，强调了团结。

问“为什么？”或“怎样？”的问题可以使一个问题和答案之间看似任意的链接变成一个有意义的链接，它会将你试图学习的内容与你试图掌握的其他信息相连。如果你有困难找到一个好的“为什么”或“怎样”的链接，返回你的笔记。如果你还是找不到一个，就去检查你的学习小组。

There' s one other technique that has proven effective in getting memories to stick: drawing a picture. It' s not clear why it works, but it' s probably due to the extra mental processing that is required to draw something. If I simply say to you, “Try to remember the word potpourri,” there are few things you could think about to help you remember it. You might think of places you' ve seen potpourri—maybe in a display in a boutique around Christmastime—or you might think of the fact that potpourri is an unusually spelled word with that silent t. But to draw it, you must think of more. You must decide what ingredients will go into your potpourri and whether it' s in a bowl or a basket, and those choices will probably make you think about what sort of room it' s in. All of those details will help you remember the word later.

I don' t recommend that you do this for everything you' re supposed to remember, because it' s too time-consuming. But for material that just won' t stick, try drawing a picture.

In a sentence: Meaningless material is hard to remember, so taking a little extra time to make it meaningful will probably be worth it.

还有一种方法被证明可以有效帮助记忆坚持较长的时间：画一幅图片。我们并不清楚其为何有效，但可能是因为需要额外的脑力来画一样东西。如果我只是对你说，“试着记住‘干花’这个词”，你可以想象一些有助于你记忆的事情。你可能会想到你在哪里看到过干花——可能是在圣诞节期间的精品店的展示窗里——或者你可能会想到干花这个词拼写特殊的地方，比如那个不发音的 t。但要画出它，你必须想的更多。你必须决定你的干花中会有什么成分，是放在碗里还是篮子里，这些选择可能会让你思考它在什么样的房间里。所有这些细节将帮助你稍后记住这个词。

我不建议你对所有要记住的东西都这么做，因为那样太费时间了。但对于那些怎么都记不住的材料，试一试画一张图片。

用一句话说：无意义的材料很难记住，所以花一点额外的时间使其有意义可能会

值得。

TIP 35 Use Mnemonics for Meaningless Content Only

Occasionally you must memorize something that really is meaningless or close to it: the names of the twelve cranial nerves, for example, or rivers in Asia. In eleventh grade I was asked to learn the names of the US presidents in the order in which they had served. (I continue to be surprised by how often that information comes in handy.)

Mnemonics are memory tricks that help you learn something meaningless. One mnemonic technique requires that you memorize something simple, where the simple thing provides cues to the to-be-remembered content. For example, to remember the five Great Lakes, you memorize the cue “HOMES,” which gives you the first letter of each: Huron, Ontario, Michigan, Erie, Superior. In other cases, instead of a word, you memorize a sentence, and the first letter of each word is a cue. Many medical students use the sentence “On Old Olympus’ s Towering Top, a Finn and German Viewed Some Hops” to remember the cranial nerves: olfactory, optic, oculomotor, trochlear, trigeminal, abducens, facial, auditory, glossopharyngeal, vagus, sensory, and hypoglossal.

提示 35：只使用助记符来记忆无意义的内容

有时候，你必须记忆一些真正无意义或接近无意义的东西：比如十二对颅神经的名称，或者亚洲的河流。在我十一年级的時候，我被要求记住美国总统的名字并且按照他们任职的顺序排列。（我一直感到惊讶的是这种信息常常派上用场。）

助记符是帮助你学习无意义事物的记忆技巧。一个助记技巧要求你记住一些简单的事物，这些简单的事物提供了要记忆内容的线索。例如，为了记住五个大湖的名字，你可以记住“HOMES”的线索，这将提供每个湖的首字母：Huron, Ontario, Michigan, Erie, Superior。在其他情况下，你记住一句话而不是一个单词，并且每个单词的第一个字母是一个线索。许多医学生使用“On Old Olympus’ s Towering Top, a Finn and German Viewed Some Hops”的句子来记住颅神经的名称：嗅觉、视觉、眼肌、滑车、三叉、脱垂、面部、听力、咽喉、迷走、感觉和舌下。

Another mnemonic technique has you find ways to associate the facts you need to remember, one with another, often with visual images. For example, if you’ re trying to remember that the Spanish word for ribbon is cinta,

since cinta sounds a little like “Santa,” you might visualize a Santa with a bag containing ribbons instead of toys. Another technique relying on imagery is a mental walk. First, you must think of a mental walk or drive you might take—for example, from your home to a friend’s house—and identify and memorize notable spots along the walk. The first notable spot on my walk might be my front porch, which is composed of an aggregate concrete I dislike. My second spot would be the stone wall halfway down my driveway that visitors keep hitting with their cars. Once you’ve got your mental walk memorized, you can learn a new, arbitrary list of objects by associating list items with the notable spots on your walk. For example, if you ask me to pick up bread, peanut butter, flour, and vitamins at the store, I could memorize the list using my walk. I would associate bread with the first notable spot on my walk (perhaps by mentally placing slices of bread to cover the unsightly aggregate on my porch), then I’d associate peanut butter with the second notable spot (perhaps imagining peanut butter instead of mortar used to repair my smashed rock wall), and so on. Later, when I need to recall the list, I go on my mental walk: I see my front porch, and I remember, “Right, I covered the porch with slices of bread. Bread was the first item on the list.”

Mnemonic methods are often used by competitors in memory contests because they are asked to memorize things that have no intrinsic meaning, such as names to go with photographs of faces or the order of a deck of freshly shuffled cards. Memory contests use such materials exactly because they are lacking in meaning to all contestants, which makes them equally challenging for all. Meaning is helpful to memory, and what something means to you depends on what you already know about the subject. For example, it would be unfair to hold a memory contest in which competitors were asked to memorize a passage from F. Scott Fitzgerald’s novel *Tender Is the Night*, because some contestants might have read the book before.

There are many books on learning written by memory champions, and most of them emphasize the use of mnemonics, but mnemonics should really be your last resort. It’s a technique to be used only when you cannot make information meaningful. That should happen rarely.

In a sentence: Mnemonics help you memorize meaningless material, but they should be a last resort because it’s better to make content meaningful.

另一种记忆技巧是要求你找到将需要记住的事实相互联系的方法,通常是通过视觉图像。例如,如果你试图记住西班牙语中丝带的词是 cinta,因为 cinta 听起来有点像“圣诞老人”,你可能会想象一个装满丝带而不是玩具的圣诞老人。另

一种依赖图像的技术是心理行走。首先，你必须想象一个你可能会走的心理之路，例如，从你的家到朋友的家，并标记并记住沿途的显著地点。我行走的第一个显著地点可能是不喜欢的混凝土门廊。我的第二个地点是我车道中间的石墙，访客们一直把车撞在上面。一旦你记住了你的心理行走，你就可以通过将列表项与行走中的显著地点相关联来学习新的任意对象列表。例如，如果你让我在商店里买面包，花生酱，面粉和维生素，我可以使用我的行走来记住清单。我会将面包与我的行走的第一个显著地点相关联(或许可以通过在脑海中用面包片覆盖我门廊的丑陋混凝土)，然后我会将花生酱与第二个显著地点相关联(可能想象用花生酱代替用来修补我破碎的石墙的砂浆)，等等。之后，当我需要回想清单时，我会进行我的心理行走：我看到我的前门廊，我记起，“对，我用面包片覆盖了门廊。面包是清单上的第一项。”

助记法常常被记忆比赛的参赛者使用，因为他们被要求记住根本没有内在含义的事情，比如要记住照片上的人名或一副刚洗过的牌的顺序。记忆比赛之所以使用这样的材料，正是因为对所有参赛者来说，这些材料都缺乏意义，这使得它们对所有人来说都同样具有挑战性。意义对记忆有帮助，而某件事对你的意义取决于你对该主题已经知道的内容。例如，如果要求参赛者记住 F. 斯科特·菲茨杰拉德的小说《夜晚的温柔》中的一段文字，那就不公平，因为有些参赛者可能已经读过这本书。

许多记忆冠军写的关于学习的书都强调了使用记忆技巧，但记忆技巧实际上应该是你的最后手段。只有当你无法使信息有意义时，才应该使用这种技术。这应该是很少发生的。

总结一句：助记法可以帮助你记忆无意义的材料，但它们应该是最后的手段，因为让内容有意义更好。

TIP 36 How to Use Your Study Guide

All right, you've written your study guide, a comprehensive list of questions and answers. Now what?

You need to commit the answers to memory. That's fairly straightforward: ask yourself a question, and see if you can provide the answer without peeking. But there are a few tweaks you can add to this simple method to make it more effective.

提示 36 如何使用你的学习指南

好的，你已经制作了你的学习指南，是一个包含疑问和答案的全面清单。下一步做什么呢？

你需要把答案记住。这相当直接：问自己一个问题，看你是否能在不看答案的情况下给出答案。但你可以对这个简单的方法进行一些改进，使之更加有效。

First, cover the answers from the start. In other words, don' t start by just reading the questions and answers, start by trying to answer the questions. Research shows that trying to answer questions even before you can know the answers adds a little boost to learning.

Second, it' s a good idea to speak aloud when you answer. Again, there' s research evidence that doing so improves learning. If you' re in a place where speaking aloud would be awkward, whisper or speak subvocally. The reason this helps is not fully understood—it' s not just the “out loud” part, because people remember lists of words better if they say them themselves compared to hearing someone else saying them. The source of the benefit might be that speaking out loud forces you to make your thoughts more complete.

Third, if the question has a longish answer (that is, it' s one you' ve written to prepare for essays), you might imagine that you' re teaching someone else. It' s common knowledge that teaching others is a wonderful way to learn something, and this is an instance when research absolutely agrees with common knowledge. Remember, when you' re quizzing yourself in this way, you may not be able to compose fully formed answers aloud. Rather, you' ll be thinking more in outline form: “First I should talk about this, which raises this question, so then I' ll talk about that.”

Fourth, even if you' re pretty sure you' ve answered correctly, look at the answer you wrote for your study guide. Immediate corrective feedback helps build the right memory if, by chance, you have the answer wrong. If you keep giving the same wrong answer to a question, it may help to explore why you keep making that mistake. Think about why that answer seems right and then explain to yourself (aloud) why the right answer is better.

Finally, pose questions to yourself in random order. Your flash cards will be lumped together by topic, because you wrote all the questions for a lecture or assigned reading at the same time. But test questions will probably not be lumped together by topic, and it' s better to study them in the same way you will be tested. Also, if you test yourself with the same order of questions each time, there' s some danger that your memory for answers will become tied to the question order; in other words, the answer to question 34 jogs your memory for the answer to question 35, but

if someone asks number 35 after number 16, you won't know the answer. 首先，从一开始就遮住答案。换句话说，不要只阅读问题和答案，而是尝试回答问题。研究表明，即便在你还不知道答案之前就试图回答问题，也能稍微提高学习效率。

其次，回答时大声说出来是个好主意。同样，有研究证据表明这样做可以提高学习效果。如果你所在的地方大声说话会很尴尬，就小声说或者潜声说。这种方法之所以有助于学习，原因并不完全明了——并不仅仅是嘴巴动，因为如果让人们自己说出单词列表，比听别人说更容易记住。这种好处的来源，可能在于大声说话会迫使你使思维更完整。

第三，如果问题的答案较长（也就是说，这是你为准备论文而撰写的答案），你可以想象自己在教别人。众所周知，教别人是学习的好方法，这是研究与常识完全一致的事例。记住，当你以这种方式自我测试时，你可能无法大声说出完全成形的答案。相反，你会更多地以大纲形式思考：“首先我应该谈论这个，这个问题却引发了这个问题，所以接下来我会谈论那个。”

第四，即使你相当确定自己的答案是正确的，也看一下你在学习指南上写的答案。立即纠正反馈有助于建立正确的记忆，如果碰巧你的答案是错误的。如果你总是对一个问题给出同样的错误答案，探索你为什么一直犯这个错误可能会有所帮助。想一想为什么那个答案看起来是对的，然后向自己（大声地）解释为什么正确的答案更好。

最后，以随机顺序向自己提出问题。你的抽认卡会按主题归类，因为你是同一时间为一个讲座或指定阅读写所有的问题。但考试的问题可能不会按主题归类，最好以你将被测试的方式来学习它们。另外，如果你每次以相同的问题顺序测试自己，你记住答案的记忆可能会与问题的顺序联系起来；换句话说，问题 34 的答案会唤起你对问题 35 的答案的记忆，但如果有人在问题 16 之后问问题 35，你可能就不知道答案了。

Randomizing question order is easy on a digital platform or if you've used index cards that can be shuffled. If you wrote your study guide on a notepad, you can still bounce around the order of questions, but it's not ideal because it's hard to keep track of which questions you've asked. To me, this consideration is not important enough to dictate that you must compose your study guide digitally or on flash cards.

In a sentence: Quizzing yourself with your study guide is straightforward, but your time can be made a little more effective with some techniques that ensure you don't breeze past the material but instead really think about it.

TIP 37 Don' t Worry About Your Style

在数字平台上或使用可以洗牌的索引卡随机改变问题顺序是容易的。如果你在记事本上写下你的学习指南，你仍然可以改变问题的顺序，但这并不理想，因为很难追踪你已经提问过的问题。对我来说，这个考虑因素并不重要，以至于必须规定你必须在电子设备或闪存卡上编写你的学习指南。

在一句话中：用你的学习指南对自己进行测验很简单，但是一些确保你不要轻易地忽略材料而是真正思考它的技巧可以让你的时间更有效。

提示 37：不用担心你的风格

You may have wondered why I haven' t said how studying should vary according to your learning style. After all, if everyone learns differently, how can I recommend the same strategies for everyone?

Scientists have conducted lots of experiments on this subject, and the evidence shows no support for learning styles theories.

Testing one of these theories is straightforward. Let' s consider the most common learning styles theory, which says that people learn best either visually, auditorily, or kinesthetically (that is, via movement). An experiment would have three phases:

你可能会纳闷，为什么我没有就你的学习方式来说明学习的变化。毕竟，如果每个人的学习方式都不同，我怎么能为每个人推荐相同的策略呢？

科学家们对这个主题进行了大量的实验，证据显示并不支持学习风格理论。

对这些理论的测试是非常直接的。让我们考虑最常见的学习风格理论，这个理论认为人们要么通过视觉，要么通过听觉，要么通过肢体动作（即通过动作）学习得最好。一个实验将有三个阶段：

Phase 1: Classify people as visual, auditory, or kinesthetic learners.

Phase 2: Give people an experience according to one of the three styles. For example, some people see a series of drawings that tell a story, some listen to a version of the story, and some (given some minimal instructions) act out the story. The crucial part is that for some of the people, their experience of the story matches their style, whereas for others, the experience does not.

Phase 3: Test people' s comprehension of the story, or perhaps wait awhile and test their memory of the story. We predict that when the story matches the person' s style, they will learn better.

That' s what we' d predict, but the data don' t come out that way. People' s supposed learning style doesn' t affect their learning. There are at least fifty different learning styles theories, not just visual versus auditory versus kinesthetic but also linear versus holistic, visual versus verbal, and many others. There' s no evidence that honoring people' s learning styles helps them learn.

阶段 1: 将人们分为视觉型、听觉型或动觉型学习者。

阶段 2: 根据这三种风格中的一种为人们提供体验。例如, 有些人看到一系列讲述一个故事的图画, 有些人听故事的版本, 有些人在给出一些最小的指示后, 将故事表演出来。关键的部分是, 对于其中一些人来说, 他们对故事的体验与他们的风格相匹配, 而对于其他人来说, 体验则并不匹配。

阶段 3: 测试人们对故事的理解程度, 或者稍等一会儿, 测试他们对故事的记忆力。我们预测, 当故事符合人的风格时, 他们会学得更好。

这是我们的预测, 但数据并没有这么显示。所谓的人们学习风格并不影响他们的学习。至少有五十种不同的学习风格理论, 不仅有视觉型与听觉型和动觉型, 还有线性与整体型, 视觉与言语型等等。没有证据表明, 尊重人们的学习风格能帮助他们学习。

Despite the lack of evidence, the learning styles myth is resilient, and about 90 percent of the American public thinks it' s backed by scientific evidence. I' ve written about it in several venues, so you can google my name and “learning styles” if you want to learn more.

In a sentence: There' s no scientific evidence for any learning styles theory, so don' t worry about customizing your learning to your “style.”

TIP 38 After You' ve Prepped on Your Own, Meet with Your Study Group

尽管缺乏证据, 但学习方式的误区却很顽强, 大约 90% 的美国公众认为这是有科学依据的。我在许多地方都写过这个话题, 所以如果你想了解更多, 可以谷歌搜索我的名字和 “学习方式”。

用一句话来说：没有任何科学证据支持任何学习方式理论，所以不用担心根据你的“方式”来定制你的学习。

提示 38：在你自己准备完之后，去和你的学习小组见面。

Although students are often encouraged to study together, research indicates that committing things to memory goes no better in a group. I think it's easiest on group members if you meet to discuss what's likely to be on the test, then create and memorize study guides on your own, then meet again before the test, maybe forty-eight hours before.

Why meet if you've already written your study guide and memorized it? This is where the differing perspectives of group members can prove helpful. For this session, I would recommend that the group split into pairs and each member of a pair try to answer questions from the other person's study guide. One benefit is that even though you've tried to make your study guide comprehensive, your group mates will have caught things you missed. A second benefit is that your group mates will phrase questions a little bit differently than you did.

One frustrating thing about memory is that it tends to be narrow when you learn something new. You learn a new concept phrased in a particular way. Even though there's nothing important about that phrasing, that's what sticks with you. So if everybody in your group uses their own language to describe the concepts you're supposed to understand, it will give you a broader perspective on what those concepts mean.

In a sentence: Meet with your study group after you've memorized your study guide to quiz one another; you'll each have slightly different perspectives, which will further aid your memory.

虽然学生们经常被鼓励一起学习，但研究表明，集体记忆并不比个人记忆效果好。我认为，如果学习小组的成员们先讨论一下考试可能出现的问题，然后各自制作并记忆学习指南，再在考试前再次集中讨论一下，可能在考试前 48 小时，这对小组成员们来说会更容易些。

如果你已经写好了你的学习指南并记住了它，为什么还要再次集合呢？这就是小组成员们的不同视角可能产生的帮助。对于这个环节，我建议小组分成两人一组，每个人尝试回答另一个人的学习指南中的问题。一个好处是，尽管你已经尽可能让你的学习指南全面，但你的小组伙伴可能会发现你漏掉的东西。第二个好处是，

你的小组伙伴们提出问题的方式会稍微与你不同。

关于记忆的一个令人困扰的事情是，当你学习新的东西时，它往往很狭窄。你学习了一个以特定方式表达的新概念。尽管这种表达方式并无重要之处，但这就是你记住的东西。所以，如果你的小组中的每个人都用他们自己的语言来描述你应该理解的概念，它会给你更广泛的视野来理解这些概念。

总的来说：在你记住你的学习指南后，和你的学习小组聚在一起，相互提问；你们每个人都会有略有不同的观点，这将进一步帮助你的记忆。

TIP 39 Remember That Cramming Usually Doesn' t Pay

提示 39：记住，死记硬背通常没有好结果

You' ve probably been told “Don' t cram” since you first started taking tests. “Cramming” means budgeting most or all of your study time to fall very close to the exam. In other words, if you plan to spend five hours studying for an exam scheduled for Friday morning, cramming means studying five hours on Thursday night. An alternative would be studying one hour on each of the five days before the test—same total amount of study time, just distributed differently.

The change in timing has been studied by memory researchers for decades, and it makes a big difference to how well you remember content later. Here' s a recent example that I especially like because it closely mimics the experiences of college students.

The researchers used subjects who were enrolled in an introductory psychology class. They picked sixty-four key concepts, then randomly selected thirty-two of those concepts for extra practice. They created a flash card slide deck for the items, and students worked with the deck until they got all the items correct. They had to do that three times, distributed across several weeks.

Then the experimenters analyzed the students' performance on the final examination, separating items that tested the practiced concepts from the

other thirty-two concepts that didn't get extra practice but that students studied on their own. (Remember, this was a real course students were taking for a grade.)

When the researchers asked students how they had studied, they mostly said that they had studied the night before the exam—they had crammed. And the cramming kind of worked. Students didn't do terribly on the final exam for the “crammed” items—72 percent correct, compared to 84 percent correct for the items they had practiced with the flash card deck during the semester. So cramming doesn't lead to great performance, but it's not terrible.

你可能从开始参加考试的时候就被告知“不要临时抱佛脚”。“临时抱佛脚”的意思是将大部分或全部学习时间安排在考试前的最后一段时间。换句话说，如果你计划在星期五早上的考试前花五个小时学习，那么‘临时抱佛脚’就意味着你在周四晚上学习五个小时。另一种方式是在考试前的五天每天学习一个小时——总的学习时间相同，只是分配不同。

这种时间安排的变化已经被记忆研究者研究了几十年，它对你记忆内容的深度有很大影响。这里有一个我特别喜欢的最新例子，因为它非常贴近大学生的经验。

研究者选择了一个正在上入门心理学课程的学生作为研究对象。他们选择了六十四个关键概念，然后随机选择其中的三十二个概念进行额外的练习。他们为这些项目创建了一个闪卡幻灯片，学生们用这个卡片进行学习，直到他们全都记住了。他们需要在几个星期之内重复做三次。

然后实验者分析了学生们在期末考试中的表现，分离出那些练习过的概念的考试项目，与其他三十二个概念的考试项目，这些概念没有得到额外的练习，但学生们自己进行了学习。（记住，这是学生们正在上的一个真实的课程，并且是有成绩的。）

当研究者问学生们他们是如何学习的时候，他们大多数人说，他们在考试的前一天晚上学习——他们进行了临时抱佛脚。临时抱佛脚在某种程度上还是起作用的。学生们在已‘临时抱佛脚’的项目的最后考试中，成绩并不算很糟糕——72%正确，相比之下，他们在学期中用闪卡练习过的项目的正确率为84%。所以，临时抱佛脚可能导致表现不佳，但结果也不算太糟。

What the researchers really wanted to know was whether students continued to show good memory for the information after the final exam. So they paid some students to return either three days or twenty-four days after the final examination to take another exam. The extra exam posed different questions that tested the same concepts.

After three days the students got only 27 percent of the “crammed” items correct. But for questions probing the practiced material, they got 80

percent correct. Even more amazing, the students who returned three weeks after that got 64 percent of the practiced content correct. Cramming “works” so long as you don’t care if you forget the information right after the exam. Distributed studying protects against this rapid forgetting.

What should this result mean for you? There are circumstances in which I could understand why you might cram. Maybe you’re taking a course just for fun and you don’t care if you remember any of the content later—it’s your lowest priority. That I understand. But think of how much extra work cramming creates if you later need to know the content of the course—for example, you take a more advanced course on the topic. If you plan to take Biology 102 and you cram for the final of Biology 101, you’re just creating more work for yourself down the road.

One other thing you should know that’s not obvious from the experiment I’ve described: cramming feels as though it works well. Imagine this: You and I are both trying to learn the sixty-four concepts from the introductory psychology course. I study the list for ten minutes on each of five nights. Each of those nights, when I start studying again, I’ve forgotten some of the content in the previous twenty-four hours. It’s frustrating; it feels as though my studying is not going very well. But relearning is a great way to make memory durable.

Now suppose that, unlike me, you study fifty minutes on the last night. By the end of that fifty minutes, you feel great, as though you know the content cold. And in fact, the moment after we both finish studying that last night, you might remember more than I do. But two days later, you will have forgotten most of it and I will not.

研究人员真正想知道的是，学生们在期末考试后是否仍能对这些信息保持良好的记忆。因此他们付钱让一些学生在期末考试后的三天或者二十四天返回进行另一场考试。额外的考试提出了测试同样概念的不同问题。

三天后，学生们只能答对 27% 的“临时抱佛脚”的题目。但对于测试反复练习过的材料的问题，他们答对了 80%。更令人惊讶的是，那些三周后回来的学生能答对 64% 的练习过的内容。只要你不在乎考试后立即忘记信息，临时抱佛脚就“管用”。分散学习可以防止这种快速遗忘。

这个结果对你意味着什么？我能理解你为什么可能会临时抱佛脚。也许你只是为了乐趣参加课程，你不在乎你是否会记住任何以后的内容——它是你最不重视的。我能理解这一点。但是想想看，如果你以后需要知道课程的内容，临时抱佛脚会创造多少额外的工作——例如，你参加了关于这个话题的更高级的课程。如果你计划参加生物 102 课程，并且你临时抱佛脚为生物 101 的期末考试，你只是为自

己以后增加了更多的工作。

有另一件事你应该知道，从我描述的实验中并不明显：临时抱佛脚感觉就像它工作得很好。想象一下：你和我都试图学习心理学入门课程的六十四个概念。我每晚在五个晚上学习列表十分钟。每个晚上，当我再次开始学习时，我已经忘记了前二十四小时的一些内容。这令人沮丧，感觉我的学习效果不好。但再学是使记忆持久的好方法。

现在，假设你不像我，你在最后一天晚上学习五十分钟。那五十分钟结束时，你觉得非常好，好像你完全掌握了内容。事实上，我们都在最后一个晚上学习结束后，你可能记得比我多。但两天后，你会忘记大部分，而我不会。

The natural question is “If I don’ t put all of my studying into the night before the exam, how exactly am I supposed to distribute it?” People have tried to figure out the exact, maximally efficient practice schedule, and in fact there are apps that schedule practice for you at what is claimed to be the exact right time, depending on how long you hope to remember the content and how well you’ ve done on memory tests so far.

I don’ t think it’ s worth worrying about what the best distribution of practice is. The main thing is to do some distribution of memorization. If shooting for the “perfect” distribution of practice means you’ re supposed to wake up at 5:57 a.m. on Sunday morning to quiz yourself on French verbs, you’ re just going to drop the whole thing. Just do some distribution of practice and, if at all possible, have an overnight sleep between sessions. In other words, it’ s better to study Tuesday evening and then Wednesday morning, rather than Wednesday morning and then Wednesday evening. Sleep is good for learning, as we’ ll see in chapter 11.

In a sentence: Cram only if you sincerely don’ t care about learning for the long term; otherwise, distribute your studying into multiple sessions across days.

自然会产生一个疑问：“如果我不将所有的学习都集中在考试前一晚，我该如何进行分配呢？”人们一直在尝试找出最高效的练习时间表，事实上，有一些应用程序会根据你希望记住内容的时间长度以及你迄今为止在记忆测试中的表现，为你按照声称的“最佳时间”安排练习。

我认为，不需要过分担忧练习的最佳分配方式。主要的是要进行一些记忆的分配。如果为了追求“完美”的练习分配，你需要在周日早上5点57分起床复习法语

动词，那你可能就会放弃整个学习过程。只需进行一些练习的分配，如果可能的话，让每次练习之间有个过夜的睡眠。换句话说，最好是在周二晚上再到周三早上学习，而不是在周三早上然后再到周三晚上学习。睡眠对学习很有帮助，我们会在第 11 章中看到这一点。

用一句话来总结：只有当你真的不关心长期学习时，才去临时抱佛脚；否则，你应该将学习分配到多个在几天里的学习阶段中。

TIP 40 To Prepare for Application Problems, Compare Examples

Instructors often like to include “application” problems on exams—problems that require you to use what you’ve learned, not just pull information from your memory. Because of the way human memory operates, these problems pose a special challenge.

You probably remember experiencing this challenge in school, especially in math class. For example, you learn about congruent shapes, and it all seems pretty straightforward, but then the exam has a word problem about diagonally cut sandwiches and napkins, and it doesn’t occur to you that your knowledge of congruence applies. You learned about congruence with problems that used the word congruence and described simple geometric shapes. You’d get that sort of problem right, but when you read the test problem, your mind immediately goes to your knowledge about sandwiches and napkins, and that doesn’t help you solve the problem. Later, you can’t believe you failed to see what the problem was about.

We talked about memory cues in chapter 3. The specific aspects of the situation (here, sandwiches and napkins) are the memory cues, because the general principle that might apply (congruence) is hidden. It’s not obvious whether the underlying principle of congruence applies to this problem, or calculation of area, or deductive logic, or what. But sandwiches and napkins are explicitly in the problem, so your mind treats sandwich and napkin as cues to memory and hunts for information connected to those.

提示 40：为了准备应用问题，对比一下例子

教师通常喜欢在考试中出“应用”题——需要你运用所学知识，而不只是从记忆中提取信息的问题。由于人类记忆的运作方式，这些问题构成了一种特殊的挑战。

你可能记得在学校，尤其是在数学课上，曾经经历过这种挑战。例如，你学了关

于相等形状的知识，所有的事情似乎都很笔直，但是到了考试出现了一个关于对角线切割的三明治和餐巾的文字问题，并且你没有意识到你关于等形的知识是适用的。你以使用等形一词并描述简单的几何形状的问题方式来学习等形。这种问题你会做对，但当你读到考试题目的时候，你的脑海中会立即想到你关于三明治和餐巾的知识，而这不能帮助你解决问题。稍后，你无法相信你竟然没有看出问题的本意。

我们在第三章中讨论过记忆线索。情境的特定方面（在这里，是三明治和餐巾）就是记忆线索，因为可能适用的一般原则（在这里，是等形）被隐藏起来。这个问题是否适用等形的底层原则，或者计算面积，或者演绎逻辑，都不明显。但三明治和餐巾明确出现在问题中，所以你的大脑把三明治和餐巾当作记忆线索，并寻找与它们相关的信息。

The problem is not limited to math. For example, my students learn about Ivan Pavlov's famous experiment: the experimenter rang a bell, then fed a dog. With repetition, the dog came to salivate when it heard the bell, before it was fed. I expect students to recognize whether or not a very different situation—say, feeling anxious when they approach the classroom in which they failed a math test—is an example of the same type of learning.

How can you prepare for test questions that require you to apply what you've learned to new contexts?

One strategy is to compare different examples of the principle you're studying. In each of the examples above, something happens that leads to an automatic response that the learner can't help: the dog salivates when it's fed, and the student feels anxious when he's failing a test. Then something that doesn't prompt a response becomes associated with the thing that does prompt a response: the bell becomes associated with food, and the classroom becomes associated with struggling with math. With repetition, the once neutral thing (bell or classroom) begins to bring about the response (salivating or anxiety).

Comparing examples helps because it uses the memory-is-the-residue-of-thought principle. Comparing the problems prompts you to think about what they have in common, namely the shared general principle. Understanding the general principle is hard when it's stated in the abstract, but when it's described in the context of a concrete situation, it's easier.

In a sentence: The best way to improve your ability to see the general principle in a problem is to find several examples of the principle and compare them.

问题并非仅限于数学。例如，我的学生会学习关于伊万·巴甫洛夫著名的实验：实验者敲响了一只铃，然后喂狗。经过重复，狗听到铃声就会开始流口水，即使在喂食之前。我希望学生能否识别出一个非常不同的情况 – 例如，当他们走进他们过去在数学测试中失败的教室时感到焦虑 – 是否是同一类型的学习的例子。

你如何准备需要你所学应用到新环境的测试题？

一种策略是比较你正在学习的原理的不同例子。在上面的每一个例子中，都有一些事情发生，导致学习者无法控制的自动反应：狗听到喂食的便开始流口水，学生在测试失败时感到焦虑。然后，一些原本不会引发反应的事物开始与可以引发反应的事物关联：铃声开始与食物关联，教室开始与数学挣扎关联。重复后，曾经中立的事物（铃声或教室）开始引发反应（流口水或焦虑）。

比较例子有助于理解，因为它运用了“记忆是思考的残留”的原理。比较问题能让你思考它们的共同之处，即共享的一般原理。当抽象地陈述通用原理时，理解起来很难，但如果在具体情况下描述，就会容易很多。

总结一句话：提高在问题中看到一般原理的能力的最佳方式是寻找几个原理的例子并进行比较。

TIP 41 To Prepare for Problem Variations, Label the Subgoals

提示 41：为应对问题变化，标记子目标

We’ ve looked at one variety of challenge in applying classroom knowledge to the real world: you look at a complex situation and fail to recognize “Oh, this is that sort of problem.”

Other times, recognizing the problem is relatively easy, but the solution has a few possible variants, and what you learned was a set of steps specific to the example that the instructor provided. Consider this example, offered by the psychologist Richard Catrambone, of what is usually called a “work problem”:

Tom can clean his garage in 2.5 hours. How long will it take him to finish cleaning it if his daughter already cleaned $\frac{1}{2}$ of it?

Solution:

$$(1/2.5 * h) + 0.33 = 1$$

我们已经观察了在将课堂知识应用到实际生活中遇到的一种挑战：你面临一个复杂的情境，却未能认识到“哦，这是那种问题”。

其他时候，认识到问题相对容易，但解决方案有几种可能的变体，你学到的是针对老师提供的示例的一套特定步骤。考虑心理学家理查德·卡特拉姆鲍恩提供的这个例子，通常被称为“工作问题”：

汤姆可以在 2.5 小时内清理他的车库。如果他的女儿已经清理了其中的 1/3，那么他需要多长时间才能完成清理工作呢？

解决方案：

$$(1/2.5 * h) + 0.33 = 1$$

$$(0.4 * h) + 0.33 = 1$$

$$0.4h = 0.67$$

$$h = 1.68 \text{ hrs,}$$

where h is the number of hours worked.

$$(0.4 * h) + 0.33 = 1$$

$$0.4h = 0.67$$

$$h = 1.68 \text{ 小时,}$$

其中 h 是工作的小时数。

Based on this example, you might conclude, “The way to solve work problems is to divide 1 by one person’s time, multiply it by the unknown, add what was already done, and set all of that equal to 1.” That description fits the example. So far, so good.

But that set of steps doesn’t apply for another work problem, even though it’s similar:

Bill can paint a room in 3 hours, and Fred can paint it in 5 hours.

How long will it take them if they work together?

根据这个例子，你可能会得出这样的结论：“解决工作问题的方法是以一人的时间为除数进行 1 除，然后乘以未知数，添加上已完成的部分，然后将所有这些都等于 1。”该描述适合此示例。目前为止，一切顺利。

但是，即使类似，这组步骤也不适合其它工作问题：

比尔能在 3 小时内把一个房间刷完，而弗雷德能在 5 小时内刷完。

如果他们一起工作，需要多长时间？

Things went wrong because we described the first problem in very particular terms that applied only to that problem. We needed a set of steps that was just a bit more abstract: think about the amount of work done by each worker, then set it equal to the total amount of work to do. That is a conceptual description of subgoals:

First, I should represent the amount of work each worker does.

Second, I should set it equal to the total amount of work to do.

Labeling subgoals is a good way to ensure that you think about the general principle of multistep solutions to problems.

事情出错是因为我们特别详细地描述了第一个问题，而这只适用于那个问题。我们需要一套稍微抽象一些的步骤：思考每个工人完成的工作量，然后将其设定为要完成的总工作量。这是子目标的概念描述：

首先，我应该表示每个工人完成的工作量。

其次，我应该将其设定为要完成的总工作量。

标记子目标是确保你考虑解决问题的多步骤解决方案的一般原则的好方法。Here's another example. Suppose you're trying to learn how to use Gmail, and you look up the procedure to create a calendar event from an email. Tutorials commonly provide a series of steps that produce the desired outcome, such as this:

On your computer, go to Gmail.

Open the message from which you want to create an event.

On the ribbon of icons at the top, click the one with three dots.

Select “Create event.”

这是另一个例子。假设你正在尝试学习如何使用 Gmail，而你查找的是从电子邮件创建日历事件的步骤。教程通常会提供一系列生成所需结果的步骤，就像这样：

在你的电脑上，打开 Gmail。

打开你想要创建事件的信息。

在顶部的一排图标中，点击那个有三个点的图标。

选择“创建事件”。

Google Calendar will open, creating an event titled with the email subject line and inviting anyone else who received the email.

Set the date and time of the event.

Click “Save” at the top right of the screen.

This example could have the same drawback we saw with the work problems. Your understanding of the solution includes steps that apply only to this example, as it’s specific to your computer and the procedure is slightly different on your phone. It’s better to be mindful of the abstract principles that underlie the specific actions you’re taking. For example. you could set them up like this:

Google 日历将会打开，创建以电子邮件主题行为标题的事件，并邀请其他收到该电子邮件的人。

设定事件的日期和时间。

点击屏幕右上角的“保存”。

这个例子可能会有我们在工作问题中看到的同样的缺点。你对解决方案的理解包括只适用于这个例子的步骤，因为它特定于你的电脑，而你的手机上的步骤有些许不同。最好留心那些支撑你正在采取的具体行动的抽象原则。例如，你可以这

样设置它们：

Navigate to Message

On your phone, open Gmail.

Open the message from which you want to create an event.

Create Event

导航至信息

在你的手机上，打开 Gmail。

打开你想要创建事件的信息。

创建事件

Tap the underlined date or time in the message.

Choose “Create event” from the menu that appears.

Complete Missing Properties

A window opens, creating an event titled with the email subject line and with the date and time from the email.

点击消息中的下划线日期或时间。

从出现的菜单中选择“创建事件”。

完成缺失的属性

会有一个窗口打开，创建一个以电子邮件主题行为标题，以电子邮件的日期和时间为准的事件。

Change the duration if needed. (Default duration is one hour.)

Invite others to the event if needed.

Save Event

Click “Add” at the top right of the screen.

如有需要，更改持续时间。（默认持续时间为一小时。）

如有需要，邀请其他人参加此活动。

保存事件

在屏幕右上角点击“添加”。

Labeling the subgoals may seem like a trivial change. But the labels facilitate two mental processes that we’ve already seen can aid learning: first, they make explicit the organization of the steps, and second, they emphasize meaning—they make clear why you’re carrying out each step.

To use this strategy, start with an example provided in your textbook that’s meant to illustrate a particular type of problem solution. Scan the accompanying text that describes the procedure in more abstract terms. Then match the two by creating labels for the subgoals that the concrete steps are meant to address. If possible, find someone who understands the procedure well to give you feedback on whether you’ve gotten it right.

In a sentence: When you learn a multistep solution to a problem, part of the solution may be specific to that one problem; to help you apply your knowledge more broadly, try labeling the subparts of the solution.

将子目标进行标记可能看起来是微不足道的改变。但是这些标签促进了我们已经看到可以帮助学习的两种心理过程：首先，它们明确了步骤的组织方式；其次，它们强调了意义——它们明确了你为什么要执行每一步。

使用这种策略时，可以从你的教科书中提供的一个用来说明特定类型问题解答的示例开始。浏览描述更抽象术语程序的附 accompanying 文本。然后通过为具体步骤中的子目标创建标签来匹配这两者。如果可能的话，找一个理解程序的人给你反馈，让你是否理解正确。

用一句话说：当你学习解决问题的多步骤解决方案时，解决方案的一部分可能特定于那个问题；为了帮助你更广泛地应用你的知识，试着给解决方案的子部分打标签。

For Instructors

Naturally, it's up to learners to implement the study methods described in this chapter, but there are a few things instructors can do to smooth the way.

One is to be forthcoming about what will be tested and how. Because they are new to the field, students are not good judges of what is really central information and what's a fun fact you just threw in. Tell them.

You can also provide guidance about what I've called "found materials." Mimic the search a student would do when looking for study materials for your class. Then tell your class about the quality of what you found and remind students why creating their own materials leads to greater success in the course.

对于指导员

当然，学习者需要实施这一章节中描述的学习方法，但是指导员可以做一些事情来简化这个过程。

一是明确告知将测试什么以及如何测试。因为他们是这个领域的新手，学生们并不擅长判断什么是真正核心的信息，什么只是你随便添加的有趣事实。告诉他们。

你还可以提供关于我所说的“找到的材料”的指导。模仿学生寻找你课程学习材料时的搜索过程。然后告诉你的班级你找到的材料的质量，并提醒学生，为什么创造自己的材料会导致课程的更大成功。

When it comes to getting learners to use the learning tips described here, certainly you can simply tell them, "These strategies are good, and these others that you might be using are less effective," but to avoid overwhelming them, you might start with the three learning strategies you think have the greatest chance of being used.

It might be even more effective to demonstrate the techniques to students rather than telling them. You can:

Use retrieval practice by giving low- or no-stakes quizzes in class.

Use distributed practice (see tip 39) by revisiting content at targeted times of the marking period.

Use the power of meaning (see tip 34) by emphasizing to students the links among what seem like disconnected facts.

当涉及到让学习者使用这里描述的学习技巧时，当然你可以直接告诉他们，“这些策略是好的，而你可能正在使用的其他策略效果较差”，但为了避免让他们感到困扰，你可能会首先开始使用你认为最有可能被使用的三种学习策略。

向学生演示这些技术可能会更有效，而不是仅告诉他们。您可以：

通过在课堂上进行低风险或无风险的测验来实践检索。

通过在成绩计算时段的特定时间重新访问内容，使用分布式学习(参见提示 39)。

通过强调对学生来说，看似无关的事实之间的联系，使用意义的力量(参见提示 34)。

Describe to students what their study guide should look like (see tip 32). Devote a little time at the end of a few classes to letting them practice writing study guide questions for the material covered that day. Provide models and have students share the questions and answers they compose.

Just deploying these learning tips in class will result in better learning, but you can also go all out by repeating the experiment I described as part of tip 39. Employ a learning tip in class for some of the content but not the rest. Then, on a unit test, separate students' performance on the content you targeted. Show students how much better they did on that content, explain why, and then emphasize that they can do this kind of work as part of their own studying.

向学生们描述他们的学习指南应该是什么样子（参见提示 32）。在几堂课的末尾花一点时间让他们练习为当天覆盖的材料写学习指南的问题。提供模型，并让学生们分享他们组成的问题和答案。

仅仅在课堂上使用这些学习提示就会带来更好的学习效果，但你也可以全力以赴，重复我在提示 39 中描述的实验。在部分内容中用一个学习提示，而其他内容则不用。然后，在单元测试中，把学生在你目标内容上的表现单独出来。向学生显示他们在那部分内容上做得有多好，说明原因，然后强调他们可以把这类工作作为自己学习的一部分。

Summary for Instructors

Tell students what information they are and are not expected to memorize for exams.

Talk to students about the value and reliability of “found materials.”

Advise students how to study.

向学生说明他们需要和不需要为考试记住什么信息。

和学生讨论“找到的材料”的价值和可靠性。

指导学生如何学习。

Put principles such as distributed practice and retrieval practice to work during class time.

在课堂时间运用分布式练习和检索练习等原则。

第七章 如何判断你是否准备好考试

A lawyer preparing for the bar exam doesn' t set a time—say, one hundred hours—that she' ll study and then stick to that. She evaluates her learning as she goes and stops when she thinks she' s mastered the material. Thus, learners must be confident that their judgments about what they know are accurate.

You' ve surely had the experience of thinking you were ready for a test and then somehow doing poorly anyway. People in this situation often blame the test. They figure, “I know I knew the content. Therefore, there must be something wrong with the test because it did not show that I knew it.” But your judgment “I knew the content” is the result of a mental assessment. Maybe that was the lousy test, not the exam the instructor administered. It may come as a surprise, but people can be mistaken about what they know.

Many Factors Contribute to Judgments of Learning

一位准备法律资格考试的律师并不会设定一个时间——比如说，一百个小时——然后坚持不懈地学习。她会随着学习的进行对自己的学习进行评估，当她认为自己已经掌握了所需的材料时就会停止学习。因此，学习者必须对他们对所知识的判断有信心。

你肯定有过这样的经历，认为自己已经准备好了考试，但结果却令人失望。在这种情况下，人们常常会责怪考试。他们会想，“我知道我知道这个内容。所以，考试一定出了问题，因为它没有显示出我知道这个内容。”但你的判断“我知道这个内容”是心思评估的结果。也许这就是糟糕的测试，而不是教师分发的考试。这可能会让人吃惊，但人们可能会错误地判断他们所知的内容。

许多因素影响学习判断。

Suppose you are taking a conservation biology course and you want to cement this fact in your memory: the red-handed howler monkey is native to Brazil. How would you know whether you' ve learned it? Easy: ask yourself, “The red-handed howler monkey is native to which country?” and see what pops

out of your memory. Certainly, that's one way to judge whether you know something, and it's a good one.

But people confuse performance and learning. Here's the difference. Suppose I see you right after a workout, and you tell me you've been practicing push-ups and can do twenty. I say, "Cool, show me!" You might say, "I can't now; I'm tired from my workout." You've learned to do twenty push-ups, but your performance wouldn't show that learning in the current circumstances.

When it comes to learning, "performance" means saying "Brazil" in response to the question "The red-handed howler is native to which country?" You can see why you would think, "I answered the question, so I definitely know that one." But the fact that you can answer it now (under one set of conditions) doesn't mean that you will be able to access that memory reliably under all circumstances.

For example, you might have learned to speak conversational Japanese pretty well, but your performance with a Japanese border agent doesn't show your learning because you are tired from your flight and a little nervous. (Or maybe it's just me who gets nervous for no reason when talking to border agents.)

假设你正在修一门保护生物学的课程，你想在记忆中牢记这个事实：红手吼猴是巴西的本土生物。你如何知道你已经学会了呢？很简单：问自己“红手吼猴是哪个国家的本土生物？”然后看看你的记忆中会出现什么。当然，这是判断你是否了解某件事的一种方法，而且是很好的方法。

但是人们常常把学习和表现混淆。以下就是他们的区别。假设我在你健身后看到了你，你告诉我你一直在练习俯卧撑，可以做到二十个。我说：“酷，给我展示一下！”你可能会说：“我现在无法做到；我因为健身而累了。”你已经学会做二十个俯卧撑，但是在当前的情况下，你的表现无法展示出你学习的成果。

在学习中，“表现”意味着在问题“红手吼猴是哪个国家的本地动物？”的响应中说“巴西”。你可以看出，你会想，“我回答了问题，所以我肯定知道答案。”但是，你现在可以回答这个问题（在一种条件下）并不意味着你会在所有情况下都能可靠地寻找到这个记忆。

例如，你可能已经学会了日常日语对话，但是与日本边境检查员的交谈并不能很好地展示你的语言学习成果，因为你由于飞行而疲倦，加上一点紧张。（或者只有我在与边境检查员交谈时毫无原因地紧张。）

Typically people overestimate what they know because they test their knowledge in ways that, without their realizing it, support their performance. Thus, they judge that they have learned something because

their performance is good when they quiz themselves, but in fact their memory is shaky.

WHEN JUDGING WHETHER YOU'VE LEARNED SOMETHING

What your brain will do: It will confuse performance and learning. If you recite something from memory—even though you aren't really drawing on your memory—your brain will conclude that you've studied enough.

How to outsmart your brain: Test your knowledge without any other support to your performance. The easiest way to do that is to mimic the conditions of an exam.

通常，人们会高估自己的知识，因为他们以一种他们自己并未意识到的方式来测试自己的知识，这种方式实际上支持了他们的表现。因此，他们会因为自测的结果良好，从而判断自己已经学会了某件事，但实际上他们的记忆并不牢靠。

在判断自己是否学会了某件事时

你的大脑会做什么：它会混淆表现和学习。即使你并没有真正调用你的记忆来背诵某件事，你的大脑也会得出你已经学习足够的结论。

如何愚弄你的大脑：在没有任何其他支持的情况下测试你的知识。最简单的方法就是模拟考试的条件。

In this chapter we'll look at three ways that people can be deceived about their learning when testing themselves, and I'll describe self-tests you can do to get better information about what you really know.

TIP 42 Be Clear About What It Means to “Know” Something

在这一章节中，我们将探讨人们在自我测试时可能受到欺骗的三种方式，我也会描述一些你可以做的自我测试，以便更好地了解你真正知道的内容。

提示 42：清楚地理解“知道”某事的含义

In his Confessions, written in about the year 400, Saint Augustine noted, “If no one questions me, I know; if I want to explain it to those who question me, I don’ t know.”

This distinction is timeless. Every instructor has had a conversation with a student that went something like this:

Student: I can’ t understand how I could have gotten such a low grade. I studied so hard, and I know that I knew everything! Some of the questions seemed really ambiguous to me.

Instructor: But you knew everything….

Student: Yes!

在大约 400 年的《忏悔录》中，圣奥古斯丁写道：“如果没有人质疑我，我知道；如果我想向质疑我的人解释，我就不知道。”

这种区别是永恒的。每个教师都曾与学生进行过像这样的对话：

学生：我无法理解我为什么会得到这么低分数。我学习得很努力，我知道我知道的一切！有些问题对我来说真的很模糊。

教师：但你知道所有的一切…

学生：对！

Instructor: So, for example, you’ d be comfortable explaining the different mechanisms of forgetting.

Student: For sure.

Instructor: Okay, so why don’ t you describe the main theories of forgetting we talked about.

Student: Okay. There’ s a stimulus and a response. And if the stimulus is not connected to the response… wait… no… yes, that’ s right, if the stimulus gets cut off from the response, or wait, not cut off… um… well… I know it, I just can’ t explain it.

教练：例如，你会感到很舒适去解释忘记的不同机制。

学生：当然。

教练：好的，那你为何不描述我们谈论过的忘记的主要理论。

学生：好的。有刺激和反应。如果刺激没有与反应链接……等等……不……对，就是这样，如果刺激与反应断开，或等等，不是断开……呃……嗯……我知道，只是我无法解释它。

This student is using the word know differently from the way instructors do. The student is thinking, “When we first started studying how forgetting works, it made no sense to me. I didn’ t understand the textbook chapter, and I didn’ t understand the lecture. But I went over the reading really carefully, and a friend from class explained some of the concepts in a different way, and now when I hear the theories of forgetting, it all makes perfect sense.”

You can see why the student feels he understands; he is much farther along than he was. Following along when someone else discusses an idea is partway to the understanding that instructors expect. But it’ s not enough. Being ready for a test means being able to explain content yourself, not just understanding it when someone else explains it.

This situation is a good example of the difference between performance and learning. My student is noting his performance: “I’ m following this discussion really well, and a few days ago it would have been really confusing!” He’ s not considering that this performance does not necessarily signify complete learning.

Unfortunately, the way that many people study leads them to exactly this mistaken perception of what they know. Let’ s see how that happens.

In a sentence: “Knowing” doesn’ t mean being able to understand an explanation; it means being able to explain to others.

这个学生对“知道”这个词的理解和教师的不同。学生在想：“当我们首先开始研究如何忘记时，我一点都不理解。我不懂教材的章节，也不懂课堂讲座。但我仔细看过阅读材料，课堂上的一个朋友用不同的方式解释了一些概念，现在，当我听到关于“遗忘”的理论时，一切都显得非常清晰。”

你可以理解为什么学生觉得他理解了；他的理解程度已经比之前高了很多。在别人讨论一个想法的时候跟随理解，这是朝着教师期待的理解方向迈进的一部分。但这还不够。为了准备考试，你需要能够自己解释内容，而不仅仅是在别人解释的时候理解。

这个情况很好的展示了表现和学习之间的区别。我的学生在注意他的表现：“我非常好地跟随了这个讨论，几天前这对我来说会非常混乱！”他没有考虑到这种表现并不一定代表完全的学习。

不幸的是，许多人学习的方式正导致他们对自己所知的误解。我们来看看这是如何发生的。

总之，“知道”并不意味着能够理解别人的解释；它意味着能够向他人解释。

TIP 43 Rereading Leads to Overconfidence in Your Knowledge

提示 43：重复阅读会导致你对知识的过度自信

Imagine you’ re taking a business school course called Innovation. You attend a lecture on wearable technology: clothing and jewelry that collect and store physical information such as heart rate and body temperature. It’ s pretty interesting, and you have little trouble following it. The next time the class meets, the professor starts to deliver exactly the same lecture. A nervous titter runs through the room, which the professor ignores. Soon, someone raises their hand and points out that he already gave this lecture. The professor says, “Yes, but it’ s important material, so it’ s worth repeating.” He proceeds to give a presentation identical to the previous one: same slide deck, same anecdotes, same “spontaneous” jokes.

What would you think?

If you’ re like me, you would think it was a big waste of your time. I’ d be thinking, “Yes, yes, you said that last time. I know all this, I’ m not learning anything.”

Now, do I know the content the speaker is reviewing? Yes and no. On the one hand, I know I have heard it before, and that judgment is based on my memory of the previous lecture. In that sense I “know” it. But if I tried to provide a summary of what he said, it wouldn’ t be very good.

Many memory researchers distinguish between two ways that you can pull information out of memory. One method is rapid and requires very little attention, but it can provide only limited information; it identifies whether or not something is familiar. It tells you whether you've encountered something before but not anything associated with it, nor where or when you encountered it. Another memory process can provide information associated with something, but this process requires attention, and it occurs more slowly.

想象一下，你正在参加一个叫做“创新”的商学院课程。你参加了一个关于穿戴技术的讲座：收集和存储诸如心率和体温这样的身体信息的衣物和珠宝。这个课程相当有趣，你并没有遇到太大的理解困难。但在下一次课程开始时，教授开始重复之前那堂课的内容。教室里响起了紧张的窃笑声，但教授并不在意。不久，有人举手指出他已经讲过这个课程了。教授回应：“是的，但这是重要的内容，值得再次讲解。”他然后继续进行和前一次相同的演讲：同样的幻灯片，相同的趣事，相同的“即兴”笑话。

你会怎么想？

如果你和我一样，你会觉得这是在浪费你的时间。我会想：“是的，是的，你上次就讲过了。我都知道，我没学到任何新的东西。”

现在，我知道这个演讲者正在回顾的内容吗？可以说是知道也可以说是不知道。一方面，我知道我以前听过，这个判断是基于我对前一次讲座的记忆。在这个意义上，我“知道”了。但是如果我试图总结他所说的内容，效果可能不会很好。

许多记忆研究者区分了两种可以从记忆中提取信息的方式。一种方法快速且需要很少的注意力，但它只能提供有限的信息；它可以识别出某件事是否熟悉。它告诉你你是否曾经遇到过这个问题，但无法告诉你与此相关的任何信息，也无法告诉你你在何处或何时遇到它。另一种记忆过程可以提供与某物相关的信息，但这个过程需要注意力，并且进行得较慢。

These two types of memory probably ring a bell. Sometimes you'll see someone on the street and the familiarity process tells you, "You know this person!" So you call on the other process for more information: What is this person's name, and how do I know them? That second process may deliver nothing—you have no information about their name, how you know them, or anything else. That doesn't make you feel less certain that you've seen them before.

In tip 30 I mentioned that rereading is one of the most common study techniques and pointed out that it's not an effective way to commit something to memory; you should think about meaning, and rereading doesn't guarantee that.

Here we consider another reason why rereading is a bad idea: rereading misleads you into thinking, “I know this.” Rereading is like going to the lecture on wearable tech for the second time. When you’ re rereading, you’ re thinking, “Yes, yes, I’ ve seen all this before. This is totally familiar.” But that’ s just it—the sense of “knowing” you’ re getting is from the memory process that assesses whether or not you’ ve seen something before. You’ re right, you have seen it before, but knowing you’ ve seen it before is not the same as being able to talk about or analyze the content. And the more you reread, the more the process that assesses familiarity tells you, “You’ ve seen this before!”

To be clear, rereading is desirable for the purpose of comprehension. If you read something and didn’ t understand it, give it another try. But rereading is a bad way to commit something to memory. It’ s bad enough that it doesn’ t help memory much, but in addition it makes you believe that your knowledge of the content is improving.

So what can you do to get a more accurate assessment of how your studying is going?

这两种类型的记忆应该给你带来了一些启发。有时你会在街上看到某人，熟悉的感觉告诉你，“你认识这个人！”然后你就会寻求其他过程来获取更多信息：这个人的名字是什么，我是如何认识他的？第二个过程可能一无所获，你对他们的名字、你如何认识他们和其他任何信息一无所知。但这并不会让你觉得自己以前没有见过他们。

在第 30 条建议中，我提到重读是最常见的学习技巧之一，并指出这并不是是一种有效的记忆方法；你应该思考内容的含义，而重读并不能保证这一点。

在这里我们会讨论重读为什么不好的另一个原因：重读会误导你去思考，“我知道这个。”重读就像第二次参加对可穿戴技术的讲座。当你重读的时候，你在想，“是的，是的，我之前看过所有这些。我对这完全熟悉。”但是，你所得到的“知道”感觉其实来源于评估你是否见过某样东西的记忆过程。你是对的，你以前见过它，但是知道你见过它并不等于你能够讨论或分析内容。而且你重读的越多，评估熟悉度的过程就会越告诉你，“你见过这个！”

明确一点，为了理解而重读是可取的。如果你读了某个东西却不理解，那就再试一次。但是重读对于记忆某个东西来说是个不好的方法。它不仅对记忆帮助不大，而且还会让你误以为你对内容的理解在提高。

那么该如何更准确地评估你的学习情况呢？

In a sentence: Rereading boosts familiarity, giving you a false sense that you have mastered content, but being familiar with something doesn’ t mean

you can recall it from memory and provide other, related information, which is exactly what you need to do for an examination.

TIP 44 Evaluate Your Preparation with the Right Type of Self-Testing

在一个句子中：重复阅读增加了熟悉度，给你一种错误的感觉，即你已经掌握了内容，但熟悉某件事并不意味着你能从记忆中回忆起它，并提供其他相关信息，这正是你在考试中需要做的。

提示 44： 用正确的自我测试类型评估你的准备情况

At the start of this chapter I noted that the question “How do you know whether you know?” sounds stupid because it seems easy to evaluate: you look into your memory and see if the information is in there. The problem, as we’ve discussed, is that you might rely on other information (usually, a feeling of familiarity) to make that judgment. Your first instinct—to look into your memory—was good, but you need to ensure that you actually test your memory for the content.

People understand that part of exam preparation is self-testing. The mistake they make is not challenging their memory the way it will be challenged on the test. They read over their textbook and then look up and try to summarize the section they just read. If they can provide a good summary, they figure that’s evidence that they’ve mastered the content. This is a decent way to test comprehension—if you can paraphrase what you just read, you understand it. (It’s not foolproof, however, because you have no way of knowing whether your paraphrase is accurate.) But if you aim to commit something to memory, this self-testing is faulty in three ways.

First, you can’t self-test for material you just finished reading. You’re not really testing your memory, because the content is still rattling around in your short-term memory—you just read it! There’s no hard-and-fast rule here, but I’d say at least thirty minutes should elapse between when you read content and when you self-test on that content.

Second, summarizing is fine as one type of self-test, but you really want to quiz yourself on other content: knowledge of specific details, inferences you can draw, comparisons among ideas, and so on.

Third, when you self-test, you need to articulate your answers aloud. When you answer in your head, it's too easy to be satisfied with a vague or incomplete thought. Answering aloud and articulating full thoughts makes it plain to you whether you've really got it.

在这一章的开始,我指出“你如何知道你是否真的了解?”这个问题听起来很愚蠢,因为似乎很容易评估:你查看你的记忆,看是否有该信息。问题是,如我们讨论过的,你可能依赖其他信息(通常是熟悉的感觉)来做出这个判断。你的第一反应——查看你的记忆——是正确的,但你需要确保你实际上测试了你对内容的记忆。

人们知道考试准备的一部分是自我测试。他们犯的错误是没有以考试时会遇到的方式挑战他们的记忆。他们查阅自己的教科书,然后抬头试图总结刚刚读过的部分。如果他们能提供一个良好的总结,他们认为这是他们已经掌握了内容的证据。这是一个检验理解力的好方法——如果你能够改述你刚刚阅读的内容,你就理解了它。(然而,这并不是百分之百准确的,因为你无法确定你的改述是否准确。)但如果你的目标是把某些内容记住,这种自我测试有三个方面是错误的。

首先,你不能在刚刚阅读完的材料上进行自我测试。你并没有真正测试你的记忆,因为内容仍在你的短期记忆中回荡——你刚刚读了它!这里没有硬性规定,但我会说从你阅读内容到你在该内容上自我测试之间至少应该有三十分钟的间隔。

其次,总结作为一种自我测试是可以的,但你真正想要针对其他内容考自己:了解具体的细节,你可以得出的推断,对比各种想法等等。

第三,当你自我测试时,你需要口头表达出你的答案。当你在你的脑海中回答时,过于容易对模糊或不完整的想法感到满意。口头回答并表述完整的思想可以清楚地告诉你是否真正理解了它。

You probably noticed that the conditions I set for self-testing—test when you haven't seen the answer recently, use varied questions, say the answer aloud, get feedback—is pretty much baked into the procedure I encouraged you to use for studying in chapter 6. If you write a comprehensive question-and-answer study guide and study by testing yourself, you will get good information along the way regarding how much you know.

In a sentence: To assess whether you really know something, you should test yourself when you haven't seen the content recently and say the answers aloud—a practice that pairs easily with the method I suggested you use to memorize your study guide.

TIP 45 Don' t Use Practice Tests to Judge Your Readiness for an Exam
你可能已经注意到,我为自我测试设定的条件—在你最近没有看到答案的时候测试,使用各种各样的问题,大声说出答案,获取反馈—这几乎都融入到了我在第六章中鼓励你用来学习的方法中。如果你编写一个全面的问答学习指南并通过自我测试来学习,你将在此过程中获得关于你知道了多少的好信息。

用一句话来说:为了评估你是否真的知道某件事,你应该在最近没有看过内容的时候测试自己,并大声说出答案—这一做法很容易与我建议你用来记忆学习指南的方法配对。

提示 45: 不要使用练习测试来判断你是否准备好考试。

I' ve mentioned that my students are eager to get their hands on exams from prior years. But I actually think old exams do more harm than good, at least the way my students use them.

Even if they know that the questions will be different this year, students use old exams to judge whether or not they are prepared. The logic seems to make sense: if I take last year' s exam and score 90 percent, it would seem that I' m ready for this year' s exam.

There are a couple of reasons you shouldn' t use previous tests to evaluate your readiness. First, last year' s test probably doesn' t exactly reflect this year' s content. The readings may have changed, the pace of the course might be faster or slower, some topics have received greater or lesser emphasis, and some content may have been updated. These changes accumulate as time passes, so if a student collects exams from the last several years (probably gloating over her prize), the older ones will reflect this year' s course all the more poorly.

我曾经提到我的学生热切地希望得到往年的考试试卷。但实际上,我认为过去的考试对他们的影响可能弊大于利,至少对我来说,学生们使用它们的方式是这样的。

即使他们知道今年的考题将会有所不同,学生们还是会用旧的考卷来判断他们是

否做好了准备。这种逻辑看似有道理：如果我做了去年的考试，得分 90%，看起来我应该准备好了今年的考试。

但有几个原因你不应该使用以前的考试来评估你的准备情况。首先，去年的考试可能并不能完全反映今年的内容。阅读材料可能已经改变，课程的进度可能会加快或减慢，有些话题可能被更大或更少的强调，且一些内容可能已经被更新。随着时间的推移，这些变化会积累起来，因此如果学生收集了过去几年的考试（可能对她的获得的奖品洋洋得意），较旧的考试将更糟糕地反映今年的课程。

Naturally, students have no way of knowing how the course has changed. So if the term blocking appears on a test from two years ago and I didn't discuss blocking this year, students with that old exam will panic. "Why can't I find blocking in the book or my notes?" That problem is unfortunate because of the panic, but at least it's easily fixed: the students ask me about blocking, and I tell them we're not covering it this year. (Actually, I usually explain blocking first and then tell them that it's not part of the class and so won't be tested. This practice does not make me more popular.)

There's a more serious drawback to using old tests to evaluate your preparedness. Suppose there were, say, a thousand concepts covered in a course. Naturally, a test won't include questions on every concept, so you might say to yourself, "I think I'll learn nine hundred of them, and maybe I'll be lucky and the instructor won't ask anything about the hundred I've ignored." That's a bad strategy, because there's no reason you should expect to be lucky. Ideally you want to learn everything. Even with that goal, there will be some things you know better than others and therefore some element of luck in your exam score, depending on what happens to appear on the exam.

It's obvious, then, that if you want to minimize chance, you should judge whether you're ready for the test based on how well you know everything. If you take an old test to decide if you're ready, you are judging your readiness on just a fraction of the content to be learned. You're throwing an element of chance into your preparation when you don't have to.

It's smart to look at old tests to get a sense of the types of questions that an instructor tends to ask. But don't use old tests to measure whether you've done enough studying. Judge whether you're ready for a test by how well you know the content of the study guide you've written.

In a sentence: Use old exams to get a sense of the types of questions that might be posed, not to judge whether or not you have done enough studying.

自然地，学生们不会知道课程是如何变化的。所以，如果两年前的一次考试中出

现了"封锁"这个词,而我今年并未讨论这个问题,拿到老试卷的学生会感到恐慌。“为什么我在书或笔记中找不到'封锁'这个词?”这个问题令人遗憾,会让学生感到恐慌,但至少可以轻易解决:学生向我询问有关"封锁"的问题,我告诉他们我们今年并不会涉及这个问题。(实际上,我通常会先解释什么是"封锁",然后告诉他们这不是课程的一部分,因此不会在考试中出现。这种做法并没有让我更受欢迎。)

使用老试卷来评估你的准备情况有一个更严重的缺点。假设一门课程覆盖了一千个概念。自然,一次测试不可能涵盖所有概念,所以你可能会对自己说,“我想我会学习其中的九百个,可能我会很幸运,教师不会问我忽略的那一百个。”这是一个糟糕的策略,因为没有理由你应该期待自己会有幸运。理想的情况是你要学习所有的东西。即使有这个目标,你会对某些事情知道得比其他人更多,因此你的考试成绩会有一些运气成分,这取决于考试中出现的内容。

很明显,如果你想尽量减少运气因素,你应该根据你对所有内容的掌握程度来判断你是否准备好了这次测试。如果你拿一份旧试卷来决定你是否准备好了,那你其实只是在对要学习内容的一部分做出判断。你在准备过程中引入了一种不必要的运气因素。

查看旧试卷以了解教师倾向于提问的类型是明智的。但不要使用旧试卷来衡量你是否已经做足了学习准备。你应该根据你对学习指南内容的了解程度来判断你是否准备好了考试。

总结一句:利用老试卷来了解可能会出现的问题类型,而不是用来衡量你是否已经做足了学习准备。

TIP 46 Study Until You Know It; Then Keep Studying.

Let's try another thought experiment. Suppose you're taking a world history class and the instructor announces that there's a quiz on Monday. You're to know the names and dates of the ancient and imperial Chinese dynasties, but there are only sixteen, so it doesn't seem too challenging. You quiz yourself Sunday night until you are able to recite the list in order perfectly.

提示 46: 学到你掌握了; 然后继续学习。

让我们再试一次思想实验。假设你正在上世界历史课，老师宣布周一要有测验。你需要知道古代和帝国时代中国朝代的名称和日期，但只有十六个，所以看起来并不太具挑战性。周日晚上，你自我测验，直到你能完美地背诵出这个列表。

Will you remember the names and dates for the quiz the next day?

You might think, “I tested myself and knew them. So obviously I know them. What’s the question?”

You might remember the dynasties perfectly the next day, but you probably won’t. Eighteen hours or so will elapse, so you’ll forget some of what you studied. Remember that I drew a distinction between learning and performance? People tend to think that their performance at any given moment reflects their long-term stable learning—if my performance is 100 percent today, it will be 100 percent tomorrow, because 100 percent reveals the state of my knowledge.

The only way to address the problem is to anticipate forgetting. You need to study until you know it, and then keep studying. This practice, called overlearning, has been examined extensively in laboratory experiments, and there are two things you should know about the research. First, overlearning works, just as you would expect it to. It protects against forgetting. Second, while you’re doing it, it feels as though it’s not working. It feels pointless, even foolish, to keep studying after you know something. You’re going through your flash card deck and getting every answer right, so you can’t help but wonder, “What good is this doing?” What it’s doing is strengthening the memories to shield them from forgetting.

How much overlearning should you do? It depends on how long you hope to remember the information, the nature of the content, what else you know about the topic, and other factors. When I was in college, I remember talking with a friend during finals week about her preparation for her organic chemistry final. She told me, “When leaves blowing around on the quad look like organic compounds to me, I know I’m ready.”

你是否会记住第二天测验的名称和日期？

你可能会认为，“我已经自我测验并且知道了。所以我显然是知道的。这有什么问题呢？”

你可能会在第二天完美地记住所有的朝代，但你可能也没法做到。大约需要经过十八个小时，所以你会忘记你学过的一部分内容。还记得我之前区分学习和表现的吗？人们倾向于认为他们在任何特定时刻的表现反映了他们的长期稳定学习——如果我今天的表现是 100%，那么明天也会是 100%，因为 100%展示了我

的知识状态。

解决这个问题的唯一方法是预期遗忘。你需要学习到知道它，然后继续学习。这种做法被称为过度学习，在实验室实验中得到了广泛的研究，而且你应该知道研究的两个要点。首先，过度学习有效，正如你期望它那样。它能抵抗遗忘。其次，当你在做这个的时候，它会让你感觉没有效果。在你知道某个事物后继续学习，感觉就像毫无目的，甚至愚蠢。你在刷你的记忆卡片并且每个答案都回答正确，所以你不禁会想，“这有什么用？”这在做的是强化记忆以保护它们免于忘记。

你应该做多少过度学习？这取决于你希望记住信息的时间长短，内容的性质，你对主题的其他了解，以及其他因素。我记得在大学时，在期末考试周与一位朋友交谈她的有机化学期末考试准备情况。她告诉我，“当我看到校园里飘动的树叶就像有机化合物一样时，我知道我已经准备好了。”

That seemed a little intense to me at the time, and it still does. As a rule of thumb, I'd advise studying until you know the content, then add about another 15 percent of study time. There's nothing especially research based about that number; the important thing is that you do some overlearning, whatever the exact amount ends up being.

In a sentence: Don't study until you know the content and then stop; keep studying a little longer to protect against the forgetting that will happen during the time between when you stop studying and when you take the test.

For Instructors

当时，这个观点对我来说似乎有点过于激进，现在依然如此。我建议的经验法则是，一直学习到你掌握了内容，然后再增加大约 15% 的学习时间。这个数字并没有特别的研究依据；重要的是你要过度学习，不管最后的确切数量是多少。

换句话说：不要在掌握内容之后就停止学习，要再多学习一会儿以防止从你停止学习到参加考试之间的时候发生遗忘。

I've reviewed two key ideas in this chapter: (1) there are different ways one can “know” something, and (2) our judgment of whether or not we know something can be faulty. Both ideas are useful for students to understand, and both can be brought home to them via in-class demonstrations.

Here's one to help students understand that there can be different ways

to know things. First, ask students to list, on a blank sheet of paper, as many US states as they can in, say, three minutes. Depending on their age, students might list twenty or thirty. Next, give each student a map of the United States showing nothing but outlines of the states. (For students outside the United States, use local geography, as appropriate.)

Everyone will be able to name many more states when looking at the map. Rereading your textbook is like looking over the map and thinking, “I can name all the states.” The test, however, is akin to naming the states in the absence of the map.

What about helping students understand that their sense of “knowing” can be faulty? I find in-class opportunities to highlight this difference almost any time I explain something complicated. If I then call for questions (with a good long wait time) and get none, I’ll say, “Okay, turn to your neighbor and take turns explaining to each other those two theories I just went over.” Invariably, many students quickly realize that they can’t do it. I then explain what just happened: they evaluated their knowledge not by their ability to explain but by their level of understanding when someone else explains.

我在这一章中回顾了两个关键的观点：（1）我们“知道”某事的方式有很多种，（2）我们对自己是否了解某事的判断可能是错误的。这两个观点对学生来说都有益处，可以通过课堂演示使他们理解这两个观点。

为了帮助学生理解可能存在不同的认知方式，我有个办法。首先，让学生在一张空白纸上列出他们能在三分钟内想到的所有美国州。根据他们的年龄，学生们可能会列出二十或三十个州。然后，给每个学生一张只显示各州轮廓线的美国地图。（对于非美国的学生，可以根据情况使用当地的地理信息。）

当大家看着地图的时候，会能够列出更多的州。重读教科书就像是在看地图并且思考，“我可以说出所有的州。”然而，考试就像在没有地图的情况下列出各州的名字。

那么如何帮助学生理解他们的“知道”感觉可能会出错呢？我发现几乎在任何我解释复杂事情的时候，都有课堂的机会来强调这点。如果我在解释完后提问（给出足够的等待时间）但没有任何问题，我就会说，“好的，转向你的邻座，轮流向对方解释我刚刚讲的那两个理论。”结果总是有很多学生很快发现他们无法做到。然后我会解释刚才发生了什么：他们评估自己的知识不是根据他们解释的能力，而是根据当别人解释时他们的理解程度。

I find this method more effective than pop quizzes, by the way. When students can’t explain something on a quiz, they don’t conclude “I guess I didn’t know it after all.” They conclude the quiz was not fair.

Once your students understand that there are different ways to know things and that their feeling of knowing can mislead them, be sure to connect the dots for them and tell them exactly what it means for their own learning, namely that they must keep in mind how they will be asked to demonstrate their knowledge on exams and they must use reliable methods to assess their learning when preparing. Then tell them how to do that.

Knowing that there are different types of memory should also make you more likely to tell your students what to expect on a test. As an instructor, I'm tempted to tell students nothing about upcoming tests: I want to say, "Just know the content and you'll do fine." But as a memory researcher, I know that is a bit idealistic.

Because recognizing is much easier than recalling, multiple-choice tests, which show the answer, usually demand quite fine-grained knowledge. Short-answer tests seldom require such detail, but students don't have the benefit of seeing the choices laid out for them. And of course for an essay test they need knowledge of broad themes.

It's asking a lot of students to have the depth of knowledge needed to answer questions in any format on any of the class topics. I think it's wiser to set realistic expectations for what they should know and tell them what your expectations are.

我发现这种方法比随堂小测验更有效。当学生在测验中不能解释某个问题时，他们的结论并不是“我想我根本不知道。”他们会认为测验不公平。

一旦你的学生理解了知识的获取有不同的方式，他们的知识感可能会误导他们，一定要为他们连线引导，并明确告诉他们这对他们自身的学习意味着什么，主要是他们必须时刻记住在考试中如何被要求证明他们的知识，他们在准备过程中必须使用可靠的方法来评估他们的学习。然后告诉他们如何做。

了解有不同类型的记忆也应该让你更可能告诉你的学生期望在考试中遇到什么。作为一名教师，我很想告诉学生关于即将进行的考试一无所知：我想说，“只要掌握好内容，你就能做得很好。”但是作为一个记忆研究者，我知道这是有些理想化。

因为识别比回忆更容易，选择题测试，显示答案，通常需要相当精细的知识。简答题测试很少需要这样的详情，但学生们看不到为他们列出的选择。当然，对于论文考试，他们需要在大主题有所了解。

要求学生对任何课程主题都具有回答任何格式问题所需的知识深度，实在是太过分了。我认为更明智的做法是设定他们应该知道的现实期望，并告诉他们你的期望是什么。

The students who struggle the most on exams seem to have the most trouble evaluating whether or not they are ready. Helping students understand the difficulty of assessing their knowledge may take some persistence. But it's worth your effort, because a more accurate sense of what they know will enable them to prepare more effectively.

Summary for Instructors

Conduct an in-class demonstration so students understand the difference between understanding when someone else explains versus explaining themselves.

在考试中挣扎最严重的学生似乎在评估自己是否准备好时遇到了最大的困扰。帮助学生理解评估他们知识的难度可能需要一些坚持。但是这值得你的努力，因为更准确的了解他们所知将使他们能够更有效地准备。

教师总结

在课堂上进行演示，以便学生理解别人解释时的理解与他们自己解释的区别。

Show students that their judgment of whether something is in their memory can be faulty.

Tell them how to self-test.

Let students know what type of knowledge you expect on tests.

向学生们展示他们对是否记住某些东西的判断可能会出错。

教导他们如何自我测试。

让学生们知道你期望在测试中看到他们掌握的知识类型。

第 8 章 如何考试

Exams require two things: that you recall information from memory and that you do something with that information, for example, solve a problem or write a persuasive essay.

I've noticed that students change their judgment about which of these requirements is more important, depending on where they are in the test-taking process. Before a test, they think that their success will be determined by how much stuff they have in memory: "If I study, I'll pass." After the test, they think the same way: they think their grade was mostly determined by how much they studied.

考试需满足两个要求：一是从记忆中回忆信息，二是利用这些信息，例如解决问题或者写一篇有说服力的文章。

我注意到，学生在考试过程中会改变他们对这两个要求重要性的看法。在考试之前，他们认为自己的成功将由他们记忆中的信息量决定：“如果我学习，我就会通过。”考试之后，他们的想法仍然如此：他们认为他们的成绩主要由他们学习的多少决定。

During the test, however, students think very little about the process of getting information out of memory and focus on how to most effectively use whatever memories they can access. They spend a lot of time and mental energy trying to interpret what questions really mean or to guess what the instructor wants me to say.

These are commonly called “test-taking strategies,” but they often go wrong. They prompt students to interpret questions as having subtle meanings other than what's plainly asked. Or students try to eliminate answers to a multiple-choice question based on supposedly helpful tricks such as “Answers containing the word ‘always’ or ‘never’ are usually wrong.”

Students use these dubious strategies during a test because they're trying to get maximum value from the first information they can pull out of memory. But they seldom try to get more out of memory during a test because they

think there' s no point. But they' re wrong.

In chapter 3 we saw that a memory can be “in there” but difficult to retrieve because of the way that you probe your memory. (Seeing the grocery store was not a good cue for me to remember to buy coffee for my neighbor' s gift basket.) With the right strategy, you might be able to coax a reluctant memory out of the vault.

WHEN TAKING A TEST

在考试过程中，学生们很少思考如何从记忆中获取信息，而是专注于如何最有效地使用他们能够访问的记忆。他们花费大量时间和精力试图理解问题的真正含义，或猜测老师希望我说什么。

这些通常被称为“考试策略”，但它们常常出错。它们促使学生把问题解读为除了明问的消除意外的含蓄意义。或者，学生试图根据一些所谓的有用的技巧，如“包含‘总是’或‘永不’的答案通常是错的”，来消除多项选择题的答案。

学生们在考试中使用这些可疑的策略，是因为他们试图从第一时间能从记忆中获得的信息中获取最大价值。但他们很少试图在考试中从记忆中得到更多，因为他们认为没有意义。但他们错了。

在第三章中，我们看到一个记忆可能“在那里”，但由于你探索记忆的方式，很难取得。（看到杂货店并不能很好地提示我记住为邻居的礼物篮买咖啡。）使用正确的策略，你可能能够说服一个不情愿的记忆从金库中出来。

面对考试时

What your brain will do: It may believe that if you know something, each attempt to retrieve the memory will be successful. Actually, working at remembering something can pay off. But instead of trying to squeeze more out of memory, people apply ineffective strategies to the content that comes out of memory easily.

How to outsmart your brain: Don' t give up on your memory if it doesn' t provide the desired answer right away. Test-taking strategies should be your very last resort.

In this chapter we' ll look at a few ways to create cues for memories that you can' t recall. I' ll also elaborate on why it' s usually a bad idea to use test-taking strategies or tricks. But strategies meant to keep you organized and calm are useful, and we' ll consider those first.

你的大脑会做什么：它可能会相信，如果你知道某件事，每次试图检索这个记忆都会成功。实际上，努力记忆某件事情是会有回报的。但是，人们并没有试图从记忆中挤出更多的内容，而是对轻而易举就能从记忆中获得的内容应用无效的策略。

如何智胜你的大脑：如果记忆不能立即提供你所期望的答案，也不要放弃你的记忆。应试策略应该是你的最后一招。

在本章中，我们将探讨一些创建你无法回忆的记忆线索的方法。我还会详细说明为什么通常使用应试策略或技巧是个不好的主意。但是，那些旨在让你有条理并保持镇静的策略是有用的，我们会先考虑这些策略。

TIP 47 Prepare and Take Care

What's more frustrating than getting a test back and seeing an answer marked wrong for which you absolutely knew the content but did something dumb, such as circling b when you meant to circle c? To prevent this problem, you need to add a few simple routines to your test taking.

Routine 1: Spend the first thirty seconds or so reading the instructions, if any are provided. Usually they don't say anything important, but sometimes you learn that there will be a penalty for guessing, for example, or that you needn't show all your work, or that you needn't write in full sentences.

提示 47：准备和小心对待

没有什么比拿回考试卷子看到一个被标错的答案更让人沮丧的了，你明明对那个题目的内容了如指掌，但是做了一些愚蠢的事情，比如你打算圈 c 却误圈了 b。为了预防这个问题，你需要增加一些简单的例行习惯到你的答题过程中。

习惯 1：花费大约三十秒钟的时间阅读指示，如果有的话。通常它们并没有说什么重要的事情，但是有时候你会了解到瞎猜的答案会被罚分，或者你并不需要展示你的所有工作过程，或者你不需要用完整的句子来回答。

Routine 2: Spend the second thirty seconds skimming the test to get a sense

of how much time you can spend on each question. Pay attention to the point values of different questions so you can allocate more time to questions that count for a lot. Do a quick calculation that tells you where you should be when one-third of the time has elapsed and when two-thirds of the time has elapsed. When making these calculations, don't forget to leave a little time at the end to check your work. Mark those spots on the exam.

Routine 3: Read. Each question. Carefully. My students sometimes get questions wrong because they read half of a question and assume they know what it's asking. Or they read the whole thing but somehow do not see the word not. When you think you have the answer to a question, take an extra few seconds to be sure the question asked what you thought it did.

Routine 4: In the last few minutes, check your work. Be sure you didn't unintentionally skip questions. Read over your essays for illegible or missing words, unfinished sentences, and the like. For multiple-choice questions, be sure you ticked the box that you intended to. For math or science tests, make sure you actually completed multistep problems. Circle your answer to each question so it's clear to the grader what you mean to be the solution. Be sure that units are specified. Label the axes of graphs.

If a student comes to see me, frustrated about a low exam score, there are almost always a few percentage points that end up being attributed to "stupid mistakes." Make these routines into habits, and you won't lose points for silly reasons.

In a sentence: A small set of routines to help with planning and attention to your work will ensure that you don't lose points due to carelessness.

例程 2: 用第二个 30 秒来浏览试题, 感觉出你可以在每个问题上花多少时间。注意不同问题的分值, 这样你可以分配更多的时间来处理那些记分较高的问题。做一个快速的计算, 告诉自己在过去三分之一的时间和过去三分之二的时间时应该在哪里。在做这些计算时, 别忘了在最后留点时间检查你的工作。在试卷上标记出这些地方。

例程 3: 仔细阅读每一个问题。我的学生有时会因为只读了问题的一半而假定他们知道问题的要求, 或者他们读完了整个问题, 但却总是看不见“不”字。当你认为你有一个问题的答案时, 额外花几秒钟确认这个问题是否像你想的那样提出。

例程 4: 在最后几分钟, 检查你的工作。确保你没有无意中跳过任何问题。阅读你的文章, 查找不清晰或缺失的单词、未完成的句子等。对于多选题, 确保你标记了你打算选择的选项。对于数学或科学测试, 确保你实际上完成了多步骤的问题。在每个问题的答案处画一个圈, 让批改者清楚你的答案。确保单位已被指定。为图表的轴标上标签。

如果一个学生对自己的低分成绩感到沮丧地来找我，那么总有几个百分点的分数是因为“糊涂错误”而丧失的。把这些例程变成习惯，你就不会因为愚蠢的原因丧失分数。

总结句：一小组帮助规划和关注工作的例行程序将确保你不会因过于马虎而丧失分数。

TIP 48 Learn to Cope with Ordinary Test Anxiety

提示 48：学会应对普通的考试焦虑

Most everyone gets jittery during a test. Most people also get nervous when they speak in public or attend a social event at which they don't know anyone. The fact that it's typical doesn't mean you can't learn some ways to handle it. Nerves are distracting, and they will affect your exam performance. (If you have a lot of trouble controlling your anxiety or if you get anxious not just when taking exams but when preparing for them, see chapter 14.)

As you no doubt know, anxiety is self-perpetuating: anxiety during a test makes it hard to concentrate, which makes it hard to remember answers, which increases your anxiety. Thus, strategies to control test anxiety focus on breaking this cycle or never entering it in the first place. Here are some techniques you can try.

Try reducing your consumption of caffeinated drinks on exam day and see if that helps.

Some people are made anxious by the presence of other test takers—just seeing someone else nervously jiggling his foot or, worse, confidently racing through the exam sets some people's hearts racing. If you're one of those, try isolating yourself: sit alone or near the front of the room if you can. Or you can try wearing earplugs during the exam. It makes some people feel as if they are in a world of their own. (Check with the instructor to be sure this is okay.)

Some people calm their anxiety by venting about how anxious they are or how high the stakes are for this exam; it makes them feel better, but it can be terrible to listen to, so you might avoid chatting with other test takers right before the exam. If the venter is a friend and it would be awkward to shut down his conversation, tell him you want to do some last-minute cramming, and keep your nose in your notebook. (If actually reading your notes focuses your mind, great; if it just adds to your nerves, you don' t actually have to read.)

几乎每个人在考试期间都会感到紧张不安。大多数人在公开演讲或参加一个完全没有熟人的社交活动时，也会感到紧张。尽管这种现象是常见的，但这并不意味着你无法学习一些应对方法。紧张会分散你的注意力，并影响你的考试表现。（如果你在控制焦虑方面有很大困难，或者你在准备考试时也会感到焦虑，可以参见第 14 章。）

你一定知道，焦虑的自我增强效应：考试时的焦虑使你难以集中注意力，这又使你难以记起答案，从而加剧了你的焦虑。因此，控制考试焦虑的策略主要是打破这个循环，或者一开始就不进入这个循环。以下是一些你可以尝试的技巧。

试试在考试当天减少摄入含咖啡因的饮料，看看是否会有所帮助。

有些人会因为其他参考人的存在而感到紧张——只要看到别人紧张地不停地晃脚，或者，更糟糕，有人非常自信地快速进行考试，就会让有些人的心跳加速。如果你是这样的人，试着孤立自己：如果可能的话，尽量坐在前排或者单独坐一个地方。或者，你可以试着在考试时戴上耳塞。这会让一些人觉得自己处在自己的世界里。（但要先经过老师的允许。）

有些人会通过吐槽自己的焦虑程度或是考试的高风险，来平静自己的紧张情绪；这会让他们感觉好一些，但是对别人来说听起来可能会很痛苦，所以你可能要避免在考试前和其他参加考试的人聊天。如果这个吐槽者是你的朋友，而且你觉得直接拒绝他的对话会很尴尬，那么告诉他你想做最后的冲刺复习，并把鼻子埋在笔记本里。（如果实际阅读你的笔记能够帮助你集中注意力，那就太好了；如果这只会增加你的紧张感，其实你并不需要真的去读。）

Some people like to meditate or pray before an exam to calm their mind and feel centered, and it' s a good strategy to try if you start to panic during an exam. If you do neither practice regularly, here' s a simple three-step procedure that will serve: (1) Close your eyes. (2) Breathe in slowly to the count of seven and exhale to the count of seven. (3) Repeat two or three more times or until you feel your body begin to relax. If that doesn' t do the trick and if bathroom breaks are allowed, taking a brief walk sometimes provides a mental reset.

Sometimes it' s hard to relax because your thoughts are running away from

you. Some realistic self-talk after this breathing exercise might help. If you're panicking because the test has a bunch of questions you didn't expect to see, remember that everyone else is in the same boat. If you're panicking because you didn't prepare, remember, this one test doesn't determine your future, much less you. If you fail, you can bounce back. Have confidence that you can make a plan for bouncing back later—perhaps think of someone who could help you formulate the plan. Promising yourself that you'll make a plan and assuring yourself that people will assist you might allow you to set your panic aside and try your best to do the task before you.

I've sometimes heard advice about dealing with anxiety by “visualizing yourself succeeding.” I always found that a little hard to maintain. For example, I might be on a panel of speakers, and I'm saying very little, but every time I open my mouth, people seem to look at me as though I've said something silly. So now I'm just keeping quiet and not contributing anything. At this point I could try to visualize myself saying really smart things and people dropping their jaws in delighted wonder, but I simply wouldn't believe my visualization.

If visualizing success works for you, great, but if it doesn't, here's an alternative: visualize someone supportive being with you. I can't visualize success at this terrible panel, but I can imagine my wife by my side, and that helps in a few ways. It makes me see my performance through her eyes, and her perception is more realistic than mine. Okay, maybe I'm not at my best right now, but it's not the horror show I'm making it out to be, either. That said, I should be trying my hardest instead of dwelling on my performance and saying nothing; I owe that to the people who invited me. I can also hear in my head supportive things my wife would say about how it's going: “Some people did seem interested when you spoke, like that woman in the third row, she was nodding. And another thing, what's up with that other dude on the panel, the one at the end of the table? Why is he talking so much? You're definitely more interesting than he is.”

The next time you get nervous during an exam, imagine someone supportive sitting there with you, the sort of person who always knows what to say to make you feel more confident.

有些人喜欢在考试前进行冥想或祈祷，以安抚他们的心灵并感到平心静气，如果你在考试中开始恐慌，这是一个值得尝试的好策略。如果你平时没有做这些实践，那么可以按照以下简单的三步程序做：（1）闭上你的眼睛；（2）慢慢地吸入7个数的气，然后用7个数的时间呼出；（3）重复两三次，或者直到你感觉你的身体开始放松为止。如果这还不能达到效果，如果允许去厕所的话，短暂散步

有时可以提供心理复位。

有时候因为你的思维脱离控制，你会觉得很难放松。在这次呼吸练习后，一些现实的自我对话可能会有所帮助。如果你因为试题里有很多你没预料到的问题而感到恐慌，那就记住其他人也在同一艘船上。如果你因为你没做好准备而恐慌，记住，这一次的考试并不决定你的未来，更不是决定你的。如果你失败了，你可以反弹。要有信心，你可以为之后的反弹制定一个计划，也许想想有谁可以帮你制定这个计划。向自己承诺你会制定一个计划，并向自己保证会有人帮助你，这可能会让你把恐慌放在一边，尽可能做你眼前的任务。

我有时听说一种处理焦虑的建议，就是“想象自己成功”。我一直觉得这有点难以维持。例如，我可能在一个发言者小组里，我说得很少，但每次我开口说话时，人们都好像在看着我，好像我说了些傻话。所以现在我只是保持沉默，什么也没贡献出来。此时我可以试着想象自己说出很聪明的话，人们惊奇得张大了嘴巴，但我根本不可能相信我的想象。

如果想象自己成功对你有用，那就太好了，但如果没有，这里有一个替代方案：想象有一个支持你的人和你在一起。我无法想象在这个糟糕的小组中我能成功，但我可以想象我的妻子在我身边，这在一些方面会有所帮助。它让我从她的角度看我的表现，她的看法比我的现实得多。好吧，也许现在我不是最好的，但也不是我自己说的那样糟糕。这就是说，我应该竭尽全力，而不是沉浸在自己的表现中什么也不说；我欠那些邀请我的人们这个。我也可以在我的脑海中听到我妻子对我现在的状况说的支持性的话：“有些人似乎对你的发言感兴趣，像那个坐在第三排的女人，她在点头。还有一件事，那个小组里的其他家伙，那个坐在桌子尽头的，他为什么这么多话？你肯定比他有趣。”

下次你在考试中紧张时，想象有一个总是知道如何让你感到更有信心的人在你身边。

We' ve discussed how to refrain from making careless errors and how to keep anxiety under control—in short, how to keep things from going wrong. What about methods for making your test performance better? Let' s turn to some techniques that will enable you to induce reluctant memories to come out of the vault.

In a sentence: You can combat mild test anxiety by avoiding situations that make you anxious during the test and by using self-calming techniques when you feel stressed.

TIP 49 Imagine Yourself in the Place Where You Studied

我们已经讨论过如何避免疏忽大意的错误，以及如何控制好自己的焦虑情绪——简而言之，就是如何防止事情走错。那么如何提高你的考试表现呢？让我们来看看一些可以帮助你唤起内心深处不愿意面对的记忆的技巧。

换句话说：你可以通过避免在测试中让你焦虑的情况，以及当你感到压力时使用自我安抚的技术来对抗轻度的考试焦虑。

提示 49：想象自己在你学习的地方

If you’ re a student taking a written exam, you are likely in the same room where you learned some of the content—the classroom—but of course you probably didn’ t prepare for the exam in the classroom. And if you’ re taking a police officer entry exam, for example, or a teacher certification test, you’ re probably in a room you’ ve never seen before. Is your memory worse when you try to recall something in a location different from the one where you studied?

Maybe a tiny bit.

Here’ s why. Sometimes it’ s important to know where and when something happened; that’ s usually called contextual information. For example, when I park my car at the grocery store, I want to remember where it is, but I don’ t want my car permanently associated with that particular spot. I want it associated with both the spot and a time: I parked in this spot today, not forever. That’ s why finding your car can be so hard. You’ re trying to find the memory time-stamped “today,” but it’ s easily confused with the other memories of parking in the same lot (or similar lots) timestamped with different days.

When you’ re studying, you don’ t want your memories to be tied to a context. You may have been in your kitchen when you learned that Wilhelm Wundt is considered to be the first modern experimental psychologist, but you don’ t want “kitchen” tangled up with that memory; he was still the first modern experimental psychologist when you’ re in your living room or the classroom.

如果你是一个在做笔试的学生，你可能在学习某些内容的同一个房间——教室——进行考试，但是你可能并没有在教室里为考试做准备。如果你正在应考警察入职考试，例如，或者教师认证考试，你可能在一个你之前从未见过的房间里。当你试图在一个与你学习的地点不同的地方回忆起一些事情时，你的记忆力会变得更差吗？

可能会差一点点。

原因是这样的。有时候，知道事情发生的地点和时间很重要；这通常被称为情境信息。例如，当我在杂货店停车时，我想记住它的位置，但是我不希望我的汽车永远与那个特定的位置关联。我希望它与位置和时间都有关联：我今天在这个位置停车，而不是永远。这就是找车时可能很难的原因。你试图找到记忆中标记为“今天”的时间，但这很容易与在相同或类似停车场停车的其他记忆混淆，这些记忆都标记有不同的日期。

当你在学习时，你不希望你的记忆与一个情境联系在一起。你可能在你的厨房里学到威廉·冯特被认为是第一位现代实验心理学家，但是你不希望“厨房”与那个记忆混在一起；当你在你的客厅或教室里时，他依然是第一位现代实验心理学家。

Unfortunately, time or location can enter into a memory when you don't want it to. Researchers test this idea with a simple experiment. Subjects are told that their memory will be tested, and all they need to do is listen carefully to a list of words that will be read aloud. The experiment takes place in a tidy classroom with a big window, and the words are read by a young man who is dressed rather sloppily. Two days later people return and try to remember the words. For some people the test is administered by the same young man in the same room, but others take the test in a small, cluttered office, administered by a smartly dressed older woman. Those people don't do quite as well on the test.

Changing locations doesn't have a huge effect on memory. Memory wouldn't work very well if it did. Imagine going out for a lovely meal with your family to celebrate a birthday and being unable to remember it unless you went back to the restaurant. But of course you'd like to account for the effect it may have and avoid any detriment to your learning.

Learning is much more likely to be tied to a place and time if you think about the place or time as you learn, for example, if you use the cracks on your living room wall to help you visualize the major rivers of Western Europe. It's another instance of the principle that memory is the residue of thought. So as you study, you want to avoid any conscious tying of the content to the study environment.

Nevertheless, the environment can still creep into your memory even if you don't consciously include it in your studying. To use this possibility to your advantage, if you're in a test and are having trouble recalling something, try visualizing the place where you studied it. Imagine yourself in that location. If there were characteristic sounds or smells

there, put those into your imagining as well. This visualization may help you recover the lost memory.

In a sentence: If you' re having trouble recalling a fact you' ve studied, try visualizing the place where you studied it.

很遗憾,当你不想记忆时,时间或地点可能会进入你的记忆。研究人员用一个简单的实验来测试这个想法。受试者被告知他们的记忆将被测试,他们需要做的就是仔细听一系列将被大声读出的词汇。实验在一个整洁的教室里进行,有一个大窗户,单词由一个穿着相当散乱的年轻男子读出。两天后,人们返回并试图记住这些词。对于一些人来说,测试是由同一个年轻男子在同一个房间进行的,但其他人在一个小而混乱的办公室接受测试,测试由一个穿着整齐的年长女子进行。那些人在测试上的表现没有那么好。

改变位置对记忆没有太大的影响。如果有的话,记忆就不会工作得很好。想象一下,你和家人一起出去享用一顿美味的晚餐,庆祝生日,但除非你回到那个餐厅,否则你会无法记住它。但是,你当然希望考虑到它可能产生的影响,并避免对你的学习产生任何不利影响。

学习更有可能与地点和时间联系在一起,如果你在学习的时候思考这个地方或时间,例如,如果你用客厅墙上的裂缝来帮助你想象西欧的主要河流。这是一个原则的又一个实例,即记忆是思考的残余。所以在学习的时候,你要避免有意识地将内容与学习环境联系在一起。

然而,即使你在学习的时候不将环境纳入考虑,环境仍然可以潜入你的记忆。为了利用这种可能性,如果你在测试中有记忆困难,试着想象你学习它的地方。设想你在那个地方。如果那里有特色的声音或气味,请把它们也放进你的想象中。这种想象可能会帮助你找回丢失的记忆。

用一句话说:如果你在回忆你学过的知识时有困难,试着想象你学习它的地方。

TIP 50 If You Can' t Remember a Fact, Think About Themes

提示 50: 如果你记不住某个事实, 试着思考主题

Let' s try another little experiment: see how many animals you can name in sixty seconds. Really, give it a try. (If you feel as though you can'

t name any more after a shorter time, you can stop.)

How' d you do? Suppose I gave you a hint, such as "Animals you see on a farm." Can you name any new ones? How about "Animals you' d see in Australia"? Or "Circus animals." Or "Animals you see at a pet store."

Memories tend to be organized in themes, or clumps, and they can be retrieved that way. An experiment showing this principle was conducted by the psychologists James Pichert and Richard Anderson in 1977. They had subjects read a brief description of two boys, Mark and Pete, skipping school and hanging out at Pete' s house. Everyone read the same passage, but some were told to read it as though they were a burglar and others as though they were a home buyer. Later, the subjects' memories of the passage were tested, and those who had read the story from the burglar' s perspective remembered things such as Pete saying that the side door to the house was always left unlocked and that his father had a rare coin collection. Those taking the perspective of a home buyer remembered that the stone siding was new but the roof was leaky. This effect is pretty easy to understand; if you' re told to think like a burglar, as you' re reading you notice details that would be of interest to a burglar. Likewise, the home buyer' s perspective prompts you to notice details relevant to that.

But here' s where things get interesting: if the experimenters then asked people to switch perspectives—the burglars were asked to think like home buyers and vice versa—they remembered information that was relevant from the other perspective. When the burglars were asked to think like home buyers, they presumably thought, "Hmmm. What would a home buyer care about? A nice neighborhood? Whether the house is in good repair? Oh, right, the story said something about a leaky roof."

How can you use this principle when you' re taking a test? I doubt that it will help you recall a forgotten nugget of information when it' s very clear what' s being asked, for example, "In what year was the Treaty of Versailles signed?" But thinking of broad themes could be useful for the integrative questions you often find on essay exams, for example, "What were the most important consequences of the Treaty of Versailles for France during the 1920s?" Broad themes can also help you think through questions asking you to apply what you know to a concrete situation, for example, "Outline an approach to developing a virtual reality environment to simulate a roller-coaster ride." In these types of questions, you' re given limited clues about which part of the vast amount of information you' ve learned is relevant to the answer. You' re forced to do an undirected search of memory, just as you did when I said, "See how many animals you

can name in sixty seconds.” You might find yourself thinking, “Did I learn anything about this?” Or perhaps you remember a few things that seem somewhat related but don’t seem very promising as the start of an essay.

让我们试试另一个小实验：看看你能在六十秒内说出多少种动物。真的，尝试一下。（如果你感觉到无法再说出更多的名字，那就停下来。）

你做得怎么样？假设我给你一个提示，比如“你在农场上看到的动物。”你能说出新的名字吗？那么“你在澳大利亚看到的动物”呢？或是“马戏团的动物”或“宠物店里的动物。”

记忆往往是以主题或块的形式组织起来的，并且可以通过这种方式来检索。心理学家詹姆斯·皮切尔特和理查德·安德森在 1977 年进行了一项实验来展示这个原理。他们让受试者阅读了两个男孩马克和皮特逃学而在皮特的房子里闲逛的短篇描述。每个人都阅读相同的文章，但有些人被告知要以盗贼的角度去阅读，还有些人被告知要以家庭购房者的角度去阅读。后来，对受试者对文章的记忆进行了测试，那些从盗贼的角度阅读的人记住了像皮特说的这类信息，他的父亲有一份稀有的硬币收藏，房子的侧门总是没有上锁。从家庭购房者的角度看，他们记住的是新的石头外墙，但屋顶却有漏水。这个效应很容易理解；如果你被告知要像一个盗贼那样思考，当你在阅读时，你会注意到那些对盗贼有兴趣的细节。同样，家庭购房者的视角会让你注意到与此相关的细节。

但是，接下来的事情就有趣了：如果实验者之后让人们转换视角——让盗贼像家庭购房者那样思考，反之亦然——他们就会记住与另一个视角相关的信息。当让盗贼像家庭购房者那样思考时，他们可能会想：“嗯，家庭购房者会关心什么呢？好的社区？房子是否保养良好？哦，对了，故事中提到了有栋屋顶漏水的房子。”

你如何在做测试时使用这个原则呢？我怀疑这会帮你找回遗忘的信息，特别是当问题非常明确地问你，“凡尔赛条约是在哪一年签署的？”但是，思考广泛的主题可能对你在论文考试中经常遇到的综合性问题有所帮助，例如，“凡尔赛条约对 20 世纪 20 年代法国的最重要影响是什么？”广泛的主题也可以帮你思考如何将所学应用到具体的情境中，例如，“概述如何开发一个虚拟现实环境来模拟过山车游戏。”在这种类型的问题中，关于你所学习的大量信息中的哪一部分与答案相关，你能得到的线索是有限的。你被迫进行未指向的记忆搜索，就像我说：“看看你能在 60 秒内说出多少种动物。”你可能会发现自己在想：“我学过关于这个的知识吗？”或者，也许你记得几件似乎有关但作为论文的开头似乎不太有希望的事情。

If you’re having a hard time figuring out which part of what you’ve learned is relevant to a question, list the topics you’ve learned on a piece of scrap paper or the margin of the test. This will serve the same purpose as my hints: Australian animals, farm animals, and so on. For the question about the Treaty of Versailles, you might list “Financial impact of the

war,” “Territory gained because of the treaty,” “Social reintegration of soldiers,” and so on. Once you’ve listed as many topics as you can, go through them one by one to see if they jog any memories that help you interpret and answer the question.

Needless to say, this process may take a while. You should do it only when you’ve been through the rest of the test and have time to return to the problem that has stumped you.

In a sentence: Some test questions provide only very general cues to memory, and you may not consider one or more broad course topics that are relevant while you’re formulating an answer; in that case, list the themes of the material you’ve covered to be sure you consider all the content that might be pertinent to a question.

如果你在弄清楚你所学的哪一部分与问题有关时遇到困难，可以在一张废纸或试卷边缘列出你所学过的话题。这与我给出的提示有相同的作用：澳大利亚动物，农场动物，等等。针对《凡尔赛条约》的问题，你可以列出“战争的经济影响”，“由于条约而取得的领土”，“士兵的社会重建”，等等。当你尽可能多地列出话题后，逐一检查它们，看它们是否能引发任何有助于你理解和回答问题的记忆。

不用说，这个过程可能需要一些时间。你应该在完成测试的其他部分并有时间返回到你感到困扰的问题时，再进行这个过程。

简单的说：有些测试题只给出了很笼统的记忆线索，你在构思答案时可能没有考虑到一个或多个课程主题的相关性；在这种情况下，列出你所涵盖的材料的主题，以确保你考虑到所有可能与问题有关的内容。

TIP 51 Keep Trying

Here’s another thought experiment for you: Suppose you agree to participate in a memory experiment: I show you forty-four line drawings of common objects (a fish, a flower, and so on), each one for five seconds. You see the whole set twice. Twenty-four hours later, you return and I give you a blank sheet of paper, asking you to list as many of the objects depicted as you can in five minutes. Then for three minutes I ask you to do an unrelated task (simple math problems) so that you don’t think about the drawings. Then I give you another blank sheet of paper and again ask

you to list as many of the objects as you can remember. Then you do another three minutes of math problems and then one more test of your memory of the line drawings you saw the day before.

How do you think you would do on the first, second, and third attempts? Better? Worse? The same?

In this experiment, people remembered an average of nineteen objects on their first attempt, a little over twenty on their second, and twenty-one on their third. This general result is typical: people remember a little more each time they attempt to remember.

提示 51: 继续尝试

这里为你提供了另一个思考实验：假设你同意参加一个记忆实验：我向你展示 44 个普通物体（如鱼，花等）的线条图画，每个图画展示 5 秒钟。你看完整套两次。二十四小时后，你回来，我给你一张空白的纸，让你在五分钟内列出尽可能多的描绘过的物体。然后在接下来的三分钟内，我让你做一些与画无关的任务（简单的数学问题），以便你不会思考这些图画。然后我给你另一张空白纸，再次要求你列出你能记住的尽可能多的物体。然后你再做三分种的数学问题，然后再测试一次你对前一天看到的线条图画的记忆。

你认为你在第一、二、三次尝试中表现如何？更好？更差？还是一样？

在这个实验中，人们在第一次尝试时平均记住了十九个物体，在第二次尝试时略多于二十个，在第三次尝试时达到了二十一个。这个普遍结果是典型的：每次尝试去记忆，人们都能记住更多的事物。

This phenomenon has been observed in many experiments over several decades, but why it happens is not completely clear. At least part of the effect is due to retrieval practice: looking for something in memory makes it more memorable, even if you don't find it (see chapter 6).

You may also remember a little more because the same cue can work slightly differently at another time. Picture making the break shot in a game of pool; although the balls are always configured in the same triangle and they look as though they are positioned in just the same way each time, there are actually subtle differences, so that even if the cue ball hits them in just the same way, the outcome is different. Sending a question into memory such as “The Battle of Karbala was crucial in splitting which religion into two factions?” and seeing what comes out is a bit like hitting the cue ball and seeing where the other fifteen balls go. Even though your mind seems as though it's the same every time you pose the

question, it may be a little different. And one time that difference means that the cue will produce the desired answer.

Now, there's no point in reading a question, failing to come up with the answer, and then immediately rereading it, because your memory really is the same as it was five seconds ago. But if you return to the question in five or ten minutes, your memory will be in a slightly different state because you will have been thinking about other questions. And so it may respond differently to the Battle of Karbala question.

When taking a test, for each question, try to remember the answer for thirty seconds or so. If that doesn't do it, mark the question and come back to it in five or ten minutes. Keep at it until you run out of time or finish the test.

That advice raises the question of whether it's smart to change an answer or whether you're better off sticking with the answer you first thought was right. Researchers have examined this question in many experiments going back to at least the 1960s, often using the same technique: they check exam papers for erasure marks and categorize each change as (1) a wrong answer to a right one, (2) a right answer to a wrong one, or (3) a wrong answer to another wrong answer. They consistently find that students mostly change wrong answers to right ones. Furthermore, when asked about the changes they made, students rarely say that they were due to realizing that they marked the wrong choice by accident. Instead, most changes are due to continued thought about the question; the test takers keep trying to remember, and it pays off with a new insight or inference. 这种现象在过去的几十年中的许多实验中都有所观察到,但其发生的原因并不完全清晰。至少部分效果是由检索练习引起的:在记忆中寻找某物会使其更容易记住,即使你没找到它(参见第六章)。

你可能还会记得更多一点,因为同一提示在不同时间可能会稍稍有所不同。设想你在打台球的开球;虽然球总是以同样的三角形排列,并且它们看起来每次都以同样的方式摆放,但实际上有些微妙的差异,所以即使台球以同样的方式击中它们,结果也不同。向记忆提问一个问题,如“卡尔巴拉战役在哪个宗教分裂为两派时起着至关重要的作用?”并观察出来的答案就像打击台球看其他十五个球会去哪里一样。尽管你的思维看起来每次提出问题时都一样,但可能有一点不同。而有一次,那种差异意味着线索会产生想要的答案。

现在,读一个问题,未能提出答案,然后立即再读一遍是没有意义的,因为你的记忆确实和五秒前一样。但是,如果你在五或十分钟后返回这个问题,你的记忆会处于稍稍不同的状态,因为你会思考其他问题。因此,它可能对卡尔巴拉战役的问题有不同的反应。

在考试时，对于每一个问题，试着记住答案大约三十秒钟。如果这样做没有用，标记问题并在五或十分钟后回到它。坚持下去，直到你没有时间或完成测试。

这个建议引发了一个问题，那就是改变答案是否明智，或者你最好坚持你首次认为正确的答案。研究人员已经至少从 1960 年代开始就这个问题进行了许多实验，通常使用相同的技术：他们检查试卷上的擦除痕迹，并将每一个改变分类为（1）一个错误答案变为一个正确答案，（2）一个正确答案变为一个错误答案，或（3）一个错误答案变为另一个错误答案。他们一致发现，学生大多数情况下都是把错误答案改成正确答案。此外，当被问及他们所做的改变时，学生很少说他们是因为意识到他们误标了错误的选项。相反，大多数的变化是由于对问题的持续思考；考生们继续尝试去记住，这种努力带来了新的洞察或推断。

For example, suppose you've answered "Buddhism" to the Battle of Karbala question, which you know was sort of a guess—"Buddhism" just came to mind when you saw "Karbala." But while answering another question you remember the instructor mentioning that many observant Shia Muslims wear black to mourn someone whose name you can't remember, but you're pretty sure that person was the martyr of the Battle of Karbala. So now you're 95 percent sure that the answer is "Islam," not "Buddhism." Clearly, you should change your answer.

But what if you're not that sure? This situation is especially common in multiple-choice exams, where questions are written to have more than one answer choice that looks right. If you are stuck between two answers that look equally good, should you go with your first instinct or your second? I have not seen an experiment that answers this finer-grained question, and to be honest, I'm not sure there is a general answer that's right for everyone. I think you need to look at the particular way you take tests. I'll discuss how you can evaluate that in chapter 9.

In a sentence: If you can't remember a fact, come back to the question in five or ten minutes. Don't assume that your first instinct or your second guess is more likely to be correct; trust your confidence in which answer is the right one.

例如，假设你对卡尔巴拉战役的问题回答“佛教”，你知道这是有点儿猜测的——在你看到“卡尔巴拉”时，就想到了“佛教”。但在回答另一个问题时，你记得导师提到许多虔诚的什叶派穆斯林身着黑色服装表示哀悼一个你记不住名字的人，但你非常确定那个人就是卡尔巴拉战役的殉道者。所以现在你有 95% 的把握，答案是“伊斯兰教”，而不是“佛教”。显然，你应该修改你的答案。

但是如果你不那么确定呢？在多项选择考试中，这种情况特别常见，其中的问题都有不止一个看起来正确的答案。如果你对两个看起来一样好的答案犹豫不决，你该听从你的第一直觉还是你的第二直觉？我还没有看到一个实验能回答这个更细致的问题，说实话，我不确定是否有一个对所有人都适用的一般答案。我认为你需要看你考试的特殊方式。我会在第九章讨论如何评估这一点。

用一句话来说：如果你不能记住一个事实，等五到十分钟后再次回答这个问题。不要假设你的第一直觉或你的第二猜测更有可能是正确的；要相信你对哪个答案是正确答案的信心。

TIP 52 Beware of “Pop Knowledge”

Some tests call for straightforward recitation of exactly what you memorized. For example, when a third grader takes a spelling quiz, she knows that the match between the quiz and what she’s studied will be exact—she studied the spelling of a number of words and that’s what will be tested. More often, test questions require some interpretation or application of what you’ve memorized.

The need for application opens the door to test takers choosing answers that aren’t wrong but don’t answer the question posed. For example, the instructor may ask the question “How did the Romantic movement in philosophy influence British poets of the period?” The student writes an essay that’s crammed full of facts about Romantic philosophy and poetry but doesn’t connect the two—which was what the question required.

提示 52: 谨防“流行知识”

一些考试需要你直接背诵你所记住的内容。例如，当一个三年级的学生参加拼写测验时，她知道测验和她所学的内容会完全匹配——她学习了一些单词的拼写，这就是将要被测试的内容。但更多的时候，考试问题需要你对所记忆的内容进行一些解释或应用。

这种应用的需要为考生选择那些并非错误但并未回答问题的答案提供了可能。例如，教师可能会问：“浪漫主义哲学运动如何影响了当时英国的诗人？”学生写了一篇充满了关于浪漫主义哲学和诗歌的事实的文章，但并没有将两者联系起来——这正是该问题所需要的。

Why would you fail to answer the question? Sometimes it’s because you don’t know the answer, of course; you just write whatever you know about

the topic and hope for the best. But sometimes it's because you see a key term or two, think "I know this!", and start answering before you've read the question fully. I call this "pop knowledge." When a question makes a certain piece of information pop into your mind, you must evaluate whether it actually answers the question.

What amounts to the same thing can also happen in multiple-choice situations. For example, look at this question from a practice test for licensure as an electrician.

What must you observe when plugging a voltmeter into a DC circuit?

A. Power factor

B. Rms

为什么你会无法回答问题？有时是因为你不知道答案，所以只好写下你对这个话题所知的内容，然后寄希望于最好的结果。但有时是因为你看到一个或两个关键词，想到“我知道这个！”然后在完全阅读问题之前就开始回答。我称这为“弹出知识”。当一个问题让你脑中弹出某一信息时，你必须评估它是否真的回答了那个问题。

同样的事情也可能发生在多项选择的情况下。例如，看一下这个电工执照实践测试的问题。

插入直流电路的电压表时必须注意什么？

A. 功率因数

B. 均方根

C. Resistance

D. Polarity

The correct answer is "Polarity"—that is, which side of the circuit is positive and which is negative. That's what you have to observe, but a voltmeter is commonly used to measure resistance, and that's answer C. In studying for the exam, a future electrician will frequently encounter the directive "Use a voltmeter to measure resistance." So when the question includes "voltmeter" and one of the answers is "resistance"

the test taker's brain immediately shouts, "Those go together!" And they do, but that's not the question. "Pop knowledge" may be factually accurate and appear frequently in study materials, but it can still be a bad fit to the question posed.

C. 电阻

D. 极性

正确的答案是“极性”，即电路的哪一侧是正极，哪一侧是负极。这是你需要观察的，但是伏特计通常用来测量电阻，这就是选项 C。在准备考试的过程中，未来的电工经常会遇到“使用伏特计来测量电阻”的指示。所以当问题中有“伏特计”而且答案之一是“电阻”时，考生的大脑会立即尖叫，“这两个是一对！”而且他们确实是，但那并不是问题的答案。“流行知识”可能在事实上是准确的，并且经常出现在学习材料中，但仍然可能与提出的问题不相符。

The best way to answer a test question is, of course, to read the question carefully. But in addition, you must be aware of your brain's tendency to serve up "pop knowledge" when you see key terms.

In a sentence: When you've prepared well, some ideas will be strongly associated, and when you see idea A, idea B will immediately come to mind, but that doesn't mean idea B is the answer.

TIP 53 Ask the Instructor for Clarification, but Show What You Know

回答考试问题的最佳方式当然是仔细阅读问题。但是，你还必须意识到你的大脑在看到关键词时，倾向于提供“流行知识”。

用一句话来说：当你准备得很充分时，有些观点会被强烈联系在一起，当你看到观点 A 时，观点 B 会立即浮现在脑海中，但这并不意味着观点 B 就是答案。

提示 53：向讲师求证，但是要展示你所知道的。

Sometimes you have trouble accessing something in memory because the instructor phrases things in an unexpected way. Part of the problem is that we tend to learn new ideas as expressed with particular phrasing,

and if they are expressed differently we may not recognize them. That's one of the reasons I think a study group is helpful: studying with others exposes you to different ways of expressing the same idea (see tip 38).

Other times, the instructor has simply written a poorly phrased question. If a question confuses you, you might ask the instructor about it. Now, instructors vary a lot in their policy on this matter. Some instructors simply won't answer questions during an exam. Some college instructors aren't even in the room; they let teaching assistants proctor the exam while they do something else that's presumably more important.

Assuming that there is someone available and willing to field questions, you're more likely to get a helpful answer if you appreciate the instructor's perspective on the matter. Those of us who answer questions during tests are a little conflicted. On the one hand, we don't want you to get a question wrong because of some quirk in the way we've worded it. So we're happy to make sure that the question is clear. On the other hand, we don't want to give you a hint to the answer; that's not fair to everyone else. For that reason, we're sensitive to student "questions" during a test that seem like fishing expeditions: vague queries cast out in the hope that the instructor will unintentionally reveal something about the answer.

You're more likely to get a good response from the instructor if you offer reassurance that that's not your game. The way to do that is to explain your confusion. Don't just say, "I don't really get number four" or "Can you rephrase number four?" Instead, explain your confusion. Be brief, but also include specific details that show you've been thinking. Say, for example, "I'm confused by number four because it asks for an explanation of what's wrong with national education curricula, but we discussed several examples of national curricula where students do really well, like Hong Kong and Singapore and South Korea."

有时候,你会发现很难从记忆中获取某些信息,原因在于讲课者以一种出乎意料的方式阐述事物。其中一个问题在于,我们倾向于学习以特定措词表达的新观点,如果表达方式有变,我们可能无法认出它们。这就是我认为学习小组有用的一个原因:与他人共同学习能让你接触到表达同一思想的不同方式(参见建议38)。

其他时候,讲课者只是写了一个病句的问题。如果一个问题让你感到困惑,你可能会向讲课者询问。但现在,各位老师对此事的处理方式差距很大。有些老师在考试期间就不会回答任何问题。有些大学教师甚至不在教室内;他们让助教监考,而自己则在做更重要的事情。

假设有人愿意并有能力解答问题,你要想获得有用的答案,就得理解教师对此的立场。我们中的一部分人在考试期间回答问题时内心是冲突的。一方面,我们不

希望你因为我们的措辞有点奇怪而答错问题。所以，我们很乐意确保问题是清晰的。另一方面，我们不希望给你答案的提示；这对其他人来说是不公平的。所以，我们对考试期间学生的“问题”十分敏感，他们带着模糊的疑问试图钓出教师对答案的无意透露。

如果你能保证你不是这种心态，那么教师可能会更愿意给你一个满意的回答。做到这一点的办法就是解释你的困惑。别只是说，“我真的不懂第四题”或者“你能重新表述一下第四题吗？”相反，要解释你的困惑。简洁但也需要包含一些特定的细节，显示你已经思考过。例如，你可以说，“我对第四题有点困惑，因为它要求对国家教育课程的错误进行解释，但是我们讨论过的几个国家课程例子，比如香港、新加坡和南韩，学生的表现都很好。”

The instructor may draw your attention to a word or two that you had ignored. Or the instructor may decide that the question is not clearly written and offer a rephrasing that helps explain it. Or the instructor may tell you that you're on the right track and your confusion is just nerves. Or the instructor may not be helpful at all and just say, "Answer the question as best you can." But the instructor is almost guaranteed to say something like that if you don't let her know what you're thinking. If you just say, "I'm confused," she will think you're making a plea for in-exam help and she won't want to give it.

In a sentence: If you're confused by the phrasing of a question, ask the instructor to clarify, but be specific about your confusion and specify what you do understand as a way of reassuring the instructor that you're really looking for clarification of the question, not hints to the answer.

TIP 54 Don't Overthink

教练可能会引起你对你所忽略的一两个单词的注意。或者，教练可能会决定，这个问题写的不清楚，并提供重新表述以帮助解释它。或者，教练可能会告诉您，您正在正确的轨道上，您的困惑只是紧张。或者，教练可能根本没有帮助，只是说，“尽你所能回答这个问题。”但是，如果你不告诉她你在想什么，教练几乎肯定会说这样的话。如果你只是说，“我很困惑”，她会认为你在请求考试帮助，她不想提供。

用一句话说：如果你对问题的措辞感到困惑，向教练要求澄清，但要明确你的困惑，并指出你所理解的情况，这样可以安抚教练，让他知道你真的是在寻求问题的澄清，而不是答案的提示。

提示 54 不要过度思考

At the start of this chapter, I said that you use two key mental processes when taking exams: drawing information from your memory and then putting that information to use. We've looked at several ways that you can improve the odds of getting the right information out of your memory. What about putting it to use?

This is where test takers often go wrong, in particular on multiple-choice questions. When they are not 100 percent certain about the answer, they start applying what they think are clever test-taking strategies. These are actually methods of talking themselves into the wrong answer. Here are some examples of poor multiple-choice-question strategies and better ways of dealing with uncertainty.

Sometimes you just slip into overthinking. That's most common on multiple-choice exams because you are offered answers to which you can apply your overthinking. For example, you know A is right, and you know B and C are definitely wrong. But then you look at D and think, "Hmmm. You know, D could be right." And without noticing you're doing it, you become an advocate for answer D—you try to think of circumstances that would make D a good answer. In so doing, you will often add assumptions to the question and/or read things into it that are not there. For example, one of my tests had a question about memory of an everyday event (going to a restaurant) and a student selected an answer that made sense only if you assumed that eating out was a highly emotional event. She said, "I thought you were trying to get at emotion and memory, so maybe eating out makes you really happy." After the fact, she saw that that reasoning didn't make sense.

在本章开头，我说过在参加考试时，你会利用两种关键的精神过程：从你的记忆中获取信息，然后利用这些信息。我们已经探讨了你可以如何提高从记忆中获取正确信息的可能性。那么如何利用这些信息呢？

这就是考生经常出错的地方，特别是在多选题中。当他们对答案不百分百确定时，他们就开始采用他们认为可能有效的考试策略。其实这些都只是一个误导自己选择错误答案的方法。以下是一些不好的多选题策略以及如何更好地应对不确定性的例子。

有时候你可能会陷入过度思考的沼泽。这在多选题考试中尤其常见，因为你有很多答案可以供你斟酌应对。例如，你知道 A 是正确的，你知道 B 和 C 肯定是错误的。但是当你看到 D 时，你开始思考，“嗯，D 也可能是正确的。”不知不觉

中，你就成了 D 选项的倡导者——你开始想象那些会使 D 成为好答案的情况。在这个过程中，你常常会对题目做出额外的假设，或者读入一些题目本身并不存在的内容。例如，在我的一次测试中，有一个关于日常事件（去餐馆）记忆的问题，一个学生选择了一个只有在假设外出就餐是一种高度情绪化的事件的情况下才有意义的答案。她说，“我以为你是想考察情绪和记忆的联系，所以也许出去吃饭会让你非常快乐。”然而事后，她发现这种推理是没有道理的。

If you find yourself unable to choose between two answers, ask yourself: (1) Do I need to add assumptions to make one of the answers correct? (2) Is one of the answers correct only under some circumstances? If the answer to either question is yes for one choice but not for the other, you have found the right answer.

Other times students don't slip into overthinking; they purposefully plunge into it. Students learn tricks to eliminate answers on multiple-choice questions when they take standardized tests such as the SAT—tricks like “Avoid answers that say something is ‘always true’ or ‘never true’ ” or “If something is stated positively in one choice and negatively in another, the positive choice is usually right.” SAT tricks are your last resort. They are what you try in desperation when you have exhausted every other option. Whether they work at all is open to debate, but even their advocates would say you are not meant to apply them to every question. That's how you talk yourself into wrong answers.

For multiple-choice items, try to answer each question mentally before you read the choices. If your answer is one of the choices, you're good to go. If the answer is not immediately obvious to you, the usual tricks suggest that you analyze the choices and start trying to eliminate them: Which one seems most likely to be wrong?

This is bad advice.

If you don't know the answer, you need to spend more time on the question. The answer must come from memory, and the question is your cue to memory. Work with the question to get to the answer. David Daniel, a learning expert at James Madison University, offers an “80/20 rule”: most students spend 20 percent of their time on the question and 80 percent of their time thinking about the answer. They would be better off, he suggests, reversing that allocation and spending 80 percent of their time on the question.

如果你发现自己在两个答案之间无法做出选择，问问自己：（1）我是否需要增加假设才能使答案正确？（2）只有在某些情况下，一个答案才是对的吗？如果对任一问题的答案对一个选择是肯定的，对另一个选择是否定的，那么你就找到了正确答案。

有时候，学生并不是陷入过度思考，而是故意深入其中。他们在参加如 SAT 这种标准化测试时，通过消除多项选择题的答案来学习一些技巧，比如“避免选择‘总是正确’或‘从未正确’的答案”，或者“如果一个选择中某事被积极地陈述，而在另一个选择中被消极地陈述，那么积极的选择通常是正确的”。SAT 技巧只是你的最后手段。当你用尽了所有其他的选择时，这是你在绝望中尝试的东西。这些技巧是否有效尚有争议，但即使是它们的支持者也会说，你不应该把它们应用到每一个问题上。这就是你如何把自己想到错误答案的方式。

对于多项选择题，尝试在阅读选项之前就在脑中回答每一个问题。如果你的答案是其中一个选项，那么你就走对了。如果答案对你来说并不立即明了，通常的技巧建议你分析选项并开始尝试消除那些可能是错误的。

这是错误的建议。

如果你不知道答案，你需要在问题上花费更多的时间。答案必须来自记忆，问题是你触发记忆的线索。与问题一起工作，找出答案。詹姆斯·麦迪逊大学的学习专家 David Daniel 提出了一个“80/20 原则”：大多数学生在问题上花费 20% 的时间，在思考答案上花费 80% 的时间。他认为，他们反过来，把时间分配给问题的 80% 会更好。

In a sentence: Test-taking strategies that are supposed to guide you to the correct answer if you don't know the content don't work, and they often make you second-guess yourself.

TIP 55 For an Essay Question, Don't Start Writing Until You Know How the Essay Ends

在一句话中：试图指导你找到正确答案的答题策略，如果你不了解内容的话，是无效的，而且常常会让你自我怀疑。

提示 55： 对于问答题，不要在你明确知道论文结尾的情况下开始写作。

Most students need to strategize less on multiple-choice questions but more on essay questions; they don't think enough before they begin writing

their essays.

It's understandable. Essay questions are broad and often provocative, so the question immediately calls a few ideas to mind. Once you've jotted those on a piece of scratch paper, then brainstormed a little more, you might feel you can see the shape the essay will take. Given that you're under time pressure, you're impatient to start writing.

Screenwriters know this temptation well, as evidenced by an old saying. When one writer tells another she has a terrific script she is working on, the second will often ask, "How's your ending?" It's hard to start a screenplay, to invent vivid characters and an interesting situation for them. It's incomparably harder to end it in a way that will satisfy an audience.

The same is true of exam essays. If you've studied, you can probably think of a few big pieces of an answer, the parts that will enable you to write something that's okay. It's much harder to get the last parts into place and to organize them effectively. That's what will take you from okay to great.

I recommend a three-step process to writing essays. Suppose you encounter this test question: "Write an essay exploring 'appearance versus reality' as a key theme in Hamlet. Do you think Hamlet's inability to face reality is his undoing?"

大多数学生在选择题上的策略不需要那么多，但在论述题上却需要更多；他们在开始写作之前，没有足够的思考。

这是可以理解的。论述题通常主题广泛且常常富有启发性，因此问题立即使人想到了几个想法。一旦你在一张废纸上草草记下这些，再稍微头脑风暴一下，你可能会觉得可以看到文章将要呈现的形状。考虑到你正在面临时间压力，你急于开始写作。

剧本作家深知这种诱惑，正如一句老话所表明的那样。当一个作家告诉另一个人，她正在创作一部绝好的剧本时，后者经常会问：“你的结局怎么样？”开始一个剧本，创造出生动的角色和有趣的情境对他们来说是困难的。以一种能满足观众的方式结束它则更难。

考试论文也是如此。如果你已经学过，你可能可以想出几个大部分的答案，这些部分将使你能写出一些还可以的东西。但是将最后的部分安排到位并有效地组织它们是更难的。这就是让你从还可以到优秀的转变。

我推荐一个三步过程来写作论文。假设你遇到这样一个测试问题：“写一篇探讨‘表象与现实’作为《哈姆雷特》的一个关键主题的文章。你认为哈姆雷特无法

面对现实是他的垮台吗？”

Step 1: On scratch paper, list everything you think should be part of the essay. Go ahead and do a brain dump, but recognize that not everything you think of will be relevant to the question. There's a whole lot in Hamlet that has little to do with this theme, yet, because you know it, you'll be tempted to shoehorn it in.

To organize all the facts you list and to be sure that you include relevant facts in your answer, sort them by subquestions. In this example, the subquestions are (1) the exploration of the theme “appearance versus reality” and (2) Hamlet's inability to face reality as his key character flaw.

Organizing by subquestion will help you evaluate the evidence that you'll use to support your answers to these subquestions. You should have at least two sources of evidence for each subquestion, preferably three or four. If the claim is “A causes B” or “A is a type of B,” there should be multiple reasons you say that.

Also, as you're doing your brain dump, think in terms of a hierarchy, just as I described for lectures and readings when you studied. You're listing facts, themes, ideas; they are not all at the same level of the hierarchy. A conclusion lives at the top of the hierarchy; underneath are amplifications of the conclusion, evidence for the conclusion, qualifications of the conclusion, and so on. Be explicit in your essay about what type of connections you are providing.

Finally, decide how much time you can reasonably be expected to spend on the question. More detail in each answer is obviously expected if there are three questions on an exam than if there are ten.

步骤 1: 在草稿纸上列出你认为应该包含在论文中的所有内容。你可以随意乱写，但要认识到并非你想到的所有内容都与题目相关。哈姆雷特中有很多内容与这个主题无关，但因为了解它，你可能会被诱惑想要硬挤进去。

为了组织你列出的所有事实，并确保你在答案中包含相关事实，可以按子问题对它们进行排序。在这个例子中，子问题是（1）“外观与现实”这个主题的探索（2）哈姆雷特面对现实的无能为力是他的主要性格缺陷。

按子问题进行组织将帮助你评估你用来支持这些子问题答案的证据。你应该至少为每个子问题提供两个证据源，最好是三个或四个。如果主张是“A 导致 B”或“A 是 B 的一种”，你应该有多个理由支持这个说法。

此外，在进行思维倾泄时，要按照层次来思考，就像你在听讲座和阅读学习时我

所描述的那样。你正在列出的是事实、主题、想法；它们并不都处在层次结构的同一水平上。结论在层次结构的顶部；下面是对结论的扩展，为结论提供的证据，对结论的限定等等。在论文中明确说明你提供的是什么类型的联系。

最后，决定你可以合理地花多少时间来回答这个问题。如果考试有三个问题，则显然期望每个答案中的细节更多；如果有十个问题，情况就不同了。

Step 2: On scratch paper, write an outline. From step 1 you have a bunch of facts, and you've started to connect them by considering which part of the question they are relevant to and the hierarchical organization of these facts. Now flesh that out into an outline. I know time is tight, but you want your essay to be well organized, and you want it to be composed of well-written sentences, but you can't think of two things—logical organization and clear sentences—at once. So write an outline that organizes your thoughts.

Think about the sequence of your ideas: How will you transition from one to the next? Outlining will also help you spot holes in your logic and places where you need more detail. It will also force you to think about your conclusion. Don't start writing until you know how the essay will end.

Step 3: Write. If you write an outline that you're happy with, you don't have to think about the answer to the question anymore—that's in your outline. Now you can focus on making your writing as clear as you can. You can think about word choice, making your paragraphs coherent, and varying the lengths of your sentences.

Instructors will sometimes say that only the quality of your thinking matters, not the quality of your writing. Maybe other instructors are better at grading than I am, because I find it really hard to separate the two. When I'm reading something and I'm confused, I have to judge whether the ideas are incoherent or the writing is poor. That's not always easy. Even if writing is said not to count, writing to the best of your ability sure won't hurt you.

In a sentence: Essays require a lot of on-the-spot thinking, so use a three-step plan to put together an organized essay in a hurry.

步骤 2：在草稿纸上写出大纲。从步骤 1 开始，你有了一堆事实，你已经开始通过考虑这些事实与哪一部分问题相关，以及这些事实的等级组织关系来将它们联系起来。现在把这些内容整理成大纲。我知道时间紧张，但你希望你的论文结构严谨，句子书写清晰，但你无法同时思考逻辑组织和清晰的句子。所以写一个能组织你思想的大纲。

考虑你的思想顺序：你将如何从一个过渡到下一个？制定大纲还可以帮助你发现逻辑漏洞和需要更多详情的地方。它还会迫使你思考你的结论。在你知道文章将如何结束之前，不要开始写作。

步骤 3：写作。如果你写了一个你满意的大纲，你就不必再思考问题的答案——那已经在你的大纲中了。现在你可以专注于让你的写作尽可能清晰。你可以考虑词语的选择，让你的段落连贯，以及变换你的句子长度。

有些教师会说，只有你的思维质量才重要，而你的写作质量并不重要。也许其他的教师在评分上比我更厉害，因为我觉得把这两者分开真的很难。当我读到一些让我困惑的东西时，我不得不判断是思维不连贯还是写作不佳。这并不总是容易的。即使说写作不算分，尽你所能的写作肯定不会伤害你。

简单来说：论文需要大量的即时思考，所以使用三步计划快速组织出一篇论文。

With all the preparation you' ve done and the care with which you' ve taken the exam, you' ve maximized your chances of doing well. But of course things don' t always work out. Maybe you started the course at a disadvantage because your background in the subject wasn' t very good. Or maybe you simply got unlucky on the test. Or maybe your studying and test taking still need a little fine-tuning. In the next chapter we' ll consider how to examine your exam results to figure out where to go from here.

For Instructors

鉴于你已经做好了所有的准备，并且你认真完成了考试，你已经最大化了做好的可能性。但是，事情并非总是如人意。也许你学习这门课程时本已处于劣势，因为你在这个主题上的背景知识并不是很好。或者你在考试中碰巧运气不好。或许，你的学习和考试技巧还需要进一步的调整。在下一章中，我们将考虑如何检查你的考试成绩，以找出接下来的发展方向。

针对教师

It' s not pleasant for instructors to contemplate, but we actually have no idea whether the tests we write do what we intend: faithfully measure students' skills and knowledge. Professionals who develop standardized tests spend a lot of time vetting individual questions for ambiguity and other flaws, but we' re not professionals and we lack time. Still, some

simple safeguards can help.

Pick the right question format. Multiple-choice questions are good for testing fine-grained distinctions among concepts. Fill-in-the-blank and short-answer questions are good for ensuring that students recall (not just recognize) simple ideas. Essays are good for testing students' ability to analyze and think critically. Don't kid yourself into believing that you can test critical thinking with multiple-choice questions. Some of the best constructors of tests in the country work on the National Assessment of Educational Progress; they've tried and failed.

Don't test students' ability to read instructions. Students will assume that your test should be taken the same way they've taken other tests. If you violate that assumption, make it even more clear to students than you think is necessary. For example, if you don't want a paragraph of prose in response to a short-answer question but instead want a list of reasons, make that very clear. If the word **not** is key to understanding the question, boldface and underline it.

Don't test students' luck or intuition. Tell the students what to expect on the exam. Do they need to memorize names? Dates? What percentage of questions will come from readings versus lectures?

教师可能不愿意面对,但实际上我们并不知道我们编写的考试是否能达到我们的预期目标:如实度量学生的技能和知识。专业化的标准化测试开发者会花费大量的时间检查每一个问题是否存在模糊性和其他缺点,但我们并非专业人士,我们没有时间。尽管如此,一些简单的保障措施仍可提供帮助。

选择正确的问题格式。选择题很适合测试对概念的细微区别。填空题和简答题适合确保学生回忆(而不仅是识别)简单的观点。论文题目则适合测试学生的分析能力和批判性思维。不要自欺欺人地认为你可以通过选择题来测试批判性思考。全国教育进步评估中的一些最佳测试题目编写者已经尝试过并失败了。

不要测试学生阅读指令的能力。学生会假设你的考试应该与他们做过的其他考试的方式相同。如果你违反了这个假设,你需要让学生更清楚地了解你的考试要求。例如,如果你不希望在简答题中得到一段散文答案,而是希望得到一份理由列表,那就要清楚地告诉他们。如果单词“不”对理解问题至关重要,那就将其加粗并下划线。

不要测试学生的运气或直觉。告诉学生他们在考试中应该期望什么。他们需要记住名字吗?日期?阅读内容和课堂讲座中的问题将占到考试的百分之几?

Don't test knowledge unrelated to course content. Cute cultural references—for example, “Bart Simpson is weightless and moving at 50 km per minute”—are distracting for students who don't get them. Also,

don' t use complicated syntax, unnecessarily lengthy question stems, or multiple-choice options such as "A and B" or "None of the above." These test students' ability to keep a lot of information in mind at once.

Don' t test students' skill in interpreting ambiguous questions. Because you can' t write perfect questions, you need some way that students can get clarifying information during the test. Either make yourself available during exams or allow students to write marginal notes explaining why they answered as they did.

Much of what I' ve advised here may strike you as hand-holding, as providing perhaps too much help to ensure that students understand what' s being asked of them on an exam. I think it' s more accurate to view it as ways of ensuring that your test measures what you intend it to measure.

不要测试与课程内容无关的知识。比如说，可爱的文化引用—例如，“巴特·辛普森是无重力的，速度为每分钟 50 公里”—对于不理解这些的学生来说很分散注意力。同样，也不要使用复杂的语法，无谓的长问题句干，或者多选项，比如“A 和 B”或者“以上都不是”。这些都是考察学生一次记住大量信息的能力。

不要考察学生解读模糊不清问题的能力。因为你无法写出完美的问题，你需要一些方式让学生在测试期间能够获取澄清信息。或者你在考试期间提供帮助，或者允许学生写下他们为何这样答题的边注说明。

我在这里提出的许多建议可能会让你觉得像是过于过分关心学生，提供了可能过多的帮助，确保学生理解他们在考试上被问到的问题。我认为更准确的看法是，这些都是确保你的测试测量你打算测量的东西的方式。

Summary for Instructors

Match the question format to the type of knowledge to be tested.

If you violate students' expectations about the typical ground rules for exams, make that very clear.

Tell students beforehand what content they are expected to know for the exam.

Don' t include cultural references or, more generally, extraneous information in questions.

为教师的摘要

将问题格式与待测试的知识类型相匹配。

如果你违反了学生对考试通常规则的期望，那就要表达得非常清楚。

在考试之前告诉学生他们需要掌握什么内容。

不要在问题中包含文化参考或更广义的无关信息。

第九章 如何从过去的考试中学习

Suppose you take a test and it goes poorly. Clearly something about the way you prepare must change, but what? Most people conclude, “I need to study more.” That isn’t helpful because it isn’t specific.

Consider all the reasons you might have missed a given question:

You were never exposed to the content it tested because you were absent for that lecture or skipped the relevant reading.

You were exposed to the content but didn’t understand it.

You understood it, but the content didn’t make it into your notes.

假设你参加了一次考试，但结果并不理想。很明显，你的准备方法必须做出一些改变，但是应该改变什么呢？大多数人的结论是，“我需要多学习。”但这并没有帮助，因为它并不具体。

考虑一下你可能会错过某个问题的所有原因：

可能由于你缺席了那堂讲座或者跳过了相关的阅读，你从未接触过这个问题的内容。

你接触过该内容，但是并未理解它。

你理解了它，但是这个内容没有写进你的笔记中。
It was in your notes but not your study guide.

It was in your study guide, but you didn’t memorize it.

You memorized it but were momentarily unable to recall it during the test.

You would have been able to recall it from memory, but you misinterpreted the question.

You had the right answer in mind, but you accidentally circled the wrong choice on your exam paper.

它在你的笔记里，但不在你的学习指南里。

它在你的学习指南里，但你并没有记住它。

你记住了它，但在考试期间瞬间无法回忆起来。

你本来可以从记忆中回忆起来，但你误解了问题。

你心里有正确的答案，但你在考试卷上不小心圈选了错误的选项。

It' s likely that you make some of these mistakes frequently and others infrequently. It' s not fun to dissect a failed exam, but you need to diagnose your area of greatest need so you know where to put your effort going forward.

WHEN EVALUATING WHAT WENT WRONG ON A TEST

What your brain will do: It will make a snap diagnosis about why you failed:
“I needed to study more.”

How to outsmart your brain: Overcome the impulse to turn away from failed work, and analyze what went wrong. That analysis can direct your effort for the next exam.

你可能经常犯其中的一些错误，偶尔也会犯其他错误。解剖一场失败的考试并不愉快，但你需要诊断你最需要改进的地方，这样你才知道接下来该把努力投向哪里。

评估测试中出了哪些问题时：

你的大脑会做什么：它会立即判断你失败的原因：“我需要多学习。”

如何智胜你的大脑：克服避开失败作业的冲动，并分析出了什么问题。这种分析可以指导你为下一次考试做出努力。

The tips in this chapter tell you how to use completed exams to identify problems in your preparation. It will also address a couple of common problems students encounter when doing this analysis.

TIP 56 Categorize Your Mistakes

本章中的建议告诉你如何使用已完成的考试来识别你准备中的问题。它还将解决学生在进行此类分析时常遇到的几个常见问题。

提示 56: 分类你的错误

Figuring out what went wrong on an exam means analyzing the questions you couldn't answer. Start by flagging those, but also flag the ones on which you guessed and got lucky. You couldn't answer those, either.

Now, how should you analyze them? Here I'll cover exam questions for which the test writer had a specific answer in mind, such as multiple-choice questions, fill-in-the-blank questions, and calculation problems you would find on math or science exams. There are two ways to evaluate your mistakes.

First, you can analyze the content of the questions you got wrong. The most obvious way to do that is by subject matter. Did you miss a lot of questions that were based on a particular topic? Did you miss mostly questions based on readings or based on lectures? Did the questions you missed concern facts and details or more big-picture themes? If you can identify a pattern in the content of the questions you missed, you should pay attention to the completeness of your notes and study guide before the next test. Check with your study group to be sure that you've got all the content down.

Check to see whether the content you missed was in both your notes and your study guide. If not, you're skimping on your study guide. Next time, make sure it has everything in it.

找出考试中哪里出了问题的关键是分析你无法回答的问题。首先，找出这些问题，但你也需要找出你侥幸猜对的问题。你其实也无法回答这些问题。

现在，如何分析这些问题呢？我在这里会讨论出题者预期有特定答案的考试问题，如选择题、填空题以及在数学或科学考试中可能遇到的计算问题。有两种方式可以评估你的错误。

首先，你可以分析你答错的问题中的内容。最明显的方法是按照主题进行分析。

你是否答错了很多以特定主题为基础的问题？你答错的问题主要是基于阅读材料还是基于课堂讲解？你答错的问题是事实细节，还是更大范围的主题？如果你能在你答错的问题内容中发现模式，你应该在下次考试之前检查你的笔记和学习指南的完整性。确认你已经掌握所有的内容。

检查你错过的内容是否同时出现在你的笔记和学习指南中。如果没有，那说明你的学习指南不够全面。下次，确保它包含所有内容。

Did the questions you missed demand straightforward recall of concrete information, or were you asked to use the knowledge in a new way? Application is always more difficult, but you can get better at answering such questions (see chapter 6).

Second, analyze what went through your head when you saw each question you got wrong on the test. Here are eight common thoughts people have when they review questions they got wrong, along with what each thought probably means.

I was surprised that the question was on the test. This means you either missed the content altogether (that is, it's not in your notes) or you judged that it was unimportant and so didn't put it into your study guide. Missing a question or two for this reason is pretty typical, but if you missed several questions for this reason, the remedy is obvious: you need to be more careful to make sure your study guide is complete.

None of the answers looked right to me (in a multiple-choice question). Possibly you understood the concept but failed to include it in your study guide, or possibly you don't understand the concept although you think you do. The most likely scenario, however, is that what's in your notes or study guide is not quite right. Comparing your understanding of the material with other people's can help (see tip 23).

The answer seems clear enough to me now, but I couldn't recall it at the time. You didn't study your study guide enough. You probably needed to do some overlearning (see tip 50). You can also review the tips on memory recall in chapter 8.

你错过的问题是需要直接回忆具体信息，还是要求你以新的方式运用知识？运用知识总是更困难，但是你可以变得更擅长回答这样的问题（见第六章）。

其次，分析你在看到考试中答错的每个问题时，脑海中的想法。以下是人们在复习错题时常有的八种想法，以及每种想法可能的含义。

我很惊讶这个问题出现在考试中。这意味着你要么完全错过了这个内容（也就是说，它不在你的笔记中）或者你认为它不重要，所以没有将它放入你的学习指南

中。出于这个原因错过一两个问题是很常见的，但如果你因为这个原因错过了几个问题，解决办法很明显：你需要更仔细地确保你的学习指南是完整的。

在多选题中，我觉得所有的答案都不对。可能你理解了这个概念但没有把它加入你的学习指南，或者可能你认为你理解了这个概念但实际上并没有。然而，最可能的情况是，你的笔记或学习指南中的内容并不完全正确。与其他人比较你对材料的理解可以有所帮助（见第 23 条建议）。

现在这个答案对我来说似乎很清楚，但当时我回忆不起来。你没有足够地学习你的学习指南。你可能需要进行一些过度学习（见第 50 条建议）。你也可以在第八章中复习有关记忆回忆的提示。

I' m told that this question tested a particular concept and I studied that concept, but I didn' t see how it related at the time. I' ve mentioned straightforward recall of information versus application of ideas; not seeing that a concept is relevant is an application problem. You may study how Pavlov' s dog learned to salivate on hearing a bell and study that type of learning in a few other contexts (e. g. , a child is scratched by a cat and then fears cats) but then not see that a situation described in a test question (e. g. , coming to like a perfume because an attractive woman wears it) is the same type of learning. These are some of the most difficult questions, and chapter 6 describes how to prepare for them.

I made a stupid mistake. You started to read the question, recognized some key terms, and were sure you knew what it was about, so you wrote your short answer—but you didn' t notice the word not in the question. Or on a math test where you were meant to apply $(x + y)^2$, you forgot to square. These mistakes are surely the most frustrating, but fortunately they don' t reflect a deep problem. You just need to take more seriously the advice to check your work noted in chapter 8.

I still don' t see why my answer is wrong. Most likely, your notes and/or your study guide does not have fine enough detail in it. There' s a concept that you partially understand, but you are missing an important detail that is preventing you from seeing why your answer is slightly off the mark. Check with the instructor to get further information.

I overthought. Overthinking arises when you employ a test-taking strategy. Either you talked yourself into a wrong answer or you talked yourself into a strange interpretation of what the question asked (see tip 54).

It was a trick question. You feel you knew the content and if a straightforward question about it had been posed, you would have gotten it right. Instead, the question led you down the wrong mental path because

the phrasing was misleading. We' ll take up trick questions later in this chapter.

我被告知这个问题测试了一个特定的概念，我学过这个概念，但是当时我并没有看出它的相关性。我提到了对信息的直接回忆与观点的应用；没有看到概念的相关性是一个应用问题。你可能会学习帕夫洛夫的狗是如何在听到铃声时学会流口水的，也会在其他一些情境中学习这种学习方式（例如，一个孩子被猫抓伤后就害怕猫），但是在测试问题中描述的情况（例如，因为一个漂亮的女人佩戴香水而喜欢上她）却看不出这是相同类型的学习。这些是一些最难的问题，第6章将描述如何为这些问题做准备。

我犯了一个愚蠢的错误。你开始阅读问题，认出一些关键词，你确信你知道问题是关于什么的，所以你写出了你的短回答，但你没有注意到问题中的"不"字。或者在一个数学测试中，你应该应用 $(x + y)^2$ ，但你忘记了平方。这些错误当然是最令人沮丧的，但幸运的是，它们并不反映一个深层次的问题。你只需要更认真地接受第8章中关于检查你的工作的建议。

我仍然不明白为什么我的答案是错的。最有可能的是，你的笔记和/或学习指导没有足够细致的详情。有一个你部分理解的概念，但你缺少一个重要的细节，这阻止了你看到你的答案稍微有点偏离了正确答案。与教师联系以获取更多信息。

我想得太多了。当你使用一种应试策略时，就会产生过度思考。你要么说服自己给出一个错误的答案，要么说服自己对问题的提问给出一个奇怪的解释（参见提示54）。

这是一个陷阱问题。你觉得你知道了内容，如果有一个直接的关于它的问题被提出，你可能会得到正确的答案。相反，问题让你走向了错误的思维路径，因为措辞误导了你。我们将在本章后面讨论陷阱问题。

If your mistakes tend to fall into one or two categories, great; you have a good idea of what to work on. Read the tips in the relevant chapters of this book and see if following them helps on the next exam.

If your analysis indicates that there' s not just one or two problems—that is, you' re getting lots of problems wrong for lots of reasons—it may be that your root problems are planning and organization. We consider those challenges in chapter 10.

In a sentence: Analyze the reasons you got questions wrong by considering what you were thinking when you tried to answer them; that will tell you which step went wrong when you prepared for and then took the exam.

如果你的错误主要集中在一两个类别内，这是很好的；你已对需要改进的地方有了明确的认知。阅读本书中相关章节的建议，看看在下次考试中遵循这些建议是否有所帮助。

如果你的分析表明，这不仅仅是一两个问题——也就是说，你出了很多错，原因也五花八门，那么你可能的根本问题在于计划和组织。我们在第 10 章考虑了这些挑战。

用一句话来说：通过分析你在尝试回答问题时的想法，来挖掘你做错问题的原因；这将告诉你在准备考试并参加考试时，哪一步出了问题。

TIP 57 Analyze What Went Wrong on Essay Questions

You would think it would be easy to analyze what went wrong on exam essay questions. Multiple-choice, true/false, or fill-in-the-blank questions provide minimal feedback, but for essays you expect more detail. Of course, you don't always get it. Providing this sort of feedback is time-consuming for the instructor. I may, when I write an exam, have every good intention of providing clear, detailed feedback on each essay, but when confronted by eighty exams and limited time, I end up writing useless comments such as "Vague" next to a big block of text. (I still remember a comment my professor wrote on an essay for my final exam of a twentieth-century American literature course. The professor's feedback, in its entirety was "No. C+.")

提示 57：分析论文题目出了什么问题

你可能会认为分析考试论文题目出了什么问题会很容易。选择题、判断题或填空题提供的反馈最少，但对于论文，你会期望得到更多的细节。当然，你并不总是能得到这些反馈。提供这种反馈对教师来说是非常耗时的。我在出考试时，可能会有为每篇论文提供清晰、详细反馈的良好意愿，但当面对 80 份考试和有限的时间时，我最后只能在一大段文字旁边写下如“模糊不清”这样无用的评论。（我还记得我上 20 世纪美国文学课程的期末考试论文上的教授评论。教授给我的反馈，全部内容就是“不，C+。”）

If you get minimal feedback, you can always seek more information from the instructor. If that's not an option, at least see if someone else in your study group got full credit for questions you found difficult.

Seeing what was judged to be a good answer may help you identify what your answer lacked. For example, you may see that your classmate provided more detailed examples or pulled together evidence from more course topics. Then you can work backward to figure out how to prepare more effectively. (For some standardized tests—for example, Advanced Placement exams—you can view sample essays with explanations of how they would be scored.)

You should also consider what sorts of essays you were asked to write. Two types of questions dominate essay exams. Some ask you to elaborate on and explain content. Perhaps you spent a full day in your microeconomics class discussing elasticity of economic variables. An essay question might be “Define elasticity and name three ways it can be measured, along with the advantages and disadvantages of each.” This question demands direct recall of content—content that ought to be in your study guide and memorized. It is also, by the way, an easy type of question to grade. The grader knows exactly what she’s looking for and can set a point value for each expected part of the answer (a definition, three measures, and the advantages and disadvantages of each measure).

It’s therefore easy for you to assess what went wrong if you didn’t get full credit. Just as you did for multiple-choice and short-answer questions, you need to size up whether the content didn’t make it into your notes, didn’t make it into your study guide, never got memorized, and so on.

In the second type of essay question, you’re asked to evaluate something new: a conclusion, perhaps, or a hypothetical situation. There are a few ways your answer to this sort of question can go wrong.

First, the instructor might have a particular answer in mind, and you just don’t see it. Someone preparing to be a teacher might take a class on reading instruction, and the final exam poses this question: “Would it be a good or bad idea to offer an eight-year-old a dollar for every book she reads over summer vacation?” You can’t think of anything you’ve studied that addresses this question, so you just write what you hope is a coherent answer, tacking on ideas that seem relevant as they come to mind. Because the question didn’t include the words reward or motivation, you have forgotten that half of a lecture was devoted to the relationship of reward to motivation—specifically, the idea that rewarding people to do something can actually backfire and make them less motivated to do the rewarded activity.

如果你收到的反馈较少，你总是可以向教师寻求更多信息。如果这不可行，至少看看你的学习小组中是否有人在你觉得困难的问题上获得了满分。看到被判断为

好答案的内容可能有助于你确定你的回答缺少了什么。例如，你可能会发现你的同学提供了更详细的例子，或者从更多的课程主题中整理出证据。然后你可以反向理解如何更有效地准备。（对于一些标准化考试-例如，高级课程考试-你可以查看带有如何评分解释的样本文章。）

你还应该考虑你被要求写的论文的类型。两种类型的问题主导了论文考试。一些要求你阐述和解释内容。也许你在微观经济学课上花了一整天的时间讨论经济变量的弹性。一个论文问题可能是“定义弹性并列举三种可以测量弹性的方式，以及每种方式的优点和缺点。”这个问题要求直接回忆内容-这些内容应该在你的学习指南中并被记住。顺便说一句，这是一个容易评分的问题类型。批阅者清楚地知道她在寻找什么，并可以为答案的每个预期部分设置一个得分值（定义，三次测量，和每次测量的优势和劣势）。

因此，如果你没有得到满分，你很容易判断出问题在哪里。就像你为选择题和简答题做的那样，你需要估计哪些内容没有进入你的笔记，没有进入你的学习指南，或者从未记住，等等。

在第二种类型的论文问题中，你被要求评价一些新的东西：一个结论，也许是一个假设的情况。你的答案可能会以几种方式出错。

首先，教师可能已经有了一个特定的答案，而你却没有看到它。准备成为教师的人可能会上一门阅读指导课，期末考试提出这个问题：“在暑假期间，每读一本书就给一个八岁的女孩一美元好不好？”你想不起来你已经研究了哪些可以解决这个问题内容，所以你只是写下你希望是连贯的答案，又顺着思路添加一些似乎相关的想法。因为问题中没有包含奖励或激励这两个词，你已经忘记了半节课都是讲述奖励与激励的关系的，特别是奖励人们做某事实际上可能适得其反，使他们对被奖励的活动的积极性降低的观点。

This problem is similar to one described in chapter 6: the question requires that you see beyond the particular circumstances (reading, money) to the underlying principles (motivation, reward). If you're expecting deep questions like this on the next exam, see the tips offered in chapter 6.

The second way this sort of essay can go wrong: you may be on the right mental track, but you end up writing a poor essay because it doesn't make an argument, it's unorganized, or you don't use transitions well, so the instructor can't see how the whole thing hangs together. You've got a lot of the right facts in your essay, but you don't put them together so that they build something larger. The example question about paying an eight-year-old explicitly demands that you draw a conclusion about the idea. You should probably point out both advantages and disadvantages of the payment, but at the end you need to weigh the evidence and conclude either “good idea” or “bad idea.” If that conclusion is missing or doesn't seem justified, your essay could have been better.

A third possibility is that you do remember the relevant content and you include it, but you clutter your essay with a bunch of irrelevant stuff. You're pretty sure you're supposed to discuss rewards and motivation, but you think there's always the possibility that the instructor had something else in mind, so it seems like it can't hurt to add other stuff to your essay. So you write about why reading is important to success in school, you summarize things you remember from a developmental psychology class about what eight-year-olds are like, and you discuss how behaviorist psychologists use rewards in their theories.

Students often figure, "The more I show what I know, the better." Maybe, but usually not. Some instructors specifically tell you that they will lower your grade if you load your essay with irrelevancies because you are hoping for points. Even if it's not a policy, when I'm grading, it's hard for me to overlook that you've got three good points in your essay and four facts that are true, but none is related to the question. It's like someone serving me ice cream with beef gravy.

"What's the matter? You don't like gravy?"

这个问题与第六章所描述的一个问题相似：这个问题要求你看到特定环境（阅读，金钱）之外的基本原则（动力，奖励）。如果你预期下次考试会有这样的深度问题，请参考第六章的提示。

第二种可能导致这类文章出问题的方式是：你可能处于正确的思维轨道，但由于文章没有提出论点，没有组织，或者你没有很好地使用过渡，所以导致写了一篇差的文章，让教师无法看明白整体的联系。在你的文章中有很多正确的事实，但你没有把它们结合起来形成更大的内容。关于支付给八岁孩子的示例问题明确要求你对这个想法做出结论。你可能需要指出支付的优点和缺点，但最终你需要衡量证据并得出“好主意”或“坏主意”的结论。如果缺少结论或者结论看起来不合理，那么你的文章可能需要改进。

第三种可能性是你确实记住了相关的内容并将其包含在内，但你让你的文章充满了一堆无关的东西。你非常确定你应该讨论奖励和动力，但你觉得教师可能有其他的想法，所以觉得在你的文章中添加其他东西似乎无伤大雅。于是你写了为什么阅读对学校成功很重要，你总结了你从发展心理学课程中记住的关于八岁孩子的事情，你讨论了行为主义心理学家如何在他们的理论中使用奖励。

学生们经常认为，“我展示的知识越多，我就越好。”也许是，但通常不是。一些教师会特别告诉你，如果你因为希望得到分数而把你的文章塞满无关的东西，他们会降低你的成绩。即使这不是一个政策，当我在打分时，我很难忽视你的文章中有三个好点和四个事实是正确的，但是没有一个与问题有关。这就像有人在冰淇淋上面浇牛肉汁。

“怎么了？你不喜欢汤汁么？”

“I do, but not here.”

The way to avoid this problem is to be more critical about what to include in the essay when you write your brief outline.

A fourth possibility is that your essay is good, but it's a mediocre fit to what the question asked. For example, suppose a final exam question in a Shakespeare course asks you to compare the playwright's view of love in Shakespeare's plays and in Greek drama. The instructor expects you to focus on Romeo and Juliet, but for some reason you barely mention that play and build your answer on the other Shakespeare play you read, Hamlet. It's not a bad essay, but you were on the wrong mental path from the start. What you needed to do was brainstorm longer before you started to write, even before you started to outline. You probably thought of Hamlet first and in nervousness lunged toward that answer.

Finally, let's consider poor writing. Most graders will not deduct points for grammatical errors, misspellings, errors of usage, and the like. They might deduct a point or two if you adopt a very informal, inappropriate voice in your answer, for example, “People think Kant is deep and whatnot, but a lot of times when you read him, he just seems nuts.”

Now, “no penalty for grammar” might be the policy, but if your essay is full of grammar mistakes and you're on the borderline of two grades, a grader might unconsciously fail to give you the benefit of the doubt. That said, if you get a poor grade on an essay, don't conclude, “I guess she just doesn't like my writing.” Teachers are experienced and are accustomed to many different writing styles. Put a little more time into a final proofread at the end of the exam.

“我是，但不在这里。”

避免这个问题的方法是，在编写简短的大纲时，更加挑剔地确定文章中应包含的内容。

第四种可能性是，你的论文写的很好，但却与题目问的不太符合。比如，一个莎士比亚课程的期末考试问题要求你比较莎士比亚戏剧和希腊戏剧中的爱情观。教师期望你关注《罗密欧与朱丽叶》，但由于某种原因，你几乎没有提到那部剧，而是以你读过的其他莎士比亚剧《哈姆雷特》为依据来构建你的答案。这不是一篇坏的文章，但你从一开始就走错了思路。你需要的是在开始写作之前，甚至在开始编写大纲之前，进行更长时间的头脑风暴。你可能一开始就想到了《哈姆雷特》，然后在紧张中立即冲向那个答案。

最后，我们来看一下糟糕的写作。大多数批阅人不会因语法错误、拼写错误、用词错误等扣分。如果你在回答中使用了非常非正式、不适当的语气，例如，“人们认为康德很深奥之类的，但很多时候你读他的时候，他就是疯的。”他们可能会扣一两分。

现在，“对语法没有罚分”可能是政策，但如果你的文章充满了语法错误，并且你处于两个等级的边缘，批阅者可能不会无意识地给你惠及。也就是说，如果你在一篇文章上得了低分，不要得出“我想她就是不喜欢我的写作风格”的结论。老师都是有经验的，他们习惯于许多不同的写作风格。在考试结束时，花一点更多的时间进行最后的校对。

In a sentence: Even if the grader provides very little feedback regarding why you earned the grade you did on an essay question, if you know the typical ways that essay questions go wrong, you can figure out why you scored poorly, and you’ ll know how to improve next time.

TIP 58 See Trick Questions for What They Are

在一句话中：即使批阅者对你在论文问题上所得的分数提供的反馈非常少，如果你知道论文问题通常会出现的错误，你就可以弄清楚为什么你的分数低，你将知道下次如何改善。

提示 58：明察秋毫地看待问题中的陷阱

Here’ s a riddle: Imagine you’ re in a rowboat that’ s sinking. There’ s no land in sight, and you’ re surrounded by hungry sharks. What should you do?

Answer: Stop imagining.

Why do people groan when they hear riddles like this one? Because they expect the answer to require some cleverness, some ability to solve problems. Instead, getting it right requires that they assume bad faith on the part of the riddle teller—bad faith because when I tell you a riddle, I’ m inviting you to imagine, to pretend that this invented world is real and that things behave in the riddle world the way they do in the real

world. Without that rule, riddles are pointless; when you pose the sinking-rowboat riddle, I could simply say, “I pull a helicopter out of my pocket and fly away.”

Trick questions on exams resemble a bad-faith riddle. Someone who knows the content would answer the trick question this way, but the instructor has a devious justification for another answer. The student sees “ $2 + 3 = ?$ ” and writes “5,” only to be told, “No, no, that wasn’t a plus sign, it was a rotated multiplication sign. The right answer is 6.”

I think that trick questions on exams are actually quite rare. People who write tests want to find out what test takers know. If they are instructors, they also want students to enjoy the course and to appreciate the subject matter. Both goals are undercut by trick questions.

这是一个谜语：想象你在一条正在沉没的小船上，视野里看不到陆地，周围全是饥饿的鲨鱼。你应该怎么做？

答案：停止想象。

为什么人们在听到像这样的谜语时会发出抱怨？因为他们期待答案需要一些聪明才智，一些解决问题的能力。然而，得出正确答案的前提是他们要假设出谜语提问者的恶意——恶意在于，当我向你提一个谜语时，我是在邀请你去想象，假装这个虚构的世界是真实的，世界中的事物的行为方式与现实世界相同。没有这个规则，谜语就没有意义；当你提出这个正在沉没的小船的谜语时，我简单地说，“我从口袋里掏出一架直升机飞走了。”

在考试中的陷阱问题就像一个恶意的谜语。了解内容的人会这样回答陷阱问题，但教师会有一个狡猾的理由来为另一种答案辩解。学生看到“ $2 + 3 = ?$ ”并写下“5”，然后被告知，“不，不，那不是个加号，是个旋转的乘法标志。正确答案是6。”

我认为考试中的陷阱问题实际上相当罕见。出题的人想知道考生掌握了哪些知识。如果他们是教师，他们也希望学生喜欢这门课程，欣赏这门学科的内容。陷阱问题削弱了这两个目标。

If you think your instructor poses questions that call for a lot of subtle interpretation, check with the other people in your study group. I’ll bet they think the question you thought was tricky is actually pretty clear—but each of them had a different question or two that they saw as tricky.

When a question looks tricky, the problem usually lies in the student’s knowledge of the content, not in the wording of the question. For example, suppose you see this question:

Paintings from the Romantic era in Western Europe:

A. focused on landscapes and seldom included human figures.

B. often showed forces of nature at work and included human figures.

如果你认为你的导师提出的问题需要很多微妙的解释,请与你的学习小组的其他人进行确认。我敢打赌他们认为你认为复杂的问题实际上非常清晰——但他们每个人都有一两个他们认为棘手的问题。

当一个问题看起来棘手时,问题通常不在于问题的措辞,而在于学生对内容的认识。例如,假设你看到这样一个问题:

西欧浪漫时期的绘画:

A、主要关注风景,很少包含人物形象。

B、经常展示自然力量的运作并包含人物形象。

C. focused on themes from Greek mythology.

D. were wholly religious.

You know that the Romantics did not like the Classical period and weren't religious in the traditional sense, so C and D aren't right. You also know that the Romantics focused on nature, but you have a hard time choosing between A and B. You finally settle on A because it seems like there being no humans means that there's a greater emphasis on nature. But the right answer turns out to be B. You're irritated because the two answers seem so close and the right answer seems inconsistent with what you thought you understood about the Romantic era. The main difference between answers A and B seems to be whether human figures are seldom included or included. So it all seems to come down to the definition of seldom, which seems really subjective.

你知道浪漫主义者并不喜欢古典时期,也不具有传统意义上的宗教情感,所以选项 C 和 D 不正确。你也知道浪漫主义者注重自然,但在选择 A 和 B 时你很纠结。你最后选择了 A,因为你觉得没有人物意味着对自然的强调更大。但正确答案竟然是 B,你感到有些恼火,因为两个答案看起来很接近,正确答案与你对浪漫主义时代的理解似乎不一致。A 和 B 两个答案的主要区别似乎在于人物是否被很少地包含在内,或者被包含在内。因此,一切似乎都归结为“很少”的定义,这看起来非常主观。

But your interpretation wasn't quite right, because your knowledge of the content wasn't quite deep enough. You knew that Romantic painters sought to portray nature, but you didn't know that they especially focused on its awe-inspiring power. People appeared in their paintings as spectators to the splendor of nature; it's important that the figures were often tiny, because that highlighted their insignificance.

Questions can also seem tricky because "pop knowledge" doesn't work. For example, suppose the instructor used "The curtain of night fell" as an example of a metaphor. Most students have that example in their notes and study it. Then the exam contains this item:

"Night fell like a gentle snow" is an example of:

A. a simile.

B. a metaphor.

但是你的理解并不完全正确，因为你对内容的认识还不够深入。你知道浪漫主义画家试图描绘大自然，但你并不知道他们特别关注的是大自然的威严力量。他们的画中人物如同观看自然壮丽的观众；这些人物通常都被画得很小，这就突出了他们的渺小。

问题也可能看似复杂，因为“流行知识”并没有起作用。例如，假设讲师用“夜幕降临”作为一个隐喻的例子。大多数学生在他们的笔记中都有这个例子并研究它。然后考试包含这个题目：

“夜晚像温柔的雪一样降临”是以下哪个的例子：

A. 明喻。

B. 暗喻。

C. an analogy.

D. none of the above.

Having studied "The curtain of night fell" as an example of metaphor means that your memory will have those concepts bundled together. When you read "Night fell" in the test question, metaphor pops into your mind.

But of course the use of the word like means it's a simile, not a metaphor. I avoid writing questions for which "pop knowledge" leads you to the wrong answer, but you will see them on exams (see tip 52).

已经学过“夜幕降临”作为隐喻的例子意味着你的记忆会将这些概念捆绑在一起。当你在考试问题中阅读到“夜幕降临”时，你脑海中会想到隐喻。但是当然，使用像这个词意味着这是一个明喻，而不是隐喻。我避免写那些“弹出知识”会引导你得出错误答案的问题，但你会在考试中看到它们（请参阅第 52 个提示）。

It's true that sometimes instructors inadvertently include multiple-choice questions with two answers that are defensible or with a question for which the phrasing is confusing. Good instructors will admit that's the case and give credit for both answers. But don't assume that's happened if your answer seems right to you but is marked wrong. What's more likely true is that you understood the content well enough to choose an answer that's close but not deeply enough to pick the right one.

In a sentence: Most of the time that you find a question tricky or confusing, it's because your knowledge of the content isn't quite deep enough.

TIP 59 Think About What Went Right

确实有时候，教师会无意中在选择题中包含两个都有道理的答案，或者问题的措辞会造成混淆。优秀的教师会承认这种情况，并对两种答案都给予积分。但是，如果你觉得你的答案是正确的，却被标记为错误，就不要假设教师发生了失误。更有可能的情况是，你对内容的理解仅仅够选出一个接近正确的答案，但理解得并不够深入，无法选择出正确的答案。

用一句话来说，大多数时候，你觉得一个问题棘手或混淆，是因为你对内容的理解还不够深入。

提示 59: 思考你做对了什么

The fact that you seek out information about what went wrong on a test shouldn't mean that you don't acknowledge and appreciate what went right. You learned something, even if you didn't do your best and even if you'

re disappointed with your grade. Give yourself credit for the work accomplished. People who are depressed and hopeless about their work are (1) not being realistic, (2) likely to be less motivated for future work, and (3) really boring company. Snap out of it.

But this is not only about mood and motivation. You analyzed the questions you missed to figure out what not to do. You should also analyze the questions you got right, to figure out what you should keep doing. Are you nailing the details? Are you great with the readings? Are you shrewd about not getting suckered by “pop knowledge”? Whatever it is, take a bow and keep it up, especially if your success is the result of trying something new in your studying.

Analyzing the questions you got right may also refine your sense of what you need to work on. For example, when you examined the questions you got wrong, you may have noted that a lot of them asked you to integrate ideas from different lectures. But then when you look at the ones you got right, you see that there are a number of cross-class integration questions among them. So now you can ask, “Is there anything different about the ones I got right and the ones I missed?” Maybe you’ll see that you were pretty good on those questions early in the marking period, but as things got busy, you no longer had time to integrate ideas when you reorganized your notes. Assessing your strengths may help sharpen your understanding of your weaknesses.

你寻找出错的考试信息并不意味着你不承认和欣赏你做对的事情。即使你没有尽力，即使你对自己的成绩感到失望，你也学到了一些东西。要给自己所完成的工作一些认可。感到沮丧、对工作感到绝望的人（1）不现实，（2）可能对未来的工作缺乏动力，同事对（3）他们可能感到无聊。振作起来。

但这不仅仅关乎情绪和动力。你分析了错过的问题，以找出不该做什么。你也应该分析你做对的问题，找出你应该继续做什么。你对细节有把握吗？你对阅读理解的能力如何？你对“流行知识”有足够的警惕性避免上当吗？无论是什么，你都应该延续这种表现，尤其是如果你的成功是由于你在学习尝试新的事物。

分析你做对的问题也可能改善你对需要改进的地方的认识。例如，当你研究你做错的问题时，你可能会注意到有很多问题要求你整合不同讲座的观点。但当你看看做对的问题时，你会发现其中有很多涉及到跨课程整合的问题。所以现在你可以问，“我做对的和我错过的问题有什么区别吗？”也许你会发现，在记分期初期，你在这些问题上表现得相当不错，但随着事情的推进，你在整理笔记时已经没有时间去整合观点了。评估你的优点可能有助于提高你对自己弱点的了解。

Knowing what to change in your future work requires acknowledging both hits and misses.

In a sentence: Pay attention to what you got right, both because it will make you feel more encouraged and because it will help you refine your understanding of what you need to work on.

TIP 60 Don' t Cringe

了解将来需要改变的工作内容需要承认成功和失败。

在一个句子中：关注你做对的事情，因为这会使你感到更加鼓舞，并帮助你明确你需要改进的地方。

提示 60：不要皱眉

Every now and then I find myself in a conversation where someone describes what their personal experience of Hell would be. For years, I volunteered that my vision would be the Devil ushering me into a small room containing nothing but a low stool, on which I would sit while someone read my college senior thesis aloud to me for eternity. So if you' re depressed by the prospect of performing an autopsy on a failed exam, I understand.

Norman Vincent Peale said that most of us would rather be “ruined by praise than saved by criticism.” Still, you can overcome your reluctance to go over what went wrong on an exam.

Some people draw the wrong conclusion about what a failed exam says about them because they have a warped perspective on schooling and intelligence. They believe that:

You' re born either intelligent or unintelligent, and that can' t be changed.

偶尔我会发现自己在和人交谈，他们会描述自己亲身经历的地狱是什么样的。多年来，我主动分享我的看法，认为我的地狱会是魔鬼引导我进入一个只有一张矮凳子的小房间，在那里我将坐下，听着有人向我永无止境地大声读出我大学毕业论文。所以，如果你对解剖一张失败的试卷感到沮丧，我能理解。

诺曼·文森特·皮尔曾说过，我们中的大多数人宁愿被赞美“毁灭”，也不愿被

批评“拯救”。然而，你仍然可以克服不愿意回顾考试中出错的地方的困扰。

有些人对失败的试卷下了错误的结论，因为他们对学习和智力有着扭曲的看法。他们认为：

你一出生就是聪明或者笨，这是不能改变的。

Intelligent people don' t make errors.

If these statements are true, that implies that if you make errors, you' re showing the world that you' re unintelligent, and nothing can be done to change that because intelligence is inborn. You can see why poring over errors would be pretty threatening to your sense of self. Fortunately, these premises aren' t true.

Let' s look at what research says about the changeability of intelligence. Intelligence has two components: how much stuff you know and the ease and speed with which you can move information around in your mind. That second factor—what we might call “mental speed”—probably can' t be changed. People have tried to develop training programs to improve it, but no one has succeeded, at least, so far.

But the other factor—what you know—is easily changed. Learning more information makes you more intelligent. Learning can be discouraging, though, because the people who are good at the mental-speed part are better than the rest of us when we take on a new task. In other words, if two people learn how to play chess, the person with good mental speed will pick up the game faster and will beat the person with slower mental speed. But if the second person practices, she' ll gain chess knowledge—of standard openings, for example — and she' ll soon defeat her high-mental-speed opponent who lacks that knowledge.

智慧的人不会犯错误。

如果这些观点是正确的，那就意味着，如果你犯了错误，你就展示给世界你的愚蠢，而且你无法改变这一点，因为智慧是天生的。你可以想象一下，过多地关注错误对你的自我感觉会有多大的威胁。幸运的是，这些前提条件并不正确。

让我们来看看研究对于智力的可变性有何说法。智力有两个要素：你了解的事情数量以及你在脑海中处理信息的速度和轻松程度。后者——我们可能称之为“思维速度”——可能无法改变。人们试图开发训练程序来提高它，但至少到目前为止，还没有人成功。

但是，另一个因素——你所知道的东西——是可以轻易改变的。学习更多的信息会让你变得更智慧。然而，学习可能会令人沮丧，因为那些在思维速度方面表现出色的人在学习新任务时总是比我们其他人更优秀。换句话说，如果有两个人学习如何下棋，思维速度快的人会更快地掌握游戏，会击败思维速度慢的人。但是，如果第二个人进行练习，她将获得象棋知识——例如标准开局——她很快就会打败那个缺乏这些知识的思维速度快的对手。

You can get smarter in any subject you want to. You just need to learn the subject.

The second premise—that smart people don't make errors—is also obviously false. Who doesn't make mistakes? It's probably true that the people you think of as smart don't make as many mistakes, but that's because they work hard.

People at school sometimes like to claim that they didn't do the reading, didn't study for tests, and so on. They make that claim because it fits the belief that smart people are just naturally smart and don't need to try hard. I've been in schools as a student or an instructor literally my whole life, and I can confidently say that the students who do well in school work hard, with extremely rare exceptions.

Part of working hard in school is figuring out what you don't do well so you can focus your energy where it's needed. The person who gets all As is the person who is not afraid to learn from their mistakes. Going over exam mistakes may make you feel dumb, but you're actually doing what smart people do. You should remind yourself of that.

There are other things you should say to yourself as well. Remind yourself of how far you've come. Okay, maybe you underestimated what was needed to reach your goal, but that doesn't negate what you've achieved. What would have happened if you hadn't worked as hard as you did? You also might want to remind yourself of why passing this course, certification exam, or whatever matters to you. Your dream was not to get an A on this quiz; you have a larger, long-term goal. You still have that goal, and one setback should not dissuade you from continuing to work toward it. 你可以在任何你想要的科目上变得更聪明。你只需要学习这个科目。

第二个前提——聪明的人不会犯错——同样是错误的。谁不会犯错误？可能你认为聪明的人犯错的次数较少，但是这是因为他们努力工作。

学校的人有时会声称他们没有阅读，没有为测试学习等等。他们这样说是因为这符合一种观点，即聪明的人天生就聪明，不需要努力学习。我一生都在学校里作为学生或老师度过，我可以自信地说，学校里表现优秀的学生都是努力学习的，

极少例外。

在学校努力学习的一部分是找出自己不擅长的地方，这样你就可以把精力集中在需要的地方。得到全 A 的人是那种不怕从错误中学习的人。复习考试错误可能会让你觉得自己很笨，但实际上你正在做聪明人所做的事。你应该时刻提醒自己这一点。

你也应该对自己说一些其他的话。提醒自己你已经走了多远。好吧，也许你低估了达到目标所需要的东西，但这并不否定你所取得的成就。如果你没有像现在这样努力，会发生什么呢？你也可能想要提醒自己，为什么这门课程、资格考试或其他什么对你来说如此重要。你的梦想不是在这次测验上得 A；你有一个更大、更长远目标。你仍然有那个目标，一个挫折不应该阻止你继续为之努力。

If facing your failed exam still feels like a terrible burden, here's a method that might help you the first few times.

To get over your initial reluctance, promise yourself that as a first step all you will do is categorize your errors (see tip 56). You won't race to look up the right answer or mentally defend the answer you gave. You'll just sort the questions you missed. If you start to beat yourself up about missing questions, you will say aloud, "I'm doing what smart people do after an exam. This feels lousy, but it's the right thing to do." Sometime later, go back and look at the material in the readings and your notes (as needed) to get a better sense of exactly what happened on each question you got wrong; you may change your mind about which category some belong in. Sometime after that, evaluate the consistency of the mistakes you made. Splitting the work up into different sessions may seem counterintuitive, because you're eager to get it over with. But breaking the job down into smaller pieces will make it feel less threatening.

In a sentence: You may think that successful learners don't make many mistakes; they do, but what separates them from unsuccessful learners is their willingness to face their mistakes and learn from them.

如果面对你失败的考试仍然感觉像个沉重的负担，这里有个方法可能会在你最初几次尝试时帮助你。

为了克服你的初步犹豫，你可以承诺自己作为第一步，你只会对你的错误进行分类（参考第 56 条技巧）。你不会急着去查找正确答案，也不会心里辩护你给出的答案。你只需对你错过的题目进行排序。如果你开始责怪自己错过了问题，那就大声说：“我正在做聪明人考试后的行为。这感觉很糟糕，但这是正确的做

法。” 之后的某个时间，回过头来看看阅读材料和你的笔记（根据需要），以更好地了解在每个你答错的问题上到底发生了什么；你可能会改变对某些题目应该属于哪个类别的看法。在那之后的某个时间，评估你所犯错误的一致性。将工作分解为不同的阶段可能看起来没有道理，因为你渴望早点结束它。但是将任务分解成小块会让它感觉不那么威胁。

总的来说：你可能认为成功的学习者不会犯很多错误；实际上他们确实会，但区别在于他们愿意面对他们的错误并从中学习。

For Instructors

I think it's valuable to go over a graded exam in class but not to explain why one answer is right and another wrong. I think you should help students analyze the types of errors they made, as I did in tips 56 and 57. This sort of analysis will be unfamiliar to many students, and it's a tool they can use in other classes.

Students still need some way to get explanations about why answers are right or wrong, of course. That mechanism might be individual meetings, opportunities to contact you online, or an annotated answer key. I like to meet individually with students who want feedback about exam answers, because it's an opportunity for me to have a deeper conversation about obstacles to their learning and to talk about study techniques, note taking, and all the rest.

An aspect of these meetings that some instructors—especially in higher education—don't relish is that they can be emotional. The students desiring feedback are usually the ones who are failing. In fact, they often want to see you less for abstract advice about learning and more because an academic disaster is imminent. These students are upset.

对于教师来说，

我认为在课堂上复习一下已经打分的考试是很有价值的，但不需要解释为什么一个答案是正确的，另一个是错误的。我认为你应该帮助学生分析他们犯的错误类型，就像我在 56 和 57 条提示中所做的那样。这种分析对许多学生来说是陌生的，而这是他们在其他课程中可以使用的工具。

当然，学生们仍然需要某种方式来获取关于答案正确与否的解释。这种机制可能是个别会议，有机会在线联系你，或是带注解的答案密钥。我喜欢与希望获取考试答案反馈的学生单独会面，因为这对我来说是一个深入讨论他们学习障碍的机会，可以谈论学习技巧、记笔记等等。

这些会议的一个方面是，一些教师，尤其是高等教育中的教师，不喜欢的是，他们可能会变得情绪化。通常希望得到反馈的学生往往是那些正在失败的学生。事实上，他们往往更希望见到你，不是为了获取抽象的学习建议，而是因为一场学术灾难即将来临。这些学生是沮丧的。

In fact, sometimes a desire to meet with you is more about emotion than anything else. The student wants to be heard. He is mostly mad at himself and doesn't expect you to do anything. He just wants you to know that he is disappointed in his performance.

Other times the test is an excuse. The student is reaching out because she has a serious life issue. I teach at a university where most students are from comfortable families, but in the last few years I've had in my classes (1) a student whose parents had cut him off and was working long nights as a bartender to earn enough money to stay in school; (2) a student who had had to take in his niece because his sister had developed a drug problem; (3) a student who was living in the Charlottesville bus station; and (4) many, many students with nascent or fully developed depression or anxiety.

Sometimes a low exam score serves as a trigger for a student with difficult life situations to see you. But sometimes, too, such students seek help with their studies but don't reveal anything about their circumstances. Educators must keep their eyes and ears (and hearts) open to discern why a student has sought them out.

And when a student seeks you out, do not underestimate the power of your words. If you have taught for a while, you have probably had an old student return and recount in detail a conversation you may not even remember but that proved highly important to the student. We love these stories because we are the hero. I sometimes wonder how many times I've said something negative or impatient and so created a moment that was memorable for the wrong reason. Keep in mind how vulnerable many of your students are.

事实上，有时候想要与你会面的愿望更多地是出于情感，而不是其他什么。学生想被听到。他大部分时间都在自责，不期待你能做什么。他只是想让你知道他对自己的表现感到失望。

有时候，考试只是一个借口。学生因为有一些严重的生活问题而寻找你。我在一所大学教书，大多数学生来自于富裕的家庭，但在过去的几年里，我遇到过这样的学生：(1) 一名被父母断绝经济来源、不得不通过做酒吧工作来赚取学费的学生；(2) 一名因为姐姐吸毒而不得不把侄女接到家中的学生；(3) 一名住在夏洛茨维尔巴士站的学生；(4) 还有很多患有抑郁症或焦虑症的学生。

有时候，低考试成绩会引发生活处境困难的学生来找你。但有时，这些学生在寻求学业上的帮助却不会透露他们的处境。教育工作者必须保持警惕，以便洞察学生找他们的真正原因。

而当学生来找你时，不要低估你言语的力量。如果你教过一段时间，你可能已经有过老学生回来，详细地叙述你可能已经不记得的一段谈话，但对学生来说却非常重要。我们喜欢这些故事，因为在这些故事中，我们是英雄。我有时候会想，我是否因为说了一些负面的或者不耐烦的话，因此创造了一些以错误理由让人记住的时刻。请记住，你的很多学生都是身处脆弱之中。

Summary for Instructors

Use class time to model a test autopsy.

Offer an alternative mechanism by which students can get details about the factual content of questions and answers—that is, why particular answers are right or wrong.

Meeting one-on-one with students about their exam performance is time-consuming but is an effective way to have deep conversations about obstacles to their learning.

教师摘要

利用课堂时间模拟试卷解析。

提供一种替代机制，让学生能获取关于问题和答案的实际内容的详细信息，即，为什么特定的答案是对的或错的。

一对一与学生讨论他们的考试表现是耗时的，但是这是一种有效的方式来深入探讨阻碍他们学习的障碍。

Remember that students may be struggling in your course because they are experiencing serious life issues that they are reluctant to share.

Remember that your words carry more power with students than you may realize.

第十章 如何规划你的工作

请记住，学生在你的课程中可能会面临困扰，因为他们可能正在经历严重的生活问题，而他们不愿意分享。

请记住，你的话对学生来说可能比你意识到的更有影响力。

This chapter is written for people who have never gotten into the habit of planning their work. Surprisingly, that includes most college students. When they're surveyed, the most common answer to the question "When you're studying, how do you choose what to work on?" is "I do whatever is due next."

We'll take up two aspects of planning: remembering to carry out tasks at the right time and making sure you have enough time to complete them. Remembering to do things calls on prospective memory; that's what it's called when you form an intention to do something in the future and then later remember to do it. It's the type of memory you rely on when you notice that you're low on gas in the morning and think, "I should buy gas on the way home tonight." Another example of prospective memory is taking medications: you pick up your pills at the pharmacy knowing that you must remember to take one pill three times each day for the next five days.

Prospective memory can fail, of course—you forget to buy gas or take your pill when you planned—but the solution seems obvious: don't rely on memory. Instead, set up a reminder to prompt the action at the right time: you might leave a note on your steering wheel so that you'll see it when you start your drive home or set an alarm on your phone for the time to take your medication. It's a good strategy, but setting up something to remind you needs to be consistent if you're going to rely on such reminders.

这一章是为那些从未养成规划工作习惯的人们所写。令人惊讶的是，这包括大多数大学生。当对他们进行调查时，“你在学习时，如何选择学习的内容？”的最常见答案是“我会做接下来要交的作业”。

我们将讨论规划的两个方面：在正确的时间记得执行任务，并确保你有足够的时间完成它们。记住去做事情是依赖于预期记忆的；当你形成一个未来要做某事的意图，然后在后来记得去做它时，就称之为预期记忆。当你早上发现汽油不足，想到“我今晚回家时应该去加油”，或者在拿药的时候，你知道你必须记得每天吃三次药，持续五天，这些都是需要依赖预期记忆的例子。

当然，预期记忆可能会失败——你会忘记在计划的时间去加油或者吃药——但解决办法似乎相当明显：不要依赖记忆。相反，你可以设定一个提醒，在正确的时间提醒你去执行这个动作：你可以在你的方向盘上留个便条，这样当你驾驶回家时就会看到它，或者你可以在手机上设定一个闹钟，到了吃药的时间他会提醒你。这是一个很好的策略，但是如果你要依赖这种提醒，必须要保持其使用的一致性。The second aspect of planning is judging how long the activity will take to complete. People consistently underestimate how long it will take to get things done. This is called the “planning fallacy.” Just think about the last time you read about a major public construction job; they seem to run late and over budget every time. For example, the Sydney Opera House was supposed to open in 1963 at a cost of \$7 million (Australian) but was finished ten years late and cost \$102 million.

Project planners aren't stupid, but they are overconfident that their solutions to difficult problems are likely to work. For example, one obstacle in building the Sydney Opera House was the failure of the system designed to divert stormwater. In addition, people tend to completely disregard a potential problem if they think it is unlikely to occur. That sounds smart—why worry about something that probably won't happen? The catch is that there are lots and lots of ways a complicated project can be delayed. Each is, on its own, very improbable, so we ignore all of them, but taken together, one of the problems is actually pretty likely to happen.

The fallacy is easy to address: once you accept that it's real, you just need to allocate more time for work than you think you'll need. Guarding against prospective memory failures is trickier. The remedy is easy enough to describe: you need to make a habit of writing down what you're supposed to do and a habit of checking your to-do list. But developing the habits takes some perseverance.

WHEN PLANNING YOUR WORK

What your brain will do: It will not allocate enough time to complete scheduled work, and it will forget that you've planned that work.

规划的第二个方面是判断完成活动需要多长时间。人们总是低估完成事情所需的

时间，这就是所谓的“规划谬误”。只要想想上次你读到的一份大型公共建设工作报告；它们似乎每次都会超期并超出预算。例如，悉尼歌剧院原计划于 1963 年以 700 万澳元的成本开放，但却延误了十年，成本高达 1.02 亿澳元。

项目规划者并不愚蠢，但他们过于自信，认为他们对困难问题的解决方案很可能会奏效。例如，建造悉尼歌剧院的一个难题是设计用来分流雨水的系统失败。此外，如果人们认为某个问题不太可能发生，他们往往会完全忽略它。听起来这很明智——为什么要担心可能不会发生的事情呢？问题在于一个复杂的项目可能会被延迟的方式有很多，每个方式本身的可能性都非常小，所以我们忽视了所有的可能性，但实际上，其中一种问题非常有可能发生。

解决这个谬误很容易：一旦你接受它是真实存在的，你只需要为工作分配比你认为需要的更多时间。预防潜在的记忆缺失就比较棘手了。纠正方法很容易描述：你需要养成写下你应当做的事的习惯，以及检查你的待办事项清单的习惯。但是，养成这些习惯需要一些毅力。

规划你的工作时：

你的大脑会做的事情是：它不会分配足够的时间来完成计划的工作，它会忘记你已经计划了这项工作。

How to outsmart your brain: Establish a small set of simple habits to make sure you know what work you're expected to complete and by when.

In this chapter I'll suggest something of an end run around the problem of planning. Scheduling becomes greatly simplified when, instead of planning time to work on each project, you plan to work for a consistent amount of time each day.

如何智胜你的大脑：建立一套简单的习惯，以确保你知道你需要完成的工作以及完成的时间。

在这一章中，我将建议采取一种规避规划问题的方法。当你计划每天花固定的时间工作，而不是为每个项目规划工作时间时，日程安排会变得大大简化。

TIP 61 Get Enough Sleep

People—especially students—tend to treat sleep as an optional activity, making the odd assumption that it will somehow take care of itself or that they will catch up on sleep during the weekend. It's common for people to experiment with sleep in ways they would not experiment with other basic needs, like food or breathing.

Yet sleep has a direct effect on your cognitive performance. It's easy to appreciate that sleep loss makes it both harder to think and harder to pay attention the next day. It also makes people's mood more erratic, so they're not that much fun to be around. What's more surprising is that sleep loss also messes up learning from the previous day. What you learn today goes into memory today, but there's another process by which the memory “gels,” becoming more final and more resistant to loss. That process depends on sleep. Thus, losing sleep disrupts what you learned the previous day.

According to the US Centers for Disease Control and Prevention, teenagers should get between eight and ten hours of sleep each night and adults seven to nine hours. The estimated percentage of people actually getting that much sleep varies from study to study, but it's likely less than 50 percent.

提示 61: 确保充足的睡眠

人们——尤其是学生——往往将睡眠视为一项可选择的活动，奇怪地假设它会自动照顾好自己，或者他们会在周末补觉。人们实验睡眠的方式，他们不会拿其他基本需求如食物或呼吸来实验。

然而，睡眠直接影响你的认知表现。很容易理解，睡眠不足让人第二天更难思考，也更难集中注意力。它还会让人的情绪更加不稳定，所以他们在周围的人眼中并不那么有趣。更令人惊讶的是，睡眠不足也会破坏前一天的学习成果。你今天学到的东西会在今天记住，但还有另一种过程可以让记忆“凝固”，变得更加确定和抗损失，这个过程依赖于睡眠。因此，失去睡眠会破坏你前一天学到的东西。

根据美国疾病控制和预防中心，青少年每晚应该睡眠八到十小时，成人应该睡七到九小时。实际达到这么多睡眠的人的估计百分比因研究而异，但可能少于 50%。

Most of us don't get enough sleep because we get to bed too late; that is, the problem is not that we pop awake early in the morning, before the alarm rings. Although sometimes you are kept awake later than you wish, oftentimes you just don't feel sleepy when it's time to go to bed. Why?

Your body is sensitive to two cues that signal “It's time to sleep.”

One is the body's internal clock, especially the production of a hormone called cortisol. Cortisol is like an alarm. Your body produces lots of cortisol in the morning and less in the evening. Your body's internal clock is most noticeable when it becomes disengaged from the time of day; when a Londoner travels to Toronto, she may get sleepy at 6:00 p.m. because her body thinks it's 11:00 p.m. During the teenage years, the peaks and troughs of cortisol production flatten somewhat, which is one reason teens aren't sleepy at night and have a hard time waking in the morning.

Your body also pays attention to signals out in the world. For example, if you have a nighttime routine—you brush your teeth, wash your face, put on your jammies, dim most of the lights, and read for a few minutes—your body learns your routine, and after you do the first five things, it knows that it's time to sleep.

The research I've just mentioned points to concrete steps you can take to get better sleep. The time you wake up in the morning is probably out of your control, so sleeping more means getting to sleep earlier. You can change the external cues relatively easily. Your internal cues will lag behind, but they will eventually adjust to the external cues; that's what happens when you recover from jet lag. Here are some methods of changing the external cues.

Have a consistent routine. You may feel a bit silly creating a before-bed ritual, and it will take time for your body to learn it, but it will help you go to sleep more quickly. Part of that routine is a consistent time to go to sleep. With practice, your internal clock will attune itself to it so your body knows when to make you sleepy.

我们中的大多数人睡眠不足，因为我们上床太晚了；也就是说，问题不在于我们在闹钟响前早早醒来。尽管有时你比你希望的时间晚一些睡觉，但往往在该上床睡觉的时候，你就是不困。为什么呢？

你的身体对两个表示“该睡觉了”的暗示很敏感。一个暗示是身体的内部时钟，尤其是一种叫做皮质醇的荷尔蒙的分泌。皮质醇就像一个闹钟。你的身体在早晨分泌大量的皮质醇，而在傍晚则减少分泌。当一个伦敦人旅行到多伦多时，你的身体内部时钟会与当地时间脱节；她可能在下午 6:00 就感到困，因为她的身体认为现在是晚上 11:00。在青少年时期，皮质醇的分泌高峰和低谷有所平缓，这就是为什么青少年在晚上不困，早晨难以醒来的一个原因。

你的身体也会对外界的信号作出反应。例如，如果你有一个晚间的常规活动——你刷牙，洗脸，穿睡衣，调暗大部分的灯光，读一会儿书——你的身体会学习到你的常规活动，当你做完前五件事，它就知道该睡觉了。

我刚刚提到的研究指出了你可以采取的一些具体步骤，以获得更好的睡眠。你早

晨醒来的时间可能是无法改变的，所以要多睡觉就意味着要早点儿睡觉。你可以相对容易地改变外部暗示。你的内部暗示会滞后于外部暗示，但最终会调整过来，这就是你从时差反应中恢复过来的原理。以下是一些改变外部暗示的方法。

保持一致的常规。你可能会觉得创建一个睡前的仪式有些傻，而且你的身体需要时间来学习它，但这将帮助你更快地入睡。常规的一部分就是有一个固定的睡觉时间。有了练习，你的内部时钟会对此进行调整，这样你的身体就知道什么时候该让你困了。

Avoid looking at screens for an hour or two before you sleep. The light from a screen is a cue to your brain that it's closer to the middle of the day than it really is, so it confuses your internal clock. When someone has a hard time sleeping, they often turn to their phone, figuring, "I'm on my phone because I can't sleep." But the reverse may be true: they can't sleep because they are on their phone.

Just lie there. I know that sounds weird, but you don't want to send your body mixed messages. When you pick a time to go to sleep, stick with it; don't lie there for five minutes, conclude that it's pointless, and get up. Just lie quietly with your eyes closed and figure that you are at least resting.

That said, use common sense when you pick your target sleep time. Suppose you have been getting to sleep around 2:00 a.m. each night and you would like to start going to sleep at 11:00 p.m. Don't get into bed at 10:59 and just lie there. Shoot for a thirty- or even fifteen-minute backward increment. Make sure you're in bed by 1:45 a.m. for a week or however long it takes until you regularly fall asleep pretty quickly at that hour. Then make it 1:30 a.m., and so on.

If you can, nap during the day. Some people have enormous difficulty napping, I know. Their bodies just won't cooperate. But others can, and it's a good way to achieve more sleep time if you find that you often have interesting things you want to do late in the evening. If you find you're extremely groggy when you wake from a nap, that's a sign that you've been deeply asleep. Try napping for no more than twenty minutes, and do so in a not-terribly-comfortable position—for example, in an easy chair. That might keep you from falling too deeply asleep.

避免在睡觉前一两个小时看屏幕。屏幕的光线会让你的大脑误以为现在是一天中的中午，因此会使你的生物钟感到困惑。当有人睡不着时，他们通常会拿起手机，认为“我之所以看手机是因为我睡不着”。但实际上，可能恰恰相反：他们之所以睡不着，是因为他们在看手机。

躺在那里就好。我知道这听起来很奇怪，但你不该给你的身体发送混乱的信息。当你设定好睡觉的时间后，坚持下去；不要躺在那里五分钟，然后觉得没什么意义又起床。只需要安静地闭着眼睛躺在那里，告诉自己至少是在休息。

说到这里，当你设定目标睡眠时间时要运用常识。假设你每晚都是在凌晨 2 点入睡，你希望能在晚上 11 点开始睡觉。不要在晚上 10:59 就跳上床开始躺着。试着让睡觉时间提前三十分钟甚至十五分钟。确保你在凌晨 1:45 上床一个星期或者更长时间，直到你在这个时间点能够迅速入睡。然后再让时间提前到凌晨 1:30，以此类推。

如果可以的话，白天时候进行小睡。我知道有些人很难小睡。他们的身体就是不配合。但其他人可以，而且如果你发现你经常在晚上有很多有趣的事情要做，小睡是达到更多睡眠时间的好方法。如果你发现从小睡醒来时非常昏沉，那是你已经深深入睡的信号。试着小睡不超过二十分钟，并且选择一个不太舒服的姿势来小睡——例如，坐在一把轻松的椅子上。这可能会防止你过于深入地睡着。

In a sentence: Sleep directly affects learning, and although many people are frustrated by their inability to sleep as long as they want to, there are steps you can take to help you get more sleep.

TIP 62 Plan a Block of Consistent, Dedicated Time for Learning

在一个句子中：睡眠直接影响学习，虽然很多人因为无法睡眠足够长的时间而感到挫败，但是你可以采取一些步骤来帮助你获得更多的睡眠。

提示 62：为学习计划一段连续，专注的时间

When a student sits down to work, she is typically not strategic in deciding what to do; she works on whatever happens to be due next. This strategy can scarcely be called planning; it's damage control, and it leads to three undesirable outcomes.

First, it leads to cramming. If Tuesday is filled by studying for things due Wednesday, and Wednesday is filled by studying for things due Thursday, you can't start studying for Friday's quiz until Thursday night.

Second, if you're in the habit of asking yourself, "What's due tomorrow?" on days when the answer is "Nothing," it's natural to think, "That means I have the day off." You end up studying less than you would, in a more reflective moment, say you ought to.

Third, counting on external deadlines (such as tests) as your guides to studying becomes a habit that's hard to break once you're out of school. You will still look to deadlines at work for motivation. Say you intend to teach yourself to code because it would help your long-term career prospects. A lifetime of being prompted to study only when a test looms means that you're unlikely to make time for learning when there's no urgency.

当学生坐下来学习时，她通常在决定做什么时并不会策略性地思考；她所做的只是顺序处理即将到期的事情。这种策略几乎不能称之为计划；这是损害控制，它会导致三个不良的结果。

首先，这导致死记硬背。如果星期二的时间都被用来为星期三的任务做准备，星期三的时间都被用来为星期四的任务做准备，你甚至不能在星期四晚上开始准备星期五的测验。

其次，如果你习惯于问自己，“明天有什么到期？”在答案是“没有”的日子里，你自然会认为，“那意味着我今天休息。”你最终学习的时间少于你在更深思熟虑的时候，认为你应该学习的时间。

第三，依赖外部截止日期（如考试）作为你的学习指导，在你离开学校后很难打破这种习惯。你会继续在工作中寻找截止日期作为动力。假设你打算自学编程，因为这会有助于你的长期职业发展。一生都被促使只在考试临近时才学习，意味着你很可能不会在没有紧迫感的时候抽出时间来学习。

A better strategy is to plan your learning by time, not by task. In other words, plan a block of time each day that is dedicated to learning. If nothing is due tomorrow or even for the next several days, work on assignments that are due later.

Treat this block of time as unchangeable; don't schedule appointments at that time or skip a day if something you deem more important comes up. Think of it as a job for which you must show up. Accordingly, schedule it at a time you know you will be able to honor.

Planning by time rather than task brings important advantages:

Your memory for whatever you study will be much better if your studying is spread across days. That's a product of the positive effect of sleep

that we just discussed and of the spacing effect (see tip 39). You' ll actually get more done in the same amount of time if you spread the work out.

Spacing your work out gives you more flexibility if you misjudge how long it will take to do something or if something that should not happen nevertheless does—for example, your roommate locks you out of your room and goes home for a few days. If you wait until the night before something is due, the extra time you need or the unexpected obstacle will pose a real problem. But if the due date is still a few days away, you can adjust.

更好的策略是按时间而不是按任务来规划你的学习。换句话说，每天计划出一段专门用于学习的时间。如果明天或者接下来的几天都没有什么任务，那就提前做一些稍后要交的任务。

把这段时间当作是固定不变的；不要在这个时间安排约会，或者因为出现你认为更重要的事情就跳过一天。把它看作一份你必须去完成的工作。因此，你需要在你知道自己能够坚守的时间进行规划。

相比任务规划，时间规划带来了重要的优势：

如果你的学习是分散在几天之间进行，你对所学内容的记忆将会更好。这是睡眠带来的积极效果，以及刚刚我们讨论过的间隔效应（参见提示 39）的产物。如果你把工作分散出来，你会在相同的时间内完成更多的事情。

把你的工作分散出来，会在你估计错误一个任务所需时间，或者遇到了不应该出现但却的确出现的事情时，给你带来更多的灵活性。比如，你的室友把你锁在房间外面，自己却回家了几天。如果你等到任务交的前一天才开始做，那么你需要的额外时间或者出现的意外障碍会成为真正的问题。但如果任务的截止日期还有几天，你就可以进行调整。

One safeguard against the planning fallacy is being willing to work on assignments well in advance of their due dates if your other work is completed. Obviously this method works only if you set aside a sufficient block of time for learning each day, but fortunately there' s a built-in mechanism to let you know if you are allotting enough time. Suppose you see on your calendar that you have a math quiz in two days. You' ve done nothing to prepare for that quiz today, and your designated work time is over. What should you do?

You should do some studying for the quiz even though your work time is supposed to be over. More important, you should increase your daily study time, perhaps by fifteen or even thirty minutes. Yes, even though it was

inadequate just this once. You will never regret being ahead on your work. This is your insurance policy against the planning fallacy. Rest assured, fate will snatch away your head start by making your computer fail or creating some other unexpected obstacle.

All right, you' ve adopted a routine of working approximately the same amount of time each day at around the same time of day. How should you decide what to work on?

In a sentence: Instead of planning your work assignment by assignment, make a habit of working a set number of hours each day.

对规划谬误的一种保护措施是愿意在其他的工作完成之后提前完成任务。显然，这种方法只有当你每天留出足够的学习时间时才会有效，幸运的是，有一个内置的机制让你知道你是否分配了足够的时间。假设你在日历上看到，两天后你有一个数学测验。你今天没有为这个测验做任何准备，而你指定的工作时间已经结束。你应该怎么做？

尽管你的工作时间应该已经结束，你仍应该为测验做一些学习。更重要的是，你应该增加你每天的学习时间，也许需要增加十五甚至三十分钟。是的，即使这只是这一次不足。你永远不会后悔提前完成你的工作。这就是你对规划谬误的保险政策。请放心，命运会通过让你的电脑出故障或者制造其他意想不到的障碍来抹去你的领先。

好的，你已经养成了每天在大致相同的时间工作相同的时间的习惯。你应该如何决定工作内容？

用一句话来说：与其按任务规划你的工作，不如养成每天工作固定小时数的习惯。

TIP 63 Use a Calendar

I' ve suggested that you plan your learning by time, not by task; dedicate a set amount of time each day to learning. Thus, you sit at your desk at 7:30 p.m., for example, ready to work for two hours, and you ask yourself, "What learning tasks am I taking on today?"

提示 63: 使用日历

我建议你通过时间而不是任务来规划你的学习；每天设定一定的时间来学习。因此，例如，你在晚上 7:30 坐在你的桌前，准备工作两个小时，你问自己：“我今天要进行哪些学习任务？”

To answer that question, you need to know what tasks have been assigned to you (or that you've set for yourself) and when they ought to be finished. You need that information written in one place so you can see everything you need to do simultaneously, especially because there's so much to do: reading, reorganizing notes, preparing for exams, and so on.

If you search the internet for information about how to use a planner, you will find guidelines written by the sorts of people who really enjoy using a planner. Their videos show you how to use four different highlighter colors to make different types of activities stand out. They show how to draw arrows and borders for emphasis and how to draw shadows on capital letters, and they suggest that you maintain multiple lists (daily to-do list, weekly to-do list, monthly planning, birthdays, reading journal, reference, gift ideas, shopping, and so on). If you enjoy planning, this kind of thing is satisfying.

My father was like that, so I've observed the benefits of exacting planning and organization. Nevertheless, that's not me. My natural inclination is toward disorder and chaos. Until graduate school, my time management system was a mix of writing things on my hand, apologies, and excuses.

The fast pace of graduate school forced me to become more systematic, and I found that using a very simple calendar provided a huge benefit in productivity compared to trying to keep all my responsibilities in my head. I was so pleased that I experimented with making my simple system a little more sophisticated. But the increased payoff was small, and I soon returned to my elementary calendar.

There are two mandatory principles of using a calendar. You must do these two things, but if you do them, you don't need to do much else.

要回答那个问题，你需要知道已经分配给你的任务（或者你给自己设定的任务）是什么，以及它们应该何时完成。你需要在一个地方把这些信息写下来，这样你就可以同时看到你需要做的所有事情，特别是因为有太多的事情要做：阅读，重新组织笔记，准备考试等。

如果你在互联网上搜索有关如何使用计划器的信息，你会发现那些真正享受使用

计划器的人写的指南。他们的视频会告诉你如何使用四种不同的荧光笔颜色来让不同类型的活动更突出。他们会展示如何画箭头和边框以强调重点，如何在大写字母上画阴影，他们还建议你维护多个清单（每日待办事项，每周待办事项，月度计划，生日，阅读日记，参考，礼品想法，购物等）。如果你喜欢计划，这种方式是让人满足的。

我的父亲就是这样，所以我观察到了精确计划和组织的好处。然而，我并不是那样。我的天性是向乱序和混乱倾斜。直到研究生院，我的时间管理系统是将事情写在手上，道歉和找借口的混合体。

研究生院快速的节奏迫使我更系统地去做事，我发现使用一个非常简单的日历比试图把所有的责任都记在脑中，提供了巨大的生产力收益。我非常高兴，所以我尝试了一下让我的简单系统变得稍微复杂一些。但是增加的收益很小，我很快就回到了我的基本日历。

使用日历的两个必要原则。你必须做这两件事，但如果你做了，你就不需要做太多别的事情。

Principle 1: Have your calendar with you all the time. You don't know when you will need to schedule an assignment, social event, airport pickup, or whatever, so it needs to be with you. Hence, keeping a calendar on your phone is a good choice because you're already in the habit of carrying it. Some people prefer a paper calendar because of the larger format or because there's something they like about the feel of paper. Some students have classes that ban electronic devices, so phone-based calendars are not a great option. Use either one, so long as you make a habit of carrying it. If you want to carry a paper calendar but you always forget to have it with you, set it by the front door in the evening (see tip 6).

Principle 2: Write commitments in your calendar immediately. You can't trust that you'll remember something later, so you need to record it the moment you learn about it. If you find that hard to remember, try setting an alarm on your phone for two minutes after each class ends; that will remind you to consider whether there were any new assignments that should go into your calendar, so at least your class assignments will be covered.

You can get away with just one calendar (as opposed to adding a weekly and/or monthly calendar) by immediately adding reminders to your daily calendar for commitments that require preparation for more than one day. In other words, if an instructor announces a math quiz on September 28, put that into your calendar and also add "Math quiz in five days" on September 23 and "Math quiz in three days" on September 25. These early reminders of upcoming deadlines are crucial; they will help you avoid the

planning fallacy.

Note that you don't write these notes on a separate to-do list; you write them on the calendar entry for when the class meets. Separating assignments from the dates they are due makes no sense. When you sit down to work, you must decide "What is my highest priority?"; the due date of each assignment is obviously a crucial factor in that calculation. So why separate what needs doing from when it's due?

If you get assignments in bulk at the start of the marking period, add them to your calendar as soon as you get them. Add calendar entries for assigned readings and for lecture notes that you will reorganize (see chapter 4). Get your school calendar and note vacation days, important school events, and so on. Block out the time you've chosen to study each day (see tip 62).

原则 1: 随时携带你的日历。你永远不知道何时需要安排任务, 比如社交活动, 接机, 等等, 所以你需要随时带着日历。因此, 把日历放在你的手机上是个不错的选择, 因为你已经习惯了随身携带手机。一些人更喜欢纸质日历, 因为格式更大, 或者他们更喜欢纸张的触感。一些学生所在的课堂禁用电子设备, 所以手机日历可能不是个好选择。无论使用哪种方式, 都要养成随身携带日历的习惯。如果你想携带纸质日历, 却总忘记带, 你可以在晚上把日历放在前门口(参见提示 6)。

原则 2: 一有承诺要做的事情, 立即在日历中做好记录。你不能指望自己会记住以后要做的事情, 所以你需要在知道的那一刻就记录下来。如果你发现很难记住, 你可以试着在每节课结束后两分钟设个手机闹钟; 这会提醒你考虑是否有新的作业需要记入日历, 这样你的课程作业至少都能被包括在内。

你只需要一个日历就能满足需求(无需再添加周历或月历), 只需立即在每日日历中添加提醒, 为需要准备一天以上的承诺做好准备。换句话说, 如果一位老师公布了 9 月 28 日的数学测验, 就把它写进你的日历, 并在 9 月 23 日添加“五天后的数学测验”和在 9 月 25 日添加“三天后的数学测验”。这些提前提醒即将到来的截止日期极其关键; 他们将帮助你避免规划谬误。

注意, 你并不是在一个单独的待办清单上写这些内容, 你是在上课时间的日历条目上写这些内容。将作业和他们的截止日期分开是没有意义的。当你坐下来工作的时候, 你需要决定的是“什么是最优先的任务?”; 每个作业的截止日期显然是这个计算的重要因素。那为什么要把需要做的事情和它的截止日期分开呢?

如果你在期末开始时就批量收到作业, 那么就在收到后立刻把它们加入你的日历。记下已经被分配的阅读任务, 和你将要整理的课程笔记(参见第 4 章)。查看你的学校日历, 注明假期, 重要的学校活动等等。选择每天学习的时间, 然后把它们都记入日历(参见建议 62)。

Don't neglect to put scheduled social events onto your calendar. That doesn't apply just to formal things like parties or arrangements to meet with friends. Block out time if there's a football game you know you will want to see or if your favorite artist is releasing music and you know you'll want to download it and listen to it immediately. You need to be able to see all the claims on your time.

If you can develop these two habits—always have your calendar with you, and always record new obligations as they come up—you will know what you are supposed to do and when it's supposed to be done. So the problem we started with—sitting down to work and deciding what to do—will be mostly solved. But we can elaborate just a bit more on how to go from what's recorded in your calendar to how to plan your day.

In a sentence: If you're not already using a calendar, you must start; it's essential to managing your time and setting priorities for learning.

不要忘了将预定的社交活动添加到你的日历上。这不仅适用于正式的事情，比如聚会或与朋友的约会。如果有你想看的足球比赛，或者你最喜欢的艺术家要发布音乐，你知道你会想立即下载并听，那么就把这些时间也预留出来。你需要看到你时间的所有要求。

如果你能养成这两个习惯 - 总是带着你的日历，总是在新的任务出现时记录下来 - 你就会知道你应该做什么和何时该做。所以我们开始时提到的问题 - 坐下来工作并决定该做什么 - 将大部分得到解决。但我们可以再深入一点，关于如何从你在日历中记录的内容，规划你的一天。

用一句话说：如果你还没有使用日历，你必须开始；这对管理你的时间和设定学习优先级至关重要。

TIP 64 Make a To-Do List for Each Study Session

You might find it useful to create a daily to-do list for all your activities. I've never used one, but then, I've already told you I'm not all that organized. I remember to do laundry because I notice I'm out of socks, not because it's on my to-do list.

But. For each study session you must make a to-do list—a list of tasks

that you' ll work on that day. Begin each study session by writing your to-do list. Treat it like a ritual. If you' re not in the habit of writing a to-do list, here' s how to get going.

提示 64: 每个学习会话都制定一个待办事项清单

你可能会发现创建一个日常待办事项清单对于你所有的活动都很有用。我自己从未使用过，但是，我已经告诉你我并不是那么有组织性的人。我记得要洗衣服是因为我发现我没有袜子了，而不是因为它在我的待办事项清单上。

但是，对于每一个学习会话，你必须制定一个待办事项清单——列出你那天将要做的任务。每个学习会话开始时，都要写下你的待办事项清单。把它当作一种仪式。如果你不习惯写待办事项清单，下面是如何开始的方法。

The first item on your to-do list is always “Write today’ s to-do list.” It’ s a task that must be completed.

Look at yesterday’ s to-do list, and add unfinished items to today’ s list.

Look at your calendar for assignments and add things to your to-do list as appropriate. If you’ ve done a good job of maintaining your calendar, the entry for the current date should include reminders about upcoming work, e.g., “Political science test one week from today, chapters 7 - 11.” This is a good time to double-check that you’ ve flagged those upcoming assignments. Check the next couple of weeks to be sure.

Separate larger tasks into bite-size pieces as appropriate (more on this in chapter 11).

Scan your to-do list and decide on the order in which you want to do the tasks on it.

你待办事项列表上的第一项总是“编写今天的待办事项列表”。这是一个必须完成的任务。

查看昨天的待办事项列表，将未完成的事项加入今天的列表。

查看你的日历以获取任务，并将事项适当地添加到你的待办事项列表上。如果你对日历的维护工作做得很好，当前日期的条目应该包括关于即将进行的工作的提醒，比如，“从今天开始一周的政治科学测试，第 7-11 章。”现在是再次检查你是否标记了这些即将进行的任务的好时机。检查接下来的几周以确保无误。

将较大的任务适当地分解为可以咬下的小块(在第 11 章中有更多关于这个的介

绍)。

扫描你的待办事项列表，并决定你想按什么顺序完成列表上的任务。

If, as you' re working, you notice a new task that needs doing, add it to the list. For example, if you' re trying to write part of your study guide in preparation for a test and you see that you forgot to reorganize the notes from a lecture, add that to your to-do list.

This set of steps makes writing a to-do list look like a bigger deal than it really is. It shouldn' t take more than ten minutes, and in the end it will save you time because you always know what you should do next. Without the to-do list, every time you complete a task, you must ask yourself, "Okay, now what?" Rather than having to make that decision multiple times, it' s more efficient to decide once: these tasks, in this order.

This isn' t a list of "things to do today. " It' s a ranking, by importance, of tasks. Typically you won' t finish all the tasks on the list. And if you do, that doesn' t mean the session is over. It just means you should look over your calendar to find out what to do next.

Using a to-do list will remove one possible source of study stress. As you work on one task, you will not wonder whether there is something more important that you' ve neglected. You' ll know that you' ve evaluated all of your near-term tasks and that you' re working on the most important one.

如果在工作中发现有新的任务需要完成，那么就将它添加到列表中。例如，如果你在准备考试的学习指南的时候发现忘记了重新整理一次讲座的笔记，就将它添加到你的待办事项列表中。

这个步骤看起来将编写待办事项列表变成了一件大事，但实际上并不是。完成这样的列表不应该超过十分钟，最后还会节省你的时间，因为你总是知道下一步应该做什么。没有待办事项列表的情况下，每当你完成一个任务，你都必须向自己提问，“好的，接下来做什么？”但是，只需一次决策就能决定：这些任务，按此顺序。

这并不是一个“今天要做的事情”的清单。它是按重要性排列的任务。通常你不会完成列表上的所有任务。但即使你完成了，那也并不意味着任务结束。这仅仅意味着你应该查看你的日历，找出接下来要做的事情。

使用待办事项列表将消除一个可能的学习压力源。当你在完成一个任务的时候，

你不会想到是否有更重要的事情被忽略了。你会知道你已经评估了所有的近期任务，并且你正在完成最重要的那个。

To-do lists also help fight a motivational problem. If you're like me, you sometimes finish a work session and feel as though you got nowhere. Maybe a series of small, unexpected problems arose, and you had to spend a lot of time solving them. Or a task that you thought was complete actually needed more work. In other words, you had setbacks that meant that even though you worked hard, you ended the session pretty much where you began. A to-do list won't magically put an end to that sort of thing, but you can at least look at your list afterward and say, "I'm not where I thought I'd be, but all that stuff had to be done." A to-do list encourages you by showing you what you've accomplished. For that reason, review your to-do list at the end of every work session. Make it a little ritual to take some well-deserved pride in all that you achieved.

The final way a to-do list can be helpful is by defeating your tendency to procrastinate. But for that purpose you need to write the list in a particular way, so I'll leave that discussion for chapter 11.

In a sentence: Creating a to-do list for each work session will help keep you focused, reassure you that you're working on what's most important, and show you what you've accomplished.

待办事项清单还可以帮助解决动力问题。如果你和我一样，有时候工作结束时，会感觉自己一事无成。可能是一系列小的、意想不到的问题出现，你必须花大量的时间去解决。或者，你认为已经完成的任务实际上还需要更多的工作。换句话说，你遇到了挫折，即使你努力工作，仍然在会议结束时觉得你的位置和开始时差不多。待办事项清单不会魔术般地结束这种情况，但你至少可以在之后看到你的清单，说：“我并没有达到我所想的地方，但所有这些事情都必须做。”待办事项清单通过显示你已经完成了什么来鼓励你。因此，每次工作结束时都应该检查你的待办事项清单。让它成为一个小小的仪式，为自己取得的所有成绩感到自豪。

待办事项清单最后一个有用的地方是，它可以帮助你克服拖延的倾向。但为了达到这个目的，你需要以特定的方式编写清单，所以我会第 11 章中讨论这个问题。

总的来说：为每次工作会议创建一个待办事项清单，可以帮助你保持专注，让你确信你正在从事最重要的工作，并向你展示你已经完成了什么。

TIP 65 Set and Revisit Your Learning Goals

Most of this book concerns effective learning over the course of weeks, but part of planning is the intelligent selection of what to learn over the course of years. For some students, this choice sneaks up on them because they don't recognize their increasing responsibility for their own education.

Yet without reflection and planning, you may miss important opportunities. A high school student who doesn't like math may stop taking courses as soon as she's filled the minimum graduation requirement, only to discover, upon exploring college choices, that the schools of design that intrigue her expect a strong math background.

So keep a list of your long-term goals. What sort of work do you hope to be doing ten years from now? There's no need to be specific if you have no idea, but think in terms of broad categories: business, something mechanical, something artistic? Is the field you're interested in compatible with your ideal family life? Can you pursue the career you'd like anywhere, or would you need to go wherever the jobs are?

提示 65: 设定并重新审视你的学习目标

这本书的大部分内容都是关于几周内的有效学习,但规划的一部分是智能选择在未来几年内学习什么。对于一些学生来说,这个选择会悄然降临,因为他们没有意识到他们日益增加的对自身教育的责任。

然而,没有反思和计划,你可能会错过重要的机会。一位不喜欢数学的高中生可能会在她满足最低毕业要求后就停止上课,只有在探索大学选择时,才发现她感兴趣的设计学校期望有强大的数学背景。

所以,保持你的长期目标清单。十年后你希望做什么样的工作?如果你还没有具体的想法,那么考虑一下广泛的类别:商业,机械,艺术?你感兴趣的领域是否与你理想的家庭生活相容?你可以在任何地方追求你想要的职业,还是需要去找工作的地方?

In addition to your goals, jot down what you need to learn to achieve them. The idea is to plan backward: I want to end up there, and to get there I need to do this, and to prepare for this, I need first to do that, and so on. Then write down one or two specific steps you might take to lead you closer to your goals: talking with an expert, perhaps, reading a

relevant book, or taking an online course.

I'm not suggesting that you come up with a rigid life plan. I think Winston Churchill had it right when he said, "Plans are of little importance, but planning is essential." Churchill meant that the specific plans you draw up will almost certainly have to change because circumstances will change. But you will still benefit from planning because you will have thought about your goals, your capabilities, and the resources available to you.

That advice—plan but be flexible—applies not only to the goals you're striving toward but also the steps you need to take to get there. The college students who get into the worst academic jams are those who create a plan and stubbornly stick to it when it's obviously not working. For example, a student takes an excessive course load, so he ends up failing one class. His response is to think, "Oh no, I'm behind!" So the next semester he takes even more credits in an effort to catch up, thinking, "I'm going to stick it out. I'll just work harder!" You can predict what will happen.

In addition to flexibility, put a good dash of skepticism into your planning. The internet is wonderful, but you know it's not fully trustworthy. If you google "How can I be a software engineer?"—or a professional baseball player or a psychology professor—the website you will land on is unlikely to have been written by someone in that profession. It's written by someone trying to make a buck. Supplement what you find online by talking with people who actually have the job you're aiming for. Students may feel awkward making this request of someone they don't know, but they shouldn't. People generally enjoy talking about themselves and want to help. That said, people are also busy, and some of us get more requests for this sort of thing than we can possibly fulfill. Be prepared for the first few people to say no before you get a yes, but rest assured that you're not making an inappropriate or strange request.

Revisit your list of goals every six months or so. Do they still hold? Six months ago, what steps did you say you would take next? How did they work out? Is it time to rethink your path or to gather more information about what you should do next? Research shows that people who monitor their progress are more likely to achieve their goals than those who do not. That's one reason it's important to write down the specific steps you plan to take; it makes it easy to assess whether you're doing anything about your goals.

除了你的目标之外,还需要记录下你需要学习的内容来实现这些目标。这个想法是向后规划:我想完成的是这个,为了达到这个我需要做这个,为了为这个做准

备，我首先需要做那个，以此类推。然后，写下一两个你可能采取的具体步骤，引导你更接近你的目标：可能是与专家交谈，阅读相关的书籍，或者参加在线课程。

我并不建议你制定一个严格的人生计划。我认为温斯顿·丘吉尔说得对，“计划的重要性很小，但规划是必要的。”丘吉尔的意思是，你制定的具体计划几乎肯定需要因环境的变化而改变。但你仍将从规划中受益，因为你会考虑到你的目标，你的能力，以及你可利用的资源。

这个建议——规划但要灵活——不仅适用于你正在努力达到的目标，而且适用于你需要采取的步骤。那些陷入最糟学术困境的大学生通常是那些制定计划并固执地坚持下去，即使计划显然不奏效的人。例如，一个学生选修了过多的课程，以至于他最终不及格一门课。他的反应是想，“哦不，我落后了！”所以下个学期他为了赶进度，选择了更多的学分，心想：“我要坚持下去。我会更努力的！”你可以预测会发生什么。

除了灵活性，还要在你的规划中加入一大堆怀疑态度。互联网十分美妙，但是你知道它并不完全可信。如果你 Google 搜索“我如何成为一名软件工程师？”——或者是一名专业棒球运动员，或者一名心理学教授——你会落在的网站不太可能是由那个职业的人写的。它是由试图赚钱的人写的。你可以通过与那些真正拥有你期望职业的人交谈来补充你在网上找到的信息。学生可能会觉得向不认识的人提出这样的请求会很尴尬，但他们不应如此。人们通常喜欢谈论自己并愿意帮助他人。话虽如此，人们也很忙，我们中有些人得到的这种请求比我们可以满足的要多。做好前几个人说不的准备，在你得到肯定的答案之前，但请放心，你不是在提出一个不适当或奇怪的请求。

每六个月左右重访一次你的目标清单。它们是否仍然有效？六个月前，你说你会采取什么下一步？它们进行得怎么样？是否需要重新思考你的路径，或收集更多关于你下一步应该做什么的信息？研究显示，监测他们进展的人更有可能实现他们的目标。这就是为什么写下你计划采取的具体步骤的原因之一；这使得你可以轻松评估你是否在为你的目标做些什么。

The years pass more quickly than we anticipate. Make the most of them by investing a little time in long-term planning of your learning and career goals.

In a sentence: Set long-term learning goals related to your career aspirations, and revisit them every six months to see how you're progressing and whether they should be adjusted.

TIP 66 Set Goals with the Hidden Factors in Mind

岁月过得比我们预想的还要迅速。通过投入一些时间进行你的学习和职业目标的长期规划，充分利用它们。

一句话：设立与你的职业期望相关的长期学习目标，并每六个月回顾一次，看看你的进度如何，以及是否应该做出调整。

提示 66：考虑到隐藏因素设定目标。

How should you set long-term professional goals? You'd expect that three factors should be taken into account: (1) what you'll find satisfying in the long term, (2) your capabilities, and (3) the market. It seems obvious that all three matter. For example, you may think that a career as a musician would be quite fulfilling, and you may be quite capable (say, in the top 5 percent), but the job market for professional musicians is very small.

The stock advice is to “follow your passion” —that is, put the greatest weight on what you'll find satisfying. This advice often acknowledges the market factor by suggesting you channel your passion toward a job with a good number of openings. If you love music, for example, you might think about event planning or working as a music therapist.

Those offering the stock advice admit that it's still tricky to calculate the balance among these three factors, but that's not the only challenge. Other influences can warp your planning. Let's make them explicit and figure out how to address them.

要如何设定长期的职业目标呢？你应该考虑到三个因素：（1）你在长期内会觉得满足的事情，（2）你的能力，以及（3）市场情况。显然，这三个因素都很重要。例如，你可能觉得做音乐家很有成就感，并且你可能很有能力（假设在前5%），但专业音乐人的就业市场非常小。

常见的建议是“追随你的激情”——也就是说，对你会觉得满足的事情给予最大的重视。这种建议经常借用市场因素来建议你将自己的热情导向有很多空缺的工作。例如，如果你喜欢音乐，你可能会考虑做活动策划或音乐治疗师。

给出这种常见建议的人也承认，在这三个因素之间找到平衡还是很棘手的，但这并不是唯一的挑战。还有其他的影响因素可能会扭曲你的规划。让我们明确这些

影响因素，并找出如何解决它们。

First, “Follow your passion” is slightly off. “Follow your purpose” would be better. Research indicates that the happiest people are those who find purpose in their work, meaning that they perceive their work as having a positive effect on the lives of others. Passion might contribute to purpose, in that you’re probably most likely to feel that your work has purpose when you’re passionate about what you’re doing—it’s something that matters to you and that you feel ought to matter to others. Still, it’s purpose that should be foremost in your mind.

Another drawback to focusing on your passion is that it encourages you to ignore your faults, and they can be informative. Activities that eat up your time tell you what you love to do, which may be the way to direct your search for purpose. If you think you talk too much, maybe you should be in a job that requires a lot of talking, like teaching. If you always have to be the center of attention, maybe you should be making sales presentations to large groups. If you see the negative possibilities in every situation, maybe you should be in risk assessment. People often want to eliminate their flaws, but sometimes our flaws are deeply embedded in who we are. It makes more sense to redirect them.

The second shortcoming of the usual formula for thinking about your goals is that it ignores your surroundings. Your goals are personal, but that doesn’t mean other people won’t affect the likelihood that you’ll meet them. You are most likely to befriend the people you work with or attend school with. They are the ready means by which you’ll learn new things and find new resources. In short, your environment can be supportive, neutral, or toxic to your goals, even if the people around you are unaware of your plans.

For example, when I taught at Williams College in the early 1990s, a very high percentage of the students jogged. Many I talked to said they hadn’t been runners in high school, but when they had come to Williams, they had found that everyone jogged, so they did, too. Surely social pressure was part of the reason, but in addition, jogging at Williams was easy. It was easy to find someone to run with, to get advice about good routes and equipment, and to join a runners’ club.

When you’re selecting an environment—choosing a college, for example, or considering a job offer—you should be thoughtful about the environment you’ll be joining. Do the people there seem to share your goals? Does the institution? Most important, is there real evidence that they do, or is it just something they say? For example, many companies say they support individual growth and encourage employees to learn new skills and grow

into new jobs. Have there been examples of that learning and growth during the last few years in the division you' ll be joining? Are there company policies supporting it, such as paid tuition for relevant classwork or paid days off for professional development?

首先，“追求你的激情”略有不妥，或者说“追求你的目标”更为贴切。研究显示，最快乐的人是那些在工作中找到目标的人，也就是说他们认为自己的工作对他人生活产生了积极影响。热情可能有助于找到目标，因为你可能最有可能在对你正在做的事情充满热情时，感觉你的工作有目标——这是对你来说重要，你觉得也应该对别人重要的事情。然而，应该首易名在你的思考中的，仍然是目标。

专注于激情的另一个缺点是，它会使你忽视自己的缺点，而这些缺点信息量很大。耗费你时间的活动告诉你你喜欢做什么，这可能是你寻找目标的方向。如果你觉得你话太多，也许你应该从事需要大量说话的工作，如教学。如果你总是需要成为注意力的焦点，也许你应该进行大规模的销售演讲。如果你在每一个情况中都看到了可能的负面结果，也许你应该从事风险评估。人们通常想要消除自己的缺陷，但有时我们的缺陷深深地嵌入在我们是誰的定义中。更明智的做法是将它们重定向。

关于设定目标常用公式的第二个缺点是，它忽视了你的环境。你的目标是個人的，但这并不意味着其他人不会影响你实现它们的可能性。最有可能成为你朋友的人是你工作或上学的同事。他们是你学习新事物和寻找新资源的便捷方式。简言之，你的环境可能对你的目标起支持、中立或有害的作用，即使你周围的人并不知道你的计划。

例如，当我在上世纪 90 年代初在威廉姆斯学院教学时，有非常高的学生比例会跑步。我与许多人交谈，他们说他们在高中时并不是跑步者，但当他们来到威廉姆斯时，他们发现每个人都在跑步，所以他们也跑步了。社交压力无疑是原因之一，但除此之外，威廉姆斯的跑步很轻松。找到一起跑步的人、获取关于好路线和设备的建议，以及加入跑步俱乐部都很容易。

当你在选择一个环境——例如选择一所大学，或者考虑一份工作 offer——你应该深思熟虑你将要加入的环境。那里的人似乎有与你共享的目标吗？这个机构有吗？最重要的是，他们是否真的有实证支持，或者只是说说而已？例如，许多公司都说他们支持个人成长，鼓励员工学习新技能并成长为新的工作岗位。在过去的几年里，你将要加入的分部是否有这种学习和成长的例子？公司有没有支持员工发展的政策，诸如支付相关课程的学费或提供专业发展的休假等？

Third, people tend to underestimate how much their emotions can cloud their calculations. Even if you think that passion should be more important than I have allowed, you still want your goal setting to be realistic. Your passion for stamp collecting, for example, shouldn' t make you irrationally optimistic about the money you' ll make if you start a business selling supplies to collectors.

There is a surprisingly simple and effective way of dealing with this problem. Each of us is much more clearheaded when offering advice to other people. Think about how frequently a friend describes a life choice that has him worried and confused but for which you think the answer is obvious: No, you most certainly should not marry your fiancée who has cheated on you three times. You can be objective because you're not emotional about the choice. You're not in love with her.

To be sure that emotions are not preventing you from thinking clearly about your own life goals, try giving yourself advice as though you were someone else. Talk about yourself in the third person and describe, aloud, the situation that you're in: "Well, Dan, you'd like to apply to transfer from the School of Engineering to the School of Education so that you can become a high school physics teacher. Let's start by listing what you've done to make yourself attractive to the admissions committee at the School of Education, and then we'll consider how selective the School of Education is and what your job prospects might be with that degree. And then we'll talk about the advantages and disadvantages of your current degree program."

Setting goals is complex, and it's subject to influences you may not recognize. The importance of the consequences means it's worth being as thoughtful as you can about the process.

In a sentence: When considering long-term career goals, be sure that they will contribute to a sense of purpose, recognize how your surroundings will affect your ability to achieve them, and be sure that emotions have not influenced the goals you set.

首先,人们往往低估了情绪对自己判断能力的影响。即使你认为激情比我给予的重视程度更重要,你设定的目标仍应该切实可行。例如,你对集邮的热情不应让你对从事收藏品供应商生意所能赚到的钱过于乐观。

解决这个问题有一个出人意料的简单有效的方法。我们每个人在给别人提建议时都会更加清晰。想想看,朋友多少次描述自己对生活的选择感到困惑和担忧,但你觉得答案显而易见:不,你绝对不应该嫁给欺骗过你三次的未婚妻。你可以客观看待问题,因为你对选择没有情绪上的牵绊。你并未爱上她。

为了确认情绪是否阻碍了你对自己生活目标的清晰思考,尝试像对其他人提建议那样对自己提建议。以第三人称的方式谈论自己,大声描述你所处的情境:“嗯,丹,你想申请从工程学院转到教育学院,成为一名高中物理老师。首先,我们列出你已经做过什么来吸引教育学院招生委员会的眼球,然后我们考虑一下教育学院的选拔严格程度,以及你可以从那个学位中得到的工作前景。然后我们再谈谈你现在的学位课程的优点和缺点。”

设定目标是复杂的，并且可能受到你可能未意识到的影响。结果的重要性意味着你应该尽可能深思熟虑这个过程。

简单来说：在考虑长期职业目标时，确保它们能为你的生活带来目标感，认识到你的环境会如何影响你实现目标的能力，确保情绪没有影响你设定的目标。

TIP 67 Develop a Plan

I've suggested that you make your goal specific and plan the first steps. But how can you maximize the chances that you will actually follow through and take those steps? These sorts of goals are difficult to meet because they feel like an add-on, something extra that would be great to do but are not part of your current responsibilities. Nothing bad will happen if you fail to do them.

提示 67：制定计划

我建议你将目标具体化，规划第一步。但是，你如何才能最大限度地提高实际跟进并采取这些步骤的机会？这种目标很难实现，因为它们感觉像是额外添加的，有些东西如果你能做就太好了，但它们并不是你现有责任的一部分。即使你未能完成它们，也不会有什么糟糕的事情发生。

Researchers have discovered a couple of ways you can make it more likely that you'll follow through.

To begin with, make your plan even more specific. Rather than saying, "I want to talk to antiques store owners in the next six months," you might specify a more detailed timeline for this work, starting with the idea that in the next month you will schedule one conversation and you'll plan to get the name of the next person to interview from the first. If I'm an aspiring real estate agent, I might plan that in the next month I will invite to lunch an acquaintance who is just getting started in real estate. The month after that, I'll identify three online introductory courses on the topic.

In addition, have a plan B. If I'm having trouble finding an antiques

dealer who is willing to talk to me, I' ll contact my aunt, who is active in the business community in her town, to see if she can help. If my real estate agent acquaintance isn' t very helpful, I' ll tell him that I' m trying to get as much information as I can and ask him whether any of his colleagues might spare me fifteen minutes to chat.

These contingency plans are for external obstacles, but it' s even more important to plan for internal obstacles, things about yourself that may prevent you from following through. For example, suppose that you would have no difficulty asking your real estate agent acquaintance to lunch, but you never know how to steer a conversation to the topic that really interests you. Again, the solution is to formulate a plan in advance. Research indicates that it' s helpful to make your plan in an if-then form. For example, you might think, “There will be a natural break in the conversation when the server comes to take our order. If I haven' t brought up my plan by then, I' ll do so just as the server is leaving.”

Why does specificity help—both specificity of the plan and specificity of the contingency? It' s another example of the strength of memory and the comparative weakness of our ability to solve problems. At the moment I decide, “This is my goal,” I have lots of energy and mental space to think about steps to get there. Later, when I recall that I set this goal, I might be tired or less motivated, and in that state, I' m less able to solve problems. But memory is not much affected by mood or energy level. So if I made a plan earlier, I remember it and know what I' m supposed to do. The difference between problem solving and memory is even more important when obstacles pop up. If you' re at lunch with your real estate agent acquaintance and you can' t bring yourself to raise the topic that was actually the point of the lunch, you won' t be able to devise a plan—you' ll feel too nervous. But despite your nerves, you can recall a plan you made earlier.

研究人员已发现了一些方法可以让你更有可能执行计划。

首先，要使你的计划更具体化。你可以说：“我想在接下来的六个月里和古董店主交谈。”为此，你可能需要详细地规划此项工作的时间表。比如，你可以计划下个月约谈一位店主，并从他那里获取下一位要采访的人的名字，如果我是一个有志成为房地产经纪人的话，我可能会计划下个月邀请一个刚刚开始做房地产业务的熟人共进午餐。在那之后的一个月，我将找出三个关于这个话题的网络初级课程。

另外，设立一个备用计划。如果我找不到愿意和我交谈的古董商人，我就会联系我的阿姨，她在她所在城市的商业社区非常活跃，看她是否可以帮忙。如果我的房地产经纪人朋友没有给我提供太多帮助，我会告诉他我正在尽力获取尽可能多的信息，并请他看看他的同事是否可以抽出十五分钟和我聊天。

这些应对外部障碍的备用计划是非常重要的，但是应对内部障碍的计划更为重要。由于你自身的原因，你可能无法执行计划。比如，邀请你的房地产经纪朋友共进午餐不成问题，但你可能不知道如何把话题引向你真正感兴趣的方面。再次强调，提前制定计划是解决办法。研究表明，将你的计划制定成“如果-那么”的形式很有帮助。例如，你可以想象，“服务员来点餐时自然会有一个聊天的间隔。如果我还没提及我的计划，我会在服务员刚离开时提出。”

为什么具体化会有帮助-无论是计划的具体化还是应对办法的具体化?这是另一个记忆力的强项和我们解决问题能力的弱项的例子。当我决定“这是我的目标”时，我有许多精力和思考达成目标步骤的心理空间。后来，当我回忆我设立这个目标时，我可能会觉得累或者动力不足，在那种状态下，我很难解决问题。但记忆并不受心情或能量水平的影响。所以如果我之前已经做了一个计划，我就会记得它，知道我应该做什么。当遇到障碍时，问题解决和记忆之间的差距更为重要。如果你和你的房地产经纪朋友共进午餐，但你无法自行提出实际的话题，你也无法安排一个计划-你会感到太紧张。但是尽管你感到紧张，你可以回想起你之前制定的计划。

In a sentence: You can increase the chances that you will pursue your goals by planning the specific next steps to take, anticipating obstacles (internal or external) that might prevent you from taking those steps, and creating an action plan to be taken if an obstacle arises.

For Instructors

在一个句子中：你可以通过规划具体的下一步行动，预期可能阻止你采取这些步骤的内部或外部障碍，并制定如果出现障碍时应采取的行动计划，来增加你追求你的目标的可能性。

对于教师

Most teachers already help students with the job of remembering assigned tasks by encouraging them to use a planner. Fewer ask students, “How long do you think this assignment will take?” If you don’t ask your students to plan that aspect of assignments, you might consider adding it and modeling your thought process for the estimation.

That still leaves your students the important work of pulling together assignments from different classes, making decisions about the relative importance of the competing demands on their time, and writing a to-do

list. That requires coordination across classes, so a study hall or homeroom session may provide an opportunity for high school students to get some practice and instruction in this process.

You probably don't discuss long-term goal setting in your classroom, but the subject is fairly likely to come up in individual meetings with students. That's especially true when students face transitions: community college students wondering whether they should continue at a four-year institution, for example, or a college sophomore wondering whether a B in organic chemistry is a sign he should give up on medical school.

When you think a student's goal is well aligned with his record and prospects, these conversations are easy, even fun; you play the role of cheerleader and offer some counsel. But if the goal seems unrealistic, it's awkward. You want to provide honest feedback, but you also want to be supportive. So how sure should you be that a student can't meet a goal before you puncture the dream? And what should you say?

I've resolved this dilemma by not providing feedback in those terms. I emphasize what they've done relative to what's needed. I'd say, "Students who are admitted to medical school have usually done X, Y, and Z. You've sort of done X, and you've definitely done Y, but you haven't done Z." Then we discuss what it would take to do Z and, if she can't do it, possible ways around the requirement, if there are any. For example, if she's in her last semester of college, it's too late to remedy a low grade point average. But a couple of years as a research assistant in a scientific laboratory would provide good experience, put some distance between her and the low GPA, and earn her a helpful letter of recommendation from the head of the lab.

大多数老师已经通过鼓励学生使用计划表来帮助学生记住分配的任务。很少有老师会问学生：“你认为这个作业需要多长时间？”如果你没有让你的学生计划作业的这个方面，你可能会考虑增加这个问题，并为估计过程进行示范。

这还留给你的学生一个重要的工作，就是整合不同课程的作业，决定他们时间上竞争需求的相对重要性，并编写一个待办事项列表。这需要跨课程的协调，因此，一个自习课或班主任课程可能为高中生提供一些在这个过程中进行练习和指导的机会。

你可能不在你的课堂上讨论长期目标设定，但这个话题很可能在与学生的个别会议中提出。当学生面临转折点时，尤其如此：比如，社区学院的学生在纠结是否应该在四年制学院继续学习，或者一名大二学生在疑惑他在有机化学中的B级是否意味着他应该放弃医学院。

当你认为学生的目标与他的记录和前景相匹配时,这些对话很容易,甚至很有趣;你扮演的是拉拉队长的角色,并提供一些建议。但如果目标看起来不切实际,就会尴尬。你希望提供诚实的反馈,但你也希望给予支持。那么,在你打击梦想之前,你应该多么确定一个学生不能实现一个目标?你应该说什么?

我通过不以这些条件提供反馈来解决这个困境。我强调他们已经做到的和需要做的事情。我会说:“被医学院录取的学生通常已经做到了 X、Y 和 Z。你已经做到了一部分 X,也已经做到了 Y,但你还没有做到 Z”。然后我们讨论要做到 Z 需要做什么,如果她做不到,可能绕过要求的方法(如果有的话)。例如,如果她已经是大学的最后一个学期,那么已经太晚,无法弥补低的平均成绩。但在科学实验室做几年的研究助理能够提供良好的经验,让她和低 GPA 分开,也能从实验室主任那里获得有用的推荐信。

Summary for Instructors

Help students develop the habit of keeping a calendar up to date.

Most students would benefit from guidance about setting work priorities and budgeting their time.

教师摘要

帮助学生养成保持日历更新的习惯。

大多数学生都会从关于设定工作优先级和预算时间的指导中受益。

When discussing students' long-term goals, focus on what it would take for them to reach their goal and what they've done thus far, rather than making a global judgment about their talent or skill.

第 11 章 如何战胜拖延症

当讨论学生的长期目标时，重点应该放在他们为达到目标需要做什么，以及他们到目前为止已经做了什么，而不是对他们的才能或技能做出全面的评判。

Procrastination is challenging to avoid, but the psychology behind it is not complicated. We procrastinate to make ourselves feel better; we put off an unpleasant activity (for example, doing a math problem set) in favor of a pleasant activity (for example, playing a video game). Unsurprisingly, the more we dislike the task or the more appealing the alternative activity, the more likely we are to procrastinate.

But the problem is a little worse than it first appears because pleasure or pain that we're contemplating in the future doesn't have the same power as pleasure or pain now. For example, suppose your doctor tells you that you need to keep an eye on your sugar intake, and I ask you, "Would you like to have a piece of cheesecake for dessert a week from now?" It would be pretty easy to say, "No, I'm supposed to limit my sugar intake." The pleasure of the cheesecake doesn't tempt you much because that pleasure is a whole week away. But think how much harder it will be to turn down the cheesecake if I offer you a slice now. In the same way, painful things don't seem as scary when they are in the distant future. Even if going to the dentist frightens you, you might be talked into an appointment for a checkup if you're expecting to go six months from now. But what if the receptionist said, "Actually, there's been a cancellation... would you like to come right over?"

The way that outcomes change value over time helps us understand why playing the video game now (with the idea that you'll do your math problem set later) is much more appealing than doing your math first and playing the game afterward. Playing the video game now has a lot of positive value, but playing it later has less; it changes value over time, just like the cheesecake does. So does the math problem set. Doing it now seems really negative; doing it in the future, less so.

Impulse control also plays a role. An impulse is a plan your brain creates that meets an immediate desire but has bad consequences in the long run.

When you see “Death by Chocolate (serves two)” on the dessert cart, you may have the impulse to order it. If someone cuts you off in traffic, you may have the impulse to run them off the road. People vary in how well they can control their impulses, and that’s a big factor in procrastination.

拖延症很难避免，但其背后的心理学并不复杂。我们会拖延来让自己感觉更好；我们会推迟不愉快的活动（例如，做数学题）而选择愉快的活动（例如，玩电子游戏）。不足为奇的是，我们越厌恶一项任务，或者对替代活动的吸引力越大，我们就越有可能拖延。

但这个问题比最初看起来的还要严重，因为我们在未来展望的快乐或痛苦并没有现在的快乐或痛苦有同样的力量。例如，假设你的医生告诉你需要注意糖分的摄入，然后我问你，“你想在一周后的甜点时间吃块芝士蛋糕吗？”你很可能会轻易地说，“不，我应该限制我的糖分摄入。”芝士蛋糕的快乐不能太大地诱惑你，因为那个快乐还有整整一周。但如果我现在就给你一片芝士蛋糕，你拒绝的难度将会大大增加。同样，痛苦的事情在遥远的未来看起来就不那么可怕。即使你害怕去看牙医，但如果告诉你六个月后才要去，你可能就会同意预约。但如果接待员说，“实际上，有个预约被取消了……你想现在过来吗？”

随着时间的推移，结果的价值变化有助于我们理解为何现在玩电子游戏（以便你以后做数学题）比先做数学题再玩游戏更具吸引力。现在玩电子游戏的积极价值很高，但以后玩就变低了；它随着时间的推移而改变价值，就像芝士蛋糕一样。数学题也是如此。现在做看起来非常消极；将来做，就没那么糟糕了。

冲动控制也起着一定作用。冲动是你的大脑为满足即时的欲望而产生的一个计划，但从长远来看却产生了负面的后果。当你看到甜点车上的“巧克力致死（供两人份）”时，你可能会冲动地想要点它。如果有人在交通中切你的车，你可能有冲动想把他们赶出车道。人们在控制冲动方面的能力各不相同，这就是拖延的一个重要因素。

To reduce procrastination, we can focus on (1) making work seem more favorable compared to the alternative and/or (2) reducing the chances that we will act on impulse.

WHEN YOU’ RE TEMPTED TO PROCRASTINATE

What your brain will do: It will judge that the work you need to do will be unpleasant but less so later; further, an alternative to the work seems very attractive now but will be less attractive later. So work is put off, and the fun alternative is selected.

How to outsmart your brain: Make work seem less disagreeable, and make the tempting alternatives to work seem a bit less fun; it’s all in how you talk to yourself about them.

为了减少拖延，我们可以专注于(1)使工作看起来比其他选择更有利，和/或(2)降低我们根据冲动行事的可能性。

当你想要拖延的时候

你的大脑会做什么：它会判断你需要做的工作现在很不愉快，但是稍后会好一些；此外，工作的替代选择现在看起来非常吸引人，但稍后会变得不那么吸引人。所以工作被推迟，选择有趣的替代方案。

如何智胜你的大脑：使工作看起来不那么令人厌恶，并使工作的诱人替代选项看起来不那么有趣；这全在于你如何和自己谈论他们。

As we' ll see in this chapter, your ultimate goal is to defeat procrastination by making work a habit. If you sit down to your daily work session as automatically as you brush your teeth before you go to bed, you won' t procrastinate—you' ve eliminated the possibility of choosing not to work because you' re not making a choice. You' re on autopilot. The hard part is consistently avoiding procrastination until you get to the point of work feeling like a habit. The tips in this chapter will help you get there.

TIP 68 Don' t Rely on Willpower to Reduce Procrastination, Rely on Habit

在本章中，我们将看到你的最终目标是通过将工作变成习惯来击败拖延。如果你像刷牙睡觉前一样自然地坐下来进行每日的工作，你就不会拖延——你已经消除了不工作的选择，因为你没有做选择。你处在自动驾驶状态。难的部分是持续地避免拖延，直到工作感觉像习惯。本章中的建议将帮助你达到这个目标。

提示 68：不要依靠意志力来减少拖延，依靠习惯。

When you get up in the morning, you don' t think carefully about whether there is a more efficient way to make your coffee. You don' t experiment by brushing your teeth with your nondominant hand. There is a lot of your day—probably most of it—during which you' re on autopilot. You do things

the way you always do them.

This isn't laziness. When you experiment with something new—“Hey, what if I replace my paper coffee filter with a lettuce leaf?”—the result is sometimes good but is often a failure. Doing a task on autopilot is not creative, but if the outcome in the past has been acceptable, being on autopilot means you'll get the acceptable outcome again.

More important, for truly habitual actions we not only have an unthinking, routine way of doing them, we often don't need to think about starting that routine. You don't walk into the kitchen in the morning and think, “Hmm. Should I make coffee?” You just make it. You don't procrastinate doing routine actions because there's no act of choosing.

I've suggested that you pick a set period of time during which you will work each day (see tip 62). Ideally, starting your work session will become as habitual as flossing before bed. When sitting down to a work session becomes habitual, there's no chance of procrastinating, because you're not making a choice.

How can you make an action into a habit? As you've probably guessed, consistent repetition is the answer, but if you ensure that the repetition has a few key features, the habit will develop more quickly.

当你早上起床时，你不会认真考虑是否有更有效的制作咖啡的方法。你不会用非优势手刷牙。你的一天中有很多时间——可能大部分时间——你都在自动驾驶下进行。你做事的方式总是你一直以来的方式。

这并不是懒惰。当你尝试新的事物——“嘿，如果我用生菜叶替换掉我的咖啡过滤纸会怎样？”——结果有时候会很好，但往往会失败。在自动驾驶状态下做事并不具有创造性，但如果过去的结果是可以接受的，那么在自动驾驶状态下就意味着你可以再次得到可接受的结果。

更重要的是，对于真正的习惯性行为，我们不仅有一种不经思考、例行公事的做法，而且我们通常不需要考虑开始这种例行公事。你早上走进厨房，不会想，“嗯，我应该做咖啡吗？”你就做它。你不会拖延做例行公事，因为没有选择的行为。

我建议你选择一个每天工作的固定时间（见提示 62）。理想的情况是，开始工作成为和睡前刷牙一样的习惯。当坐下来工作成为习惯时，就不可能会拖延，因为你没有做出选择。

那么，如何将一个行动成为习惯呢？你可能已经猜到，持续的重复是答案，但是如果你确保重复具有一些关键的特性，习惯就会更快地形成。

First, it's easier to establish a habit as a sequence of things you do

rather than at particular times. Habits are like memories in that they are cued. Something happens in the environment (or in your mind) that cues a mental action plan: “Do this now.” You have a routine in the shower—a sequence in which you wash your body, shampoo and condition your hair, shave, whatever. Finishing one action in your shower routine cues the next one. The cue is not “It’s 6:35 a.m.” Time is a bad cue because you don’t monitor time that closely. In contrast, completing an action is obvious to you—it’s hard to miss that you’ve just rinsed your hair.

To develop the habit of working, start by considering what might serve as a cue. If you’re a high school student, maybe it’s “I’ve finished cleaning the kitchen after supper” or “I’ve finished my after-school snack.” You must ensure that the trigger is certain to be done each day. Thus, “I’ve finished the supper dishes” isn’t a good trigger if you alternate cleanup days with your sibling.

Another way to speed the development of a habit is to choose the context wisely. Schedule your consistent time for studying in a part of your day when you can be consistent. Don’t schedule it for “when I get home from school” if you frequently want to socialize after school. But note that it’s fine to set your time as “after my Saturday workout” even if your workout time varies. Just as you can wake up anytime and stumble into the shower on autopilot, the routine will be the same as long as the cue is consistent—arriving home from my Saturday workout.

How long does it take to develop a habit? In one experiment researchers paid subjects to develop a habit of their own choosing that related to healthy eating or drinking or to exercising. The new behavior felt habitual after an average of 66 days, but that figure varied a lot—between 18 and 254 days. The number surely depends on the particular habit you’re trying to develop, your personality, and the fit between the two.

If you’re a college student, I suggest you try thinking of college as a nine-to-five job (or ten-to-six, or whatever works for you). Treat those forty hours from Monday through Friday as nonnegotiable work time. You don’t do laundry or socialize during that time. You’re in class or studying.

首先，将习惯建立成你做的一连串事情比在特定时间做更容易。习惯就像记忆一样会被触发。环境中（或你的脑海里）发生的某种事情会触发一种心理行动计划：“现在做这个。”你有一个淋浴的例行程序——你洗身体，洗发和护发，刮胡子，等等的顺序。完成淋浴程序中的一个动作就会触发下一个。提示并不是“现在是早上 6 点 35 分”。时间是一个不好的提示，因为你不会那么仔细地监控时间。相反，完成一个动作对你来说是明显的——你很难没注意到你刚刚冲洗完你的头发。

要培养工作的习惯，首先考虑什么可能作为提示。如果你是一名高中生，可能是“我刚刚清洗完晚餐后的厨房”，或者是“我刚刚吃完放学后的零食”。你要确保触发物每天都一定会做。因此，“我已经洗完晚餐碗碟”不是一个好的触发物，如果你和你的兄弟姐妹轮流打扫卫生。

加速习惯发展的另一种方式是明智地选择环境。当你能保持一致的时间选为每天学习的时间。如果你经常在放学后想要社交，就不要将“放学后”设定为用来学习的时间。但要注意，设定你的时间为“我的周六健身结束后”是可以的，即使你的锻炼时间不定。正如你可以随时醒来并自动步入淋浴，只要提示是一致的——从我的周六锻炼回家后——程序就会保持一样。

养成一个习惯需要多长时间？在一个实验中，研究人员付钱给受试者去养成他们自己选择的与健康饮食或饮料或运动相关的新习惯。新的行为在平均 66 天后觉得像一种习惯，但这个数字变化很大——在 18 到 254 天之间。这个数字肯定取决于你试图培养的特定习惯，你的个性，以及两者之间的匹配程度。

如果你是一名大学生，我建议你试着把大学看作是一份九点到五点的工作（或十点到六点，或者对你来说有效的的时间）。从周一到周五的那四十个小时被视为不可协商的工作时间。在这段时间里，你不做洗衣或社交活动。你只能做课堂上或学习的事情。

When my fellow professors and I are thinking about who to admit to our PhD program, we have a slight bias toward people who have been in the working world compared to people coming straight from college. That's because holding a nine-to-five job makes working habitual; you get used to showing up and working, even if you don't much feel like it on a given day.

Treating your learning time as a habit sounds great, but you still have the on-ramp of sixty-six days (or whatever it ends up being) when you do have to rely on willpower. Willpower is an unreliable ally in ensuring that you work. It fluctuates with your mood, your physical state, and the environment. Let's look at ways to make sure you work consistently during your set time so that the habit has a chance to develop.

In a sentence: Making your work session habitual is the ultimate way to defeat procrastination because it removes the need to choose to work.

当我和我的同事教授们考虑谁应该被录取到我们的博士项目时，我们对那些已经在职场工作过的人有轻微的偏爱，相比于直接从学院毕业的人。因为持续的九点

到五点的工作让工作成为习惯；你会习惯于定时工作，即使在某一天你并不想工作。

把你的学习时间看作是一种习惯似乎很好，但是你仍然有六十六天（或者最后确定的时间）你需要依赖意志力。意志力在确保你工作的过程中是不靠谱的盟友。它会随着你的情绪，身体状态和环境而波动。让我们探讨一下如何在你设定的时间内保持一致的工作，以便有机会形成习惯。

简而言之：使你的工作时间成为习惯是克服拖延的终极方法，因为它消除了选择工作的需要。

TIP 69 Each To-Do List Item Should Be Concrete and Take Twenty to Sixty Minutes

When eating an elephant, take one bite at a time. —Unknown

A journey of a thousand miles begins with a single step. —Chinese proverb

建议 69：每个待办事项应具体明确，耗时应在二十到六十分钟之间

吃象的时候，每次只咬一口。—未知

千里之行，始于足下。—中国谚语

One day at a time. —Alcoholics Anonymous slogan

Each of these quotations makes the same point: ambitious goals are so intimidating that we won't attempt them. The trick is to set a much smaller goal. Don't think about eating the whole elephant, take one bite. Don't think about refraining from alcohol the rest of your life, just make it through today without a drink.

Here's why this strategy works: when you make a choice, you consider not only how much you like (or hate) what you'll get but also the odds that you'll get it. For example, if you offer me the choice of a chocolate bar or \$100,000, it's pretty obvious which one I'll take. But suppose

you say that if I choose the chocolate bar, you' ll definitely give it to me, but if I choose the \$100,000, I' ll have a 0.000036 percent chance of getting it. In more everyday terms, you give me a dollar with which I can buy a chocolate bar or a lottery ticket. I love the idea of getting all that money, but if I make that choice, I' m very unlikely to get it. I' d rather have the sure-thing chocolate bar.

We are more likely to procrastinate if we think we can' t succeed at the task we ought to do. If your instructor assigns Bleak House, you not only have all of the usual reasons to procrastinate; you also notice that the book is more than nine hundred pages long. Feeling as though you can never finish such a long book makes starting it feel like buying a lottery ticket. "The prize—finishing the book—sounds appealing, but I don' t think I' ll get the prize. So why start the book?"

一天过一天。——戒酒匿名标语

这些引言都传达出同样的观点：雄心勃勃的目标会让人望而生畏，于是我们不敢去尝试。诀窍在于设定一个更小的目标。不要想着一次性吃完整只大象，只需一小口一小口地吃。不要考虑剩下的一生都要戒酒，只需要今天不喝就行。

以下是这个策略为什么会奏效的原因：当你做出选择时，你不仅会考虑你对得到的东西有多喜欢（或多讨厌），而且还会考虑你获取它的可能性。例如，如果你让我在一块巧克力和 10 万美元之间做出选择，很明显我会选择哪个。但假设你说如果我选择巧克力，你肯定会给我，但如果我选择 10 万美元，我只有 0.000036% 的机会得到它。用更日常的话来说，你给我一美元，我可以用它买一块巧克力或一张彩票。我非常喜欢得到那么多钱的想法，但如果我做出那样的选择，我很可能得不到它。我宁愿选择肯定能得到的巧克力。

如果我们认为我们无法成功完成所要做的任务，我们更可能会拖延。如果你的讲师布置了《荒凉山庄》这本书，你不仅有所有常见的拖延借口，你还会注意到这本书有九百多页。感觉自己无法完成如此长的书，开始阅读它就像买彩票。“奖品——完成这本书——听起来很吸引人，但我认为我不会得到这个奖品。那我为什么还要开始读这本书呢？”

The quotations all offer the same advice: break overwhelming tasks into small, achievable bits. The title of Anne Lamott' s classic book on writing, *Bird by Bird*, came from an overwhelming homework assignment. She explained:

Thirty years ago my older brother, who was ten years old at the time, was trying to get a report on birds written that he' d had three months to write, which was due the next day... He was at the kitchen table close to tears, surrounded by binder paper and pencils and unopened books on birds, immobilized by the hugeness of the task ahead. Then my father sat

down beside him, put his arm around my brother's shoulder, and said, "Bird by bird, buddy. Just take it bird by bird."

Tip 64 suggested that you write a to-do list at the start of each study session. Each item on your to-do list should be a small bite—shoot for twenty to sixty minutes. Many learning tasks do not come in small bites, obviously. You need to disassemble them into parts, but you may not know how to. If you don't know what the pieces should be, make that an item on your to-do list. It's work, and it might take a while, so write, "Figure out plan for economics class project."

Let me offer a little assistance on breaking big tasks into smaller pieces. I can suggest three possible principles.

这些引语都提供了同样的建议：将压倒性的任务分解为小的、可实现的部分。安妮·拉莫特的经典创作《鸟对鸟》的书名就来源于一个令人应接不暇的作业任务。她解释说：

三十年前，我的哥哥当时十岁，他正在努力完成一个关于鸟的报告，他有三个月的时间去写，而这份作业在第二天就要交了。他坐在厨房的桌子旁，眼泪都要掉下来了，周围是装订的纸、铅笔和还没打开的关于鸟的书籍，被面临的巨大任务所困。然后我父亲坐在他旁边，搭着他的肩膀，说，“一只鸟一只鸟的来，伙计。只需一只鸟一只鸟地来。”

提示 64 建议您在每个学习会话开始时写一个待办事项清单。您的待办事项清单上的每一项都应该是一个小步骤——尽量做到二十到六十分钟。显然，许多学习任务并不是小块的。你需要将它们分解为部分，但你可能不知道如何做。如果你不知道各部分应该是什么，就把它作为你待办事项清单上的一项。这是工作，可能需要一些时间，所以写下：“为经济学课程项目制定计划”。

我提供一些帮助如何将大任务分解成小任务的建议。我可以提出三个可能的原则。Some tasks are best thought of in phases or steps, with each phase depending on the outcome of the previous phase. For example, a project report has four distinct phases: research, outlining, writing, editing. In chapter 6 I suggested these steps in preparing for an exam: create a study guide, commit your study guide to memory, meet with your study group, and overlearn—that is, keep studying even after you know the content. (Each of these phases is actually a sizable task that you'd want to break down further.)

Other tasks are ordered not in sequenced steps but rather in categories. That's the breakdown Anne Lamott's dad suggested with his bird-by-bird

advice. The same principle applies within the “create a study guide” phase of studying: you would write the part of the study guide that covers lecture 1, then lecture 2, then lecture 3, but you could also write them out of order if you preferred.

Other tasks break down naturally into parts; the task is really one giant thing to do, but you create artificial pieces to make it more manageable. When you’re at the writing phase of a project report, you can break that phase down into parts. You can consider an assignment with fifteen problems as composed of three five-problem chunks.

Whether you divide your task into phases, categories, or parts, be sure that your description is as concrete as you can make it. The goal is that when you undertake a task, you don’t need to think through what you’re supposed to do. Don’t write the task “Review for Govt. quiz.” Review how? Reread chapters, read notes, make an outline, what?

Of course, you want the task to be not only concrete but also relatively short. I’ve said twenty to sixty minutes, but there’s nothing sacred or research based about that figure. Just keep the goal in mind: you’re trying to trick yourself into working by making the task seem easy, harmless. A small bite.

有些任务最好按照阶段或步骤来考虑，每个阶段都依赖于前一个阶段的结果。例如，一份项目报告有四个明确的阶段：研究、大纲设计、写作、编辑。在第6章中，我建议了准备考试的这些步骤：创建学习指导，记住你的学习指导，与你的学习小组见面，并超学习——也就是说，在你了解了内容以后还要继续学习。（实际上，这些阶段都是你想要进一步细化的大任务。）

其他任务并非是按照顺序的步骤排序，而是分类。这就是安妮·拉莫特的父亲建议的鸟儿一样一步一步来的方法。在学习阶段创建学习指导的同样原则适用：你会写课程1、课程2、课程3的学习指导部分，但你也可以按照你喜欢的顺序来写。

还有些任务自然而然地分解为各个部分，任务实际上只是一件大事，但你创造了人造部分以使任务更易管理。当你处在项目报告的写作阶段时，你需要将该阶段分解为多个部分。你可以将拥有十五个问题的任务视为由三个五问题块组成的任务。

无论你选择将任务分解为阶段、类别还是部分，一定要确定你的描述尽可能具体。目标是，当你开始进行任务时，你不需要思考你应该做什么。不要写作任务“为政府测验复习。”再怎么复习？重新阅读章节，阅读笔记，制作大纲，还是什么？

当然，你希望任务不仅要具体，而且要相对较短。我说过，应为二十到六十分钟左右，但这个数字并没有什么神圣的或基于研究的依据。只要维持一个目标：你在尝试通过把任务变得简单、无害的方式来骗自己去工作。一小口就好。

In a sentence: Make each to-do list item doable—between twenty and sixty minutes long—because procrastination will be less tempting if tasks look achievable.

TIP 70 Reframe Your Choice

在一句话中：使每一个待办事项清单都可行——介于二十分钟到六十分钟的长度——因为如果任务看起来可实现，拖延将会显得不那么诱人。

提示 70：重新定义你的选择

Redescribing your choice may also make work seem more appealing. To see how this strategy works, we'll use an idea economists call opportunity cost. It basically means giving up the chance of a potential gain.

For example, suppose your fabulously wealthy aunt gives you \$100,000 when you're seventeen, no strings attached. You could keep the \$100,000 and get a job immediately after high school graduation. Or you could spend the \$100,000 on college, figuring that the expenditure is a good investment because you'll probably land a higher-paying job if you have a college degree.

Tuition is obviously a direct cost, but going to college also includes opportunity costs. You lose the chance to increase your \$100,000 by investing it. In addition, attending college means you lose the possibility of having worked for four years, and during that time you would have earned an income, possibly some retirement benefits, and a reputation as a good worker, someone deserving of promotion.

Now, what does all this have to do with procrastination?

Suppose you're a college student, it's Thursday night, and your roommate asks if you want to watch a movie. You were thinking you'd work on a

chemistry problem set that's due Monday. The natural way to think about this situation is similar to the video game/math example problem provided earlier: immediate fun and boredom later versus immediate boredom and fun later. But choosing the movie carries an opportunity cost you might not have considered: if you go to the movie, you will not have the satisfaction of finishing the problem set.

重新描述你的选择可能会使工作显得更有吸引力。为了看看这种策略是如何运作的，我们将使用经济学家们称之为机会成本的概念。这基本上意味着要放弃一个潜在收益的机会。

比如，假设你那个超级有钱的阿姨在你 17 岁的时候给你 10 万美元，没有任何附带条件。你可以留下这 10 万美元，并在高中毕业后立即找工作。或者，你可以把 10 万美元用来上大学，认为这个开支是一项好的投资，因为你有可能因为有了大学学位而找到一份薪水更高的工作。

显然，学费是一个直接的成本，但去上大学也包括机会成本。你失去了投资这 10 万美元以增值的机会。此外，上大学意味着你失去了四年的工作机会，那段时间你本可以赚取收入，可能会有一些退休福利，还能树立起身为优秀工人的声誉，赢得晋升的机会。

那么，这一切与拖延有什么关系呢？

假设你是一个大学生，现在是星期四晚上，你的室友问你是否想看一部电影。你本来打算做一套周一要交的化学习题。通常思考这种情况的方式类似于之前提供的电子游戏/数学示例问题：立即享受乐趣，然后晚些时候感到无聊，比起立即感到无聊，但后来有乐趣。但选择看电影可能带来你可能没有考虑过的机会成本：如果你去看电影，你就不会有完成习题的满足感。

The next time you are tempted to procrastinate, try describing the choice to yourself in a way that highlights the opportunity cost. Don't ask, "Shall I watch a movie or shall I work on the problem set?" Say, "Shall I knock that problem set off and be done with it, or shall I put it off and give up my chance to feel good about having it over with?"

Here's another way to reframe the dilemma that you may like. The psychologist Alexandra Freund has pointed out that we tend to dwell on one of two things when we procrastinate: either we don't like the process the task involves, or we don't like the goal. For example, a student may procrastinate about writing a study guide: it's not the creation of the study guide that she minds (the process), it's taking the test (the goal) that she hates, because she has test anxiety. So she puts off doing anything associated with taking the test. Another student may hate doing data analysis but enjoy designing and delivering a PowerPoint presentation for the class once the data have been analyzed.

If you notice that either the process or the goal is the part of the task that makes you procrastinate, see if you can focus on the part of the task you don't mind doing so much. The first student might try telling herself, "I'm not taking the exam. My job now is to summarize what I've learned." The second student might say to herself, "This isn't just number crunching; what I'm doing is preparing for my presentation." See if reframing the task to highlight the part you enjoy (or at least don't mind so much) makes you less likely to procrastinate.

In a sentence: Redescribing the work ahead—the outcome of the work, the process, or the goal—might make the right choice more appealing.

下次你想拖延时，试着以突出机会成本的方式描述你的选择。不要问：“我应该看电影还是做问题集？”而是说：“我应该解决那个问题集并完成它，还是应该推迟它，放弃我感觉良好的机会？”

这是另一种重新定义你可能喜欢的困境的方式。心理学家亚历山德拉·弗洛因德指出，我们在拖延时会住在两件事上：我们不喜欢任务所涉及的过程，或者我们不喜欢目标。例如，一个学生可能会拖延编写学习指南：她不介意创建学习指南（过程），她讨厌的是参加考试（目标），因为她有考试焦虑。因此，她推迟做任何与参加考试有关的事情。另一个学生可能讨厌数据分析，但喜欢设计和为课堂提供 PowerPoint 演示，一旦数据被分析。

如果你发现过程或目标是使你拖延的任务的一部分，看看你是否可以关注你不那么介意做的任务部分。第一个学生可以试着告诉自己，“我现在不是在参加考试。我当前的工作是总结我学到的东西。”第二个学生可能会告诉自己，“这不仅仅是数据分析；我正在做的是为我的演讲做准备。”看看是否重新定义任务以突出你喜欢的部分（或者至少不那么介意的部分）会让你更不容易拖延。

总的来说：重新描述未来的工作 —— 工作的结果，过程或目标 —— 可能会使正确的选择更有吸引力。

TIP 71 Just Start, and You'll See That It's Not That Bad

People are surprisingly poor at predicting their emotional reactions. Sure, you know that if you overhear someone say that you're cute, it will feel good, and if they say you have a terrible sense of humor, you'll

feel hurt. People usually get the direction of their reactions right (positive or negative), but they overestimate their strength and duration.

提示 71：只需开始，你会发现事情并没有那么糟糕

人们在预测他们的情绪反应方面出奇地差。当然，你知道如果你无意中听到别人说你很可爱，你会感觉很好，如果他们说你的幽默感很糟，你会感觉受伤。人们通常能正确判断他们的反应方向（积极或消极），但他们通常会高估这些反应的强度和持久性。

Psychologists have examined this overestimation of emotions as it relates to exercise, an activity that often makes people procrastinate. They found that one of the reasons people put off exercising is that they think they will feel more miserable when they exercise than they actually do.

You may find that the same is true of mental tasks. If you can just get yourself started, you'll see that working really isn't as unpleasant as you thought it was going to be. One way to convince yourself to "just start" is to tell yourself, "I'll just work five minutes. If I really hate it, I'm allowed to stop."

When my sister wanted to develop the habit of jogging every day, she came up with a similar strategy. If she put on her running clothes and jogged to the end of her driveway, that "counted." She was allowed to quit but still tell herself, "I jogged today." Of course, 95 percent of the time, even when she had thought, "I do not feel like jogging today. This is a day I really will turn around at the end of the driveway," she kept going when she got there. It just didn't feel that bad.

If you're having a terrible time getting yourself to sit down and work, try telling yourself, "I'll make my to-do list for today. If, after I make my list, I want to take a break, I'll take a break." Once your to-do list is written out, there will probably be one or two things on it that don't seem too hard to tackle. And you're off.

But. For this tactic to work, it's crucial that you really do allow yourself to take the break if you want to, once the to-do list is written. The whole point is to make starting seem unthreatening by giving yourself permission to ease off quickly. If you know that the permission is a lie—for example, that you'll feel guilty if you take the break—you're not making it unthreatening.

心理学家已经研究了这种情绪的高估，因为它与锻炼相关，而锻炼是经常使人们拖延的活动。他们发现，人们推迟锻炼的原因之一是，他们认为他们在锻炼时会比实际感觉更痛苦。

你可能会发现 mental tasks 也是如此。如果你能让自己开始，你就会发现工作并不像你想象的那么不愉快。说服自己“开始”的一种方法就是告诉自己，“我只工作五分钟。如果真的很讨厌，我可以停止工作”。

当我妹妹想养成每天跑步的习惯时，她想出了一个类似的策略。她只要穿上运动装，跑到她的车道尽头，那就“算数”。她可以放弃，但仍然告诉自己，“我今天跑步了”。当然，95%的时间，即使她曾经想过，“我今天真的不想跑步。这是我真的会在车道尽头转身的一天”，她到了那里时仍然继续跑。她并没有觉得那么糟糕。

如果你在坐下来工作时有很大困难，试试告诉自己，“我会制定今天的待办事项清单。如果，在我制定清单之后，我想休息，我就会休息。”一旦你的待办事项列表写出来，上面可能会有一两件事情做起来并不那么困难。然后你就可以开始了。

但是，为了让这种策略发挥作用，你必须真的允许自己在写完待办事项清单后，如果想休息就休息。最重要的是让启动看起来没有威胁，通过让自己有权利很快地放松。如果你知道这个许可是在骗人——例如，如果你休息了会感到内疚——你并没有让它变得没有威胁。

In a sentence: Starting a work session will seem less odious if you give yourself permission to take a break after a short time.

TIP 72 Tell Others What You're Up To

在一句话中：如果你允许自己在短时间后休息，开始一项工作会显得不那么讨厌。

提示 72：告诉他人你在做什么

Humans are intensely social beings. Much of what we do, we do with others, and even when we do something on our own, we consider how others will view us: Will we make the people who matter to us proud or angry or happy?

If you are frustrated by the frequency with which you procrastinate, you can take advantage of your social connections to help you work on the problem. It's a start simply to tell friends, "Hey, I'm trying to procrastinate less and do a better job of keeping up with my work." The hope is that your friends, knowing of your plan, will help in two ways: they will make you accountable, and they will provide support.

Shame is a key reason that accountability works. You feel embarrassed if you've told people, "I'm going to stop procrastinating!" and then, within a week, you've obviously not stuck to your resolution. There's no shame in using shame as a prod, and if you like that idea, you can put even more on the line by using a commitment website such as stickK, 21habit, or Beeminder. Sites come and go, of course; search for "commitment contract websites" for the latest.

Most sites have similar formats: you commit to doing something—say, "Work from 7:00 to 10:00 p.m. each weeknight." Each day you log in to the website and report whether or not you met your commitment. (Some sites require that you have a referee to monitor your honesty.) If you don't meet your commitment, a certain sum from your credit card goes to a nonprofit organization. You're encouraged to pick a cause that makes the loss more unpleasant, for example, one with a political view you dislike. For added motivation, many websites broadcast your failure via your social media account.

Participating in a study group (see tip 23) also has built-in accountability. When the group meets to compare lecture notes or discuss an upcoming test, the other group members are counting on you to have done the preparatory work. The responsibility to your peers may help you meet these deadlines.

人类是极度社交的生物。我们很多行为都是与他人一起进行的，即使我们自己做一些事情，也会考虑别人如何看待我们：我们会让重要的人为我们感到骄傲、生气还是开心？

如果你对自己总是犹豫不决感到困扰，你可以利用你的社交联系来帮助你解决这个问题。你可以简单地告诉朋友：“嘿，我正在努力减少拖延，并更好地跟上我的工作。”希望你的朋友们能在你告知你的计划后，以两种方式帮助你：他们将让你有责任感，并会给予你支持。

羞愧是责任感起作用的关键原因。如果你告诉人们：“我要停止拖延了！”然后在一周内，你明显没有坚持你的决心，你会感到尴尬。用羞愧来驱使自己没有什么可羞愧的，如果你喜欢这个主意，你可以通过使用承诺网站如 stickK、21habit 或 Beeminder，将更多的内容放在公开场合。当然，网站总是变来变去，可以搜

索“承诺合同网站”了解最新的网站。

大多数网站有类似的格式：你承诺做一些事情——比如“每个工作日的晚上7点到10点工作”。每天你都需要登录网站并报告你是否履行了你的承诺。（有些网站要求你有一个裁判来监督你的诚实。）如果你没有完成你的承诺，你信用卡里的一定数额就会捐给一个非营利组织。鼓励你选择一个让损失更加不愉快的原因，比如，你不喜欢的政治观点。为了增加动力，许多网站会通过你的社交媒体账号公开你的失败。

参加学习小组（参见提示23）也有内在的责任感。当小组聚会比较讲座笔记或讨论即将到来的测试，其他小组成员依赖你完成预备工作。对同伴的责任感可能会帮助你按时完成这些任务。

In addition to holding you accountable, friends can provide positive support. Depending on the circumstances, we might need one form of support more than another. Psychologists list four types:

Emotional support: People who express sympathy and caring. For example, when you feel frustrated because you still procrastinate even though you try not to, your friends can listen to you sympathetically and encourage you to keep trying.

Informational support: People who offer advice, suggestions, or information. For example, people might offer you their own strategies for defeating procrastination or help you find a commitment website you like.

Practical support: People who do things that directly help your effort. For example, a friend sticks up for you when someone gives you a hard time for saying you are going to work instead of going to a party. Or a friend offers to check in with you to be sure you're studying the afternoon before a test.

Appraisal support: People who provide information to help you self-evaluate. For example, a friend provides an objective view of whether your efforts to procrastinate less are working. A friend might also remind you of other times your determination to change something about yourself paid off, giving you more confidence that you can defeat procrastination. 除了帮助你负责任外，朋友们还可以提供积极的支持。根据情况的不同，我们可能需要的支持形式也不同。心理学家列出了四种类型：

情感支持：那些表达同情和关心的人。例如，当你因为即使你试图不拖延，但仍感到沮丧时，你的朋友们可以同情地听你说话，并鼓励你继续试图。

信息支持：提供建议、建议或信息的人。例如，人们可能会向你提供他们自己战

胜拖延的策略，或者帮你找到一个你喜欢的承诺网站。

实际支持：那些直接帮助你努力的人。例如，当有人因为你说你要工作而不是去派对而给你带来麻烦时，一个朋友会为你挺身而出。或者，一个朋友可能会提出要在你考试前的那个下午与你确认你是否正在学习。

评价支持：那些提供信息帮助你自我评价的人。例如，一个朋友提供一个关于你减少拖延的努力是否有效的客观视角。一个朋友也可能提醒你其他时候你决定改变自己的某些事情是成功的，从而给你更多的信心，相信你可以战胜拖延。

When you read about these types of support, I expect a couple made you think, “Nah, that’s not what I need my friends to do,” and one or two made you think, “Yes!” That realization might make you selective about who you seek out for support. Obviously it’s a bad idea to talk about your antiprocrastination campaign with the worst procrastinators you know. But after those folks are ruled out, look at these different types of support, and think a bit about which of your friends are most able and willing to provide the type of support you need.

But don’t expect your friends to automatically know how to help; you probably need to tell them, and the list above can help you be more articulate in describing what sort of support you’re hoping to get and what sort of concrete actions they can take.

Some people find it hard to ask for help. Bear in mind that you probably don’t think less of people when they ask for your help. Most people are happy to assist their friends; it makes them feel good, so don’t deny others that opportunity.

In a sentence: Your social network may provide emotional support and practical help in your effort to procrastinate less, but to do so, people must know that you’re working on it and what sort of help you need.

当你阅读这些支持类型时，我猜你可能会有一两种让你觉得：“不，我并不需要朋友这样做。”也可能有一两种让你觉得：“对！”这种觉悟可能会让你在寻求支持时更有选择性。明显地，与你认识的最严重的拖延者讨论你的反拖延计划显然是个坏主意。但是，在排除了那些人之后，看看这些不同的支持类型，并稍微思考一下你的朋友们中谁最有能力并愿意提供你所需要的支持。

但是，不要期待你的朋友会自动知道如何帮助你；你可能需要告诉他们，上面的列表可以帮助你更清楚地描述你希望得到的支持类型以及他们可以采取的具体行动。

有些人觉得很难寻求帮助。请记住，当别人向你寻求帮助时，你可能并不觉得他们有什么不好。大多数人都很乐意帮助他们的朋友；这会让他们感觉很好，所以不要剥夺别人这个机会。

简单来说：你的社交网络可能会在你努力少拖延的过程中提供情感支持和实际帮助，但是为了做到这一点，人们必须知道你正在为之努力以及你需要的帮助类型。

TIP 73 Consider Whether Your Procrastination Is a Way to Self-Handicap

提示 73：考虑你的拖延是否是一种自我设限的方式

In my sixth-grade shop class we made birdhouses. After the first work session, I concluded that I was Bad at This. I kept getting confused about how to fit the template onto the plywood, and my saw cuts weren't straight. I soon made a show of not trying. I worked quickly, I didn't pull and redrive nails that bent, and so on. I was making a preemptive excuse for poor work.

Psychologists call this self-handicapping: we impose a handicap on ourselves so that we have an excuse for our failure.

Procrastination makes it easy to self-handicap but deny what you're up to. You don't say, "I'm not going to study for this exam, because if I study and fail I'll feel stupid." Instead you fill your time with other things (laundry, socializing, other work), and somehow you don't get around to studying until the last minute. And there's your excuse: "Oh no, I was so busy I barely had time to study for this!"

Why would you do that? Doesn't it make sense to try your hardest? Even if you think the chances of earning a good grade are low, at least you can improve the odds by studying. Self-handicapping must mean that getting a low grade after you studied reveals something deeply troubling. What could it be?

The answer, of course, is "stupidity." In tip 60 I mentioned that many people believe that intelligence is largely genetic and largely

unchangeable. They further believe that, being genetic, intelligence is a matter of what you are, not what you do; that is, smart people didn't get that way by working hard but by having good genes. So if you need to work hard to pass a test, that shows that you're not very smart. Imagine, then, what it shows about a person if he works hard and fails a test!

在我上六年级的手工课上，我们做了鸟屋。在第一次工作会议后，我得出了一个结论，我对此并不擅长。我一直在困惑如何将模板放在胶合板上，而我的锯子切割得也不平直。我很快就做出了一副不再努力的样子。我工作得很快，我也不会拉出和重新驱入弯曲的钉子等等。我在为糟糕的工作找借口。

心理学家称之为自我设限：我们在自己身上施加障碍，这样我们就有借口解释我们的失败。

拖延使人们可以轻易地进行自我设限，但却否认自己正在做什么。你不会说“我不打算为这个考试复习，因为如果我复习了还失败了，我会觉得傻。”相反，你会把时间填满其他事情（洗衣服，社交，其他工作），并以此总是找不到时间去复习，直到最后一刻。这就是你的借口：“哦不，我太忙了，几乎没时间为这个复习！”

你为什么会这样做呢？为什么不尽力去做呢？即使你认为得高分的机会很低，至少你可以通过学习来提高赢取的机会。那么，自我设限一定意味着在你努力学习后的低分表明了一些深层次的问题。那可能是什么呢？

答案，当然，是“愚蠢”。在第 60 条提示中，我提到很多人认为智力主要是遗传的，且基本上不可改变。他们进一步认为，由于是遗传的，智力是你天生的，而不是你努力的结果；也就是说，聪明人之所以聪明，不是因为他们努力工作，而是因为他们有好的基因。所以，如果你需要努力通过一次测试，那就说明你不太聪明。那么，如果一个人努力工作却失败了，那又说明了什么呢！

These beliefs about intelligence are false. Yes, intelligence is determined partly by your genes, but it also depends on what you do; intelligence can be improved, and learning is the way to improve it. Therefore, “If you're smart, you don't need to study” is wrong. So is “If you fail a test, that shows you're dumb.”

So what's a better way to think about failing a test? There's no reason to think of it differently from any other challenging task. If you showed up for open-mic night at a comedy club and didn't prepare, you wouldn't get many laughs. Now, suppose you do prepare and you still don't get many laughs. Does that mean you are simply unfunny? Or does it mean that comedy is challenging and that you need to prepare carefully and expect that becoming successful will be a long process?

Teaching yourself to learn is not easy. Over the course of reading this

book, you' ve seen that there are a lot of components you have to get right. Be patient. If you stick with it, you will see results.

In a sentence: Some people procrastinate as a form of self-handicapping, so that they have an excuse if a test or project goes poorly.

关于智力的这些观念是错误的。是的，智商部分上确实取决于你的基因，但它也取决于你的行为；智力是可以提升的，而学习就是提高它的方式。因此，“如果你聪明，你就不需要学习”是错误的。“如果你考试失败，就说明你笨”这种观念也是错的。

那么，有什么更好的方式来看待考试失败呢？没有理由把它与任何其他具有挑战性的任务区别对待。如果你参加了喜剧俱乐部的现场麦克风之夜，但没有做好准备，你是不会得到很多笑声的。现在，假设你做了准备但仍然没有得到很多笑声。这是否意味着你就是不会讲笑话？还是说喜剧有挑战性，你需要精心准备并期待成功将是一个长期的过程？

教自己学习并不容易。在阅读这本书的过程中，你已经看到了必须掌握的许多要素。要有耐心。如果你坚持下去，你会看到结果。

总结一句话：有些人会以拖延行动作为自我设限的一种形式，以便在测试或项目表现不佳时找到借口。

TIP 74 Make the Temptation a Reward

This strategy should be your last resort: compromise between the work you must do and an alternative activity that tempts you. Do some of each by making the tempting activity a reward for working.

This strategy might be especially effective when you judge that the thing that tempts you to procrastinate is time sensitive. To put it more colloquially, FOMO is involved. FOMO stands for fear of missing out, but here I' ll expand the term to mean a more general feeling of missing out.

提示 74：将诱惑变成奖励

这策略应作为你的最后手段：你必须完成的工作和吸引你的其他活动之间做出妥

协。通过将诱惑的活动变成工作的奖励，进行两者的平衡。

当你判断吸引你拖延的事情是时间敏感的时候，这个策略可能特别有效。用更口语化的说法，涉及到FOMO。FOMO代表着对错过的恐惧，但在这里我将这个术语扩展为一种更通用的错过感。

Maybe a new “Halloween update” for your favorite video game went live a few hours ago or your favorite team is playing and the game is televised. Whatever the tempting alternative, the problem is not that you dread the work you’ re supposed to do or even that the tempting alternative is that amazing; it’ s that if you work, you’ re going to feel that you’ re missing something you cannot possibly get later. What should you do?

First, let’ s note what you should have done. A time-sensitive, attractive activity is usually something planned, something you know about in advance. As noted in tip 63, you should put social events into your calendar, not just work stuff. When you hear on October 16 that the Halloween update is coming on October 30, block out a couple of hours at the relevant time. Protecting time for important social events will reduce your procrastination.

Okay, you didn’ t protect this time, and now you’ ve got a couple of hours of work you really need to do. If the tempting alternative can be packaged into time-limited chunks, you can do a bit of the fun activity as a periodic reward for working—say, work thirty minutes, then treat yourself to five minutes of the game. Note that I’ m drawing a distinction between wanting to do something because it’ s special now and generally having a problem focusing your attention once you’ ve begun to work because you’ d rather be playing a game or checking social media. We’ ll address that problem in the next chapter.

This strategy is a last resort, because you run the risk of a “break” extending much longer than you’ d intended. If you’ re teetering on the brink of ignoring work altogether in favor of the tempting alternative, deploy this last-ditch tool.

In a sentence: If an activity is so tempting that it will make you skip your work session altogether, make that activity a reward for work completed.

也许几个小时前你最喜欢的视频游戏刚刚发布了一个新的“万圣节更新”，或者你最喜欢的球队正在电视上比赛。不论这个诱人的其他选择是什么，问题不是你害怕要做的工作，也不是这个诱人的其他选择那么棒；而是如果你在工作，你会感觉你错过了一些你无法再得到的东西。那么你应该怎么做呢？

首先，让我们看看你本应该做什么。一个时间敏感、吸引人的活动通常是事先计划好的，是你提前知道的事情。如在 63 号提示中提到的，你应该把社交活动也放入你的日程表，而不只是工作。当你在十月十六日听说万圣节更新将在十月三十日到来时，先在相关时间预留出几个小时。为重要的社交事件预留时间可以减少你的拖延。

好的，你没有保留这段时间，现在你确实需要做几个小时的工作。如果这个诱人的选择可以被打包成为有时间限制的部分，那么你可以把这个有趣的活动作为工作的定时奖励——比如，工作三十分钟，然后奖励自己玩五分钟的游戏。请注意，我在这里将想要做某件事是因为现在它很特别，与你开始工作后通常会因为你更愿意玩游戏或者刷社交媒体而无法集中注意力，两者进行了区分。我们会在下一章解决这个问题。

这种策略是最后的手段，因为你有可能休息的时间比你预期的要长得多。如果你正处在忽视所有工作，只为了那个诱人的其他选择的边缘，那就使用这个最后的工具。

一句话：如果一个活动太诱人，让你会越过你的工作阶段，那就把那个活动作为工作完成的奖励。

TIP 75 Track Your Progress but Ignore Your Streaks

提示 75：跟踪你的进度，但忽略你的连胜记录

The key to developing a habit is consistently working at the time planned every day. If you keep track of how frequently you stick to this plan, you can take deserved pride in your dedication. It's easy to keep track if you make a tick mark on your calendar for each day worked.

There will be days when you sit down at your work space and feel unmotivated and pessimistic about getting anything done. Sometimes you'll be wrong, but other times the feeling will be accurate. You can't concentrate, and you have the terrible day you anticipated.

There are two reasons why showing up every day matters. First, even when you foresee an unproductive day and you're right, something is much more

than nothing. You're still making progress. Second, and more important, you are showing yourself that the work matters to you. I discuss self-image more in chapter 13, but for now, consider this: When you see someone who sticks to her work schedule every day, even when she's tired or getting over a cold or just doesn't feel like working, what do you think? Obviously, you conclude, "That work is really important to her."

You draw the same conclusion when you see yourself work consistently. Noting that you have met your work commitment builds your self-image as a learner.

But there's an important distinction between taking pride in working consistently versus becoming obsessed with a work streak. Do not think to yourself, "Wow, I've worked 50 days in a row. I wonder if I can make it to 100. Or 365!" Monitoring streaks has a significant drawback: a single failure takes on undue significance. For example, a dieter succumbs to a fancy dessert at a wedding and so concludes, "I blew it. After all that work, I ate that rich dessert." So that night, when she's at home, she figures, "As long as my diet is shot, I may as well eat this ice cream."

养成习惯的关键是每天都按计划坚持工作。如果你跟踪自己坚持这个计划的频率，你可以为自己的专注感到自豪。如果你在每天工作的日子，在你的日历上做个记号，跟踪就很容易。

总会有这样的日子，当你坐在工作区时，你感到毫无动力，对完成任何事情都持悲观态度。有时你会错，但其他时候，这种感觉是准确的。你无法集中注意力，你预料到的糟糕的一天实现了。

每天坚持的原因有两个。首先，即使你预见到一个低效率的一天，你是对的，但做了一些事情总比什么都不做要好。你仍然在进步。其次，更重要的是，你向自己证明这项工作对你来说很重要。在第 13 章中，我更多地讨论自我形象，但现在，想想这样一个问题：当你看到一个人每天都坚持她的工作计划，即使她感到累，或者刚刚从感冒中恢复，或者就是不想工作，你会怎么想？显然，你会得出结论，"那项工作对她很重要。"

当你看到自己坚持工作时，你也会得出相同的结论。注意到你已经完成了你的工作承诺，能增强你作为学习者的自我形象。

但是，在自豪地坚持工作与成为工作连续性的痴迷之间，有一个重要的区别。不要对自己说，"哇，我已经连续工作了 50 天。我不知道我能否坚持到 100 天。或者 365 天！" 监测连续性有一个重大缺点：一次失败会被赋予过度的重要性。例如，一个节食者在婚礼上抵挡不住豪华甜点的诱惑，便下定结论，"我搞砸了。经过那么多努力，我还是吃了那个丰富的甜点。" 所以那天晚上，当她在家里时，她就想，"既然我的饮食已经乱了，我也可以吃这个冰淇淋。"

In fact, not only should you avoid thinking in terms of streaks, you should take days off for things that are really important. If you're at a restaurant celebrating your girlfriend's birthday, you shouldn't be glancing at your watch and badgering her to finish so you won't be late for your study session. That's not showing yourself that you are dedicated to learning; that's showing yourself that your streak matters more than your girlfriend. Be consistent, but don't prize streaks.

In a sentence: Taking note of the consistency of your work habits will be motivating and help to maintain them, but don't be fixated on streaks, because streaks are inevitably broken (and should be!); a broken streak will needlessly discourage you.

For Instructors

实际上，你不仅应该避免把连续性当作目标，并且还应该为真正重要的事情休息调整。如果你在餐厅庆祝女朋友的生日，你不应该一边看着手表，一边催她快点吃完，以免误了你的学习时间。这并不是向你自己展示你对学习的专注，反而是在向你自己展示你的连续性比你的女朋友更重要。要做到持之以恒，但不要过度重视连续性。

总结来说：关注你工作习惯的持续性将有助于激励你，并帮助你保持这些习惯，但不要过分关注连续性，因为连续性总有被打破的时候（也应该被打破！）；一旦连续性被打破，你就会无谓地对自己失去信心。

教师注意事项

Procrastination is a nearly universal problem, and if you struggle with it, too, it may help to tell your students so. Some students see themselves as weak, saddled with a self-control deficiency that few others can understand. You can help students see that procrastination is a nuisance everyone faces and that successful people learn to manage. Students can learn to manage it, too.

Some of the tips listed in this chapter are good candidates for a bit of in-class modeling and support. For example, students are likely familiar with the idea of a to-do list, but they may not be experienced in creating one, and they may especially need help in thinking about how to break complex tasks into more manageable ones.

In addition, students will need help thinking about scheduling these subtasks. Instructors can help by providing concrete reminders. In other words, don't simply remind the class, "You're all working on your papers, right? They are due in two weeks." Instead, let them know what they should have completed by this point: "Don't forget, your papers are due in two weeks. You should have picked your topic, and you should have five of your ten sources identified. If you're not there, don't panic, but I want to see you right after class." In fact, you might consider not just providing such guidelines about desirable progress but actually setting interim deadlines.

Even for shorter tasks, students may be frozen by indecision because they are unsure of exactly how to proceed. You can help by making assignments as clear as possible. And think this through: If a student doesn't understand what's required or understands but has no idea how to get started, what are her options? Is it clear where she can get help? Make sure every student knows.

拖延症几乎是一个普遍的问题，如果你也在与之斗争，向你的学生坦白可能会有所帮助。一些学生将自己视为软弱，背负着自我控制力不足的负担，很少有人能理解他们。你可以帮助学生认识到拖延是每个人都会遇到的困扰，成功的人学会了如何管理它。学生也可以学会管理它。

本章列出的一些建议很适合在课堂上进行一些示范和支持。例如，学生可能对待办事项清单这个概念很熟悉，但他们可能没有创建过一个，他们可能特别需要在思考如何将复杂的任务分解为更易管理的任务方面获得帮助。

此外，学生还需要帮助思考如何安排这些子任务。教师可以通过提供具体的提醒来予以帮助。换句话说，不要只是提醒全班人说：“你们都在写论文，对吧？那两周后就要交了。”而应该让他们知道到这个时候应该完成的进度：“不要忘了，你们的论文两周后就要交了。你应该已经选好题目，并且已经确定了十个来源中的五个。如果你还没做到，不要惊慌，但我希望你下课后来找我。”事实上，你可以考虑不仅提供关于期望进度的指导，还可以设定中期截止日。

即使对于较短的任务，学生可能也会因为不确定如何进行而犹豫不决。你可以通过让作业尽可能清楚来提供帮助。并想明白这一点：如果一个学生不了解需要做什么，或者明白了但不知道如何开始，她有什么选择？她明确知道在哪里可以得到帮助吗？请确保每个学生都清楚。

Summary for Instructors

If you' re troubled by procrastination, humanize the problem for your students by telling them so, and share how you deal with it.

Help students think through how to prioritize tasks and break big tasks into smaller chunks.

教师摘要

如果你因为拖延问题而烦恼，那就把这个问题人性化地告诉你的学生，并分享你是如何处理它的。

帮助学生思考如何优先处理任务，将大任务分解为小任务。
Set interim deadlines for large projects.

Be sure that assignments are clear and students know what to do if they don' t know how to get started.

为大型项目设定临时截止日期。

确保作业要求明确，学生们知道如果不知道如何开始该做什么。

第 12 章 如何保持专注

Chapter 11 described procrastination and how to overcome it, but getting going is not the only problem; you also need to stay on task.

Let's consider a typical case of distraction. A student is studying, and her phone pings. It's an unimportant text message, but it's from someone with whom she has a Snapstreak that she hasn't maintained today. The next thing she knows, she's on Snapchat, extending that streak and others, then adding to her story, and suddenly thirty minutes have elapsed.

The psychologists Angela Duckworth and James Gross have described four mental steps that apply to distraction: first, the student arranges her situation for studying and it includes her phone; second, the student shifts her attention from studying to her phone when it pings; third, she evaluates the notification as important; and fourth, she responds by going on Snapchat.

The result—that she's no longer studying—could have been interrupted at any of the four stages. The phone could have been elsewhere and she would not have heard it. Or if the phone had been present, she could have ignored the notification. Or if she had paid attention to the notification, she could have decided it was unimportant. Or if she had decided it was important, she could have said to herself, “Even though it's important, I still ought to work now.”

第十一章描述了拖延症以及如何克服，但是启动并不是唯一的问题；你还需要专注于手头的任务。

让我们考虑一种常见的分心的例子。一名学生在学习，手机突然响了。只是一条无关紧要的短信，但它来自于她今天尚未保持连续互动的一个快照联系人。接下来，她就在 Snapchat 上，延续那个连环和其他的，然后添加到她的故事上，突然之间，三十分钟就过去了。

心理学家安吉拉·达克沃思和詹姆斯·格罗斯描述了适用于分心的四个心理步骤：首先，学生为学习安排了她的环境，但包括了她的手机；其次，当手机响的时候，她将注意力从学习转移到手机上；第三，她将通知评估为重要；最后，通过登录 Snapchat 来做出反应。

结果是——她不再学习——在任何一个阶段都可能被打断。手机如果放在别处，她可能就听不见它。或者如果手机在身边，她可以无视那个通知。如果她注意到通知，她可以决定这不重要。或者如果她认为那是重要的，她可以对自己说：“尽管这很重要，我现在还是应该学习。”

Note that each change sounds harder than the previous one. It's relatively easy to turn your phone to silent for an hour but much harder to keep yourself off Snapchat once you decide that your unfinished Snapstreak is important. Later in this chapter we'll consider a number of methods to interrupt distractions, focusing especially on those that are easiest.

I've described the loss of focus caused by distraction from the environment. You can also lose focus due to mind wandering, a term scientists use just as you do; it's when your attention, seemingly on its own, moves from your desired focus to something else. As you would predict, mind wandering increases (1) the longer you've been doing the task, (2) the more boring you find the task, and (3) if you consider the task really simple or really difficult.

Why the mind wanders is not well understood. Some researchers believe it happens when people judge current thoughts to be unimportant. Others believe that mind wandering is actually the natural state of the brain, which is why it takes effort to focus on one thing. Though we don't understand what causes it, researchers have identified some effective techniques to reduce it.

WHEN TRYING TO FOCUS YOUR ATTENTION

What your brain will do: It will direct your attention away from work when new information appears in the environment (distraction) or it will spontaneously redirect your attention to thoughts other than work (mind wandering).

请注意，每一次的变化听起来都比前一次更难。将手机调整到静音模式一个小时相对较简单，但一旦你决定未完成的 Snapchat 串联很重要时，让自己远离 Snapchat 就难了很多。在本章的后面，我们将考虑许多方法来打断注意力分散，特别关注那些最简单的方法。

我描述了由环境中的干扰引起的注意力丧失。你也可能由于心智游走而丧失专注力，这是科学家们像你一样使用的一个术语；它是指你的注意力似乎自行从你想要专注的事物转移到了其他事物上。正如你所预测的，心智游走的情况会随着（1）你做任务的时间越长，（2）你对任务感到越无聊，以及（3）如果你认为任务非常简单或非常困难的情况而增加。

我们对于为什么大脑会游走的原因并不了解。有些研究人员认为，当人们认为当

前的思考不重要时，就会发生这种情况的。另有些人则认为，心智游走实际上是大脑的自然状态，这就是为什么专注于一件事需要付出努力。尽管我们不明白其原因，研究人员已经确定了一些有效的技巧来减少它。

当你试图集中注意力时

你的大脑会做什么：当环境中出现新信息时，它会把你的注意力从工作中转移开（分心），或者它会自发地将你的注意力转移到工作之外的想法上（心智游走）。

How to outsmart your brain: To limit distraction, the easiest fix is to change your surroundings. Defeating mind wandering is harder, and the best strategy may be to accept its inevitability and to return promptly to the work at hand.

Different circumstances call for different techniques to stay focused, so we' ll review several strategies, and I' ll describe when to use each technique.

如何智胜您的大脑：限制注意力分散的最简单的解决方案是更改周围环境。战胜心神不宁更难些，最好的策略可能是接受它的不可避免性，并迅速返回到手头的工作。

不同的情况需要不同的聚焦技巧，因此我们将审查几种策略，并描述何时使用每种技术。

TIP 76 Choose Your Work Location with Care

“Find a quiet place to work.” It' s one of the most commonly offered pieces of advice for students, and with good reason. A location can facilitate concentration or bristle with distractions, yet once you pick a spot to work, you' ll probably stay there even if you find it hard to concentrate; it' s a pain to move. Not everyone has choices about where to work, but if you do, let' s consider the features you should look for.

On the one hand, the characteristic you' re after in a study space is pretty obvious: find the place that is closest to being distraction free. On the

other hand, different environments offer different types of distractors, and these bother people more or less. A lot of my colleagues love to work at home because it's quiet and people don't drop in, but I get distracted by the kitchen—I wander in, open the fridge, and stare—and I'm distracted by all the little home maintenance and repair jobs I know I ought to do. A friend of mine told me he can't work in the same room as a bed or comfy chair because he'll talk himself into a “five-minute power nap” that turns into an hour.

提示 76: 仔细选择你的工作地点

“找一个安静的地方工作。”这是对学生最常提出的建议，而且有很好的理由。地点可以促进集中注意力，或者充满干扰，但是一旦你选择了一个工作的地点，即使你发现很难集中注意力，你也可能会待在那里，因为搬动是件麻烦事。并不是每个人都可以选择工作的地方，但是如果你可以，那就让我们考虑一下你应该寻找的特点。

一方面，你在学习空间中寻找的特点是非常明确的：找到一个最接近没有干扰的地方。另一方面，不同的环境提供了不同类型的干扰源，这些干扰源对人们的影响更大或更小。很多我的同事喜欢在家里工作，因为这里安静，人们不会突然来访，但我却被厨房分心——我会走进去，打开冰箱，发呆——房屋的各种小修小补我知道我应该做，这都让我分心。我有一个朋友告诉我，他不能在有床或舒适椅子的房间里工作，因为他会说服自己“进行五分钟的小憩”，然后就变成了一个小时。

You have to figure out what works best for you. When I was in college, I sometimes studied in empty classrooms, and I picked a different one each night (see tip 49). That was great, because a room containing nothing but a whiteboard and desks is really distraction free. But later I realized that I didn't like studying alone. You may benefit from being around other people who are also working. We are a social species, and we tend to feel and do what others around us are feeling and doing. It's called social contagion: if everyone around me is laughing, fearful, exercising, or studying, I will likely share those feelings or do those activities. Studying in the library meant being surrounded by other people working hard, and that inspired me.

In addition to where you work, give thought to when you work. Some people work best while others sleep, because a lot of distractions retire when people do. I do this myself, usually getting up around four. That schedule is not practical for most people, I realize—you need to have common sense about your body's sleep preferences, and, whatever your preferences, your schedule may have limits you can't adjust. But especially if you're a

college student with a flexible schedule, think about going to sleep earlier and waking earlier on weekdays. It may make it much easier to find distraction-free time to study.

Finally, don't be unrealistically optimistic about situations in which you think you can work effectively. You may think you'll get work done while you're babysitting an infant ("He'll probably sleep a lot") or at your friend's intramural basketball game ("She mostly sits on the bench anyway") or in an airport or riding shotgun in your friend's car as you drive home together for Thanksgiving break. There's a temptation to think, "Oh, I'm going to be in this boring situation, I should do something useful." But sometimes you're bored in locations that are poorly suited to working. So, sure, bring a book for the layover; maybe you'll get some reading done. Just don't count on it.

In a sentence: The injunction "Pick a quiet place to work" is mostly right, but it's too simple; you should think about the best time, too, and about the possibility that other people may energize you, not distract you.

你需要找出最适合自己的工作方式。当我在上大学的时候，我有时会在空教室里学习，每晚都选择一个不同的教室（参见第 49 条建议）。这很好，因为一个只有白板和桌子的教室真的没有任何干扰。但后来我发现我不喜欢单独学习。你可能会从周围也在努力工作的人那里受益。我们是一个社交的物种，我们倾向于感受并做周围的人正在感受和做的事情。这称为社会感染：如果周围的每个人都在笑，害怕，运动或学习，我很可能会分享这些感情或进行这些活动。在图书馆学习意味着被其他努力工作的人围绕，这给了我灵感。

除了你工作的地点，也要思考你工作的时间。一些人在别人睡觉的时候工作效率最高，因为当人们休息时很多干扰也会退去。我就是这样做的，通常在四点左右起床。我意识到这个时间表对大多数人来说并不实际——你需要有关于身体睡眠偏好的常识，而且，无论你的喜好如何，你的时间表可能有无法调整的限制。但如果你是一个日程安排灵活的大学生，尝试早点睡觉并在工作日早点醒来。这可能会让你更容易找到没有干扰的学习时间。

最后，不要对你认为能够有效工作的情况过于乐观。你可能会认为在照看婴儿时可以完成工作（“他可能会睡很多觉”），或者在朋友的校内篮球比赛中（“她大部分时间都是坐在板凳上的”），或者在机场，或者在朋友的车子里搭便车去度感恩节假期。有种想法会让你觉得，“哦，我要在这个无聊的情况下，我应该做些有用的事。”但有时候你在一些不适合工作的地方会感到无聊。所以，确实，如果你有很长的中转时间，请带一本书来；也许你会读一些书。只是别指望它。

简而言之：“选择一个安静的地方工作”的谕令大部分是对的，但它太简单了；你也应该思考最佳的时间，以及其他可能会给你带来活力，而不是干扰你。

TIP 77 Improve Your Work Location

Sometimes you can't choose your location, or maybe you've chosen the best one available but it's still not ideal. Then what? You can make small changes that will reduce the chances that you'll be distracted.

Let's start with distractions in a classroom or lecture hall. You should try to sit in the front row or near it. That way, there is less chance that someone in front of you will do something distracting, both because there are fewer rows of people in front of you and because people who sit near the front tend to be more serious about paying attention. Furthermore, sitting close to the speaker allows you to see her facial expressions better, and that will provide a small assist to maintaining your attention.

提示 77：改善你的工作地点

有时你无法选择自己的地点，或者你已经选择了最好的地点，但它还是不理想。那该怎么办呢？你可以做些小改变，以减少你被分心的机会。

让我们从课堂或讲堂的干扰开始说起。你应该试着坐在前排或者靠近前排。这样一来，面前的人做些让你分心的事情的机会就会减少，既因为你前面的人数更少，又因为坐在前排的人通常更认真地关注。此外，靠近演讲者坐可以让你更好地看清她的面部表情，这将对保持你的注意力提供一点帮助。

What if you arrive too late to get a seat in front and someone in front of you with a laptop starts watching *New Girl* or shopping for vintage watches? It's going to be hard to ignore the activity on the screen, so you should change seats if you can. If that's not possible, at least try to shift your body in your seat to make the screen harder to see.

Suppose a friend keeps talking to you during the lecture. It's awkward to move or to tell them to be quiet. Tell them that you're having a hard time catching everything and see if that helps. If that doesn't work, say that you're going to start sitting closer to the front to be sure you can hear. That way you're not shutting them out, but you're making

it awkward for them to keep chatting with you.

You face different distractions when you're working in a public place like a library or coffee shop. If the problem is just noise, try wearing foam earplugs. Another problem is that because you're studying in a public place, people might assume you're open to chatting. Try selecting a seat so that your back will face most foot traffic. Not looking up often will help, and wearing a cap pulled low makes it look to others like you are in your own world and will make them reluctant to invade it. If you add noise-canceling headphones, that should seal the deal.

But the greatest source of distraction may be electronic, not human. When I work on my computer, if I can see open tabs, documents, or folders, I will think of other work to be done or fun websites to visit. If you use full-screen mode, you can see only what you're trying to focus on.

Your phone is easier to deal with, because you can set it to silent. It's tempting to think, "I'll just ignore notifications," but the very act of ignoring one is an interruption. Thus, if you turn your phone off, it's better than setting it to silent; you will be less tempted to take a quick peek to see if you've gotten any messages. Schedule periodic check-ins during work sessions.

如果你到达的太晚，没能找到前排的座位，而前排有人用笔记本电脑开始看《生活大爆炸》或者在网上购物该怎么办？很难忽视屏幕上的活动，所以如果可以的话，你应该换个座位。如果这不可能，至少尝试在座位上转移身体，使屏幕更难被看到。

假设有朋友在演讲时一直和你说话。移动或告诉他们安静下来会很尴尬。告诉他们你很难抓住所有内容，看看这是否有帮助。如果这不奏效，就说你将开始坐得更近一些以确保你能听到。这样你就不会把他们排除在外，但你使他们和你聊天变得尴尬。

当你在图书馆或咖啡店等公共场所工作时，你会面临不同的干扰。如果问题只是噪音，尝试戴上泡沫耳塞。另一个问题是，因为你在公共场所学习，人们可能会认为你愿意聊天。尝试选择一个座位，这样你的背部可以面向大部分的人流。少抬头会有所帮助，带上一顶低垂的帽子可以让其他人觉得你在自己的世界里，他们会不愿打扰你。如果你加上降噪耳机，那就应该能解决问题。

但最大的干扰源可能是电子设备，而不是人。当我在我的电脑上工作时，如果我能看到打开的标签页、文档或文件夹，我会想到其他需要完成的工作或者有趣的网站去浏览。如果你使用全屏模式，你只能看到你正在试图关注的内容。

你的手机更容易处理，因为你可以将它设置为静音。人们常常会想，“我会忽视通知的”，但忽视通知本身就是一种打扰。因此，如果你关掉手机，比设置为静

音要好；你会不太想快速查看是否收到任何信息。在工作期间安排定期检查。

If you think you can be (or need to be) a little more intense about limiting your access to distracting digital content, you can install a screen-time limitation app that does it for you. Tools such as Freedom, AntiSocial, Cold Turkey, and SelfControl let you make a decision now about how much time you will allow yourself to spend using specific apps later.

If that approach seems too extreme, here are two other ways to limit your off-task time. First, you can install a screen-monitoring app that measures how much time you spend using different apps over the course of a week. Second, you might turn off auto-login for social media apps. The act of typing in your user name and password is a pain and the requirement will probably make you check in less often. You might also turn off alerts for some apps.

You can see two general principles running through these ideas. First, if something distracts you, remove it from your environment or at least make a change so it will bother you less. Second, if the distracting object is something you tend to seek out, make it harder to access.

The next tip further explores this second idea — the problem of distractions that you yourself seek out.

In a sentence: If a situation has something distracting in it, you can remove the distractor or make it less noticeable; if it's a distractor you seek out, you can make it harder to access.

如果你认为自己需要（或需要）对限制接触令人分心的数字内容更加强烈一些，你可以安装一个屏幕时间限制应用程序来为你做这件事。Freedom、AntiSocial、Cold Turkey 和 SelfControl 等工具可以让你现在就决定以后会允许自己花多少时间使用特定的应用程序。

如果你认为这种方法太极端，这里有两种其他方式可以限制你偏离任务的时间。首先，你可以安装一个屏幕监控应用程序，来计算你在一周内使用不同应用程序的时间。其次，你可以关闭社交媒体应用程序的自动登录功能。输入用户名和密码是一件让人烦恼的事情，这个要求可能会让你少查看一些。你也可以关闭一些应用的提醒。

你可以在这些想法中看到两个通常的原则。首先，如果有什么东西让你分心，就从你的环境中移除它，或者至少做出一些变动使它较少打扰你。其次，如果令人分心的物体是你倾向于寻找的，就使其难以获取。

下一个提示进一步探讨了这第二种想法——你自己寻找的分心的问题。

总结起来就是：如果一个情境中有令人分心的因素，你可以移除干扰因素或使其不那么显眼；而如果是你主动寻找的干扰源，你可以让它难以接触。

TIP 78 Don' t Choose Distraction

提示 78：不要选择分心

A friend of mine who grew up in Belgium and France described a difference in the work habits of Americans and Europeans: “Here, you tell yourselves you work all the time, but you’ re always doing something else while you work. In France, if you want to have an espresso, you have an espresso. Here, you get the espresso, and you work while you drink it. Or you pretend to listen to music while you’ re working. Or you put your feet up on your desk and say, ‘Look at me. I’ m relaxing, but I’ m also working.’ ”

People are terrible at doing two things at once. Much—perhaps most—of the distraction people suffer is self-imposed. They just don’ t realize what they’ re doing to themselves. Anytime you multitask, you are distracting yourself.

It’ s obvious that you can’ t do a task—say, write a paper—as well if you’ re simultaneously doing something else, such as working math problems. It’ s less intuitive (but true) that there’ s also a cost when you switch between tasks, as when a student works on an essay while participating in one or more texting conversations. The cost is traceable to the difference in the “mental rules of the game” of the two tasks. For example, if you’ re texting a friend while writing an essay on Invisible Man for English class, you use one way of writing for the essay and a different way of writing when you text. When you switch between them, you need to do a mental reset and say, “Okay, now I’ m writing this way.” A great deal of research going back to the 1990s shows that this reset happens even if the tasks are very familiar and very simple, such as driving and holding a conversation. You’ d think you could keep two very simple tasks in mind at once, but you can’ t. There’ s always a mental cost to switching.

Now, it’ s okay to say to yourself, “I don’ t care if I write the essay

a little slower—I want to text my friend while I write it.” Fair enough. I just want you to know that the cost is probably higher than you think. Laboratory studies show that even when people realize that there’s a cost to multitasking, they consistently underestimate it.

That’s especially true for media multitasking—that is, listening to music or having a video playing in the background while you work. Surveys of students show that they think this sort of multitasking doesn’t get in the way of studying, and some say it even helps. But research tells a different story. Most studies have students come to a laboratory and bring the sort of music or video they play while studying. Then they are given a chapter of a textbook to read or some math problems to solve; some people have the music or video going while they work, and others don’t. The results for video content are really clear: if a video plays, work suffers in time, accuracy, or both. That’s true even when people feel as though they are ignoring it and it’s just background noise.

我一个在比利时和法国长大的朋友描述了美国人和欧洲人的工作习惯之间的差异：“在这里，你们告诉自己一直都在工作，但你们总是在工作时做别的事情。在法国，如果你想喝一杯浓缩咖啡，你就专心去喝。而在这里，你喝咖啡的时候还在工作。或者你假装在工作的同时听音乐。或者你把脚放在桌子上，然后说，‘看着我，我在放松，但我也在工作。’”

人们很难同时做两件事。许多甚至大部分人遭受的干扰是自己造成的。他们只是没意识到自己对自己做了什么。每当你一心多用，你就在分散自己的精力。

很显然，如果你同时做些别的事情，例如做数学问题，你就不能把一项任务（比如写论文）做得很好。另一个不那么直观但真实的问题是，在任务之间切换也会产生成本，比如一个学生在参与一次或以上文本对话的同时写论文。这个成本源于两个任务的“心理规则”之间的差异。例如，如果你在写关于《透明人》的英语论文的同时给朋友发短信，你在写论文时会用一种写作方式，在发短信时使用另一种写作方式。当你在这两者之间切换时，你需要进行一次心理重置，告诉自己，“好，我现在要这样写。”自 20 世纪 90 年代起的大量研究表明，这种重置即使在任务非常熟悉且非常简单的情况下也会发生，比如开车和聊天。你可能会认为自己可以同时记住两个非常简单的任务，但实际上不行。切换总会有心理成本。

但是，你可以对自己说，“我不在乎写论文慢一些，我想在写论文的时候给朋友发短信。”这没问题。我只是想让你知道，这个成本可能比你想象的要高。实验室的研究显示，即使人们意识到一心多用会有代价，他们也常常低估这个代价。

尤其是对于媒体多任务处理，也就是在工作时听音乐或放视频。学生调查显示，他们认为这种多任务处理方式不会影响学习，有些人甚至说这样有帮助。但研究告诉我们不同的故事。大部分的研究都是让学生来到实验室，带来他们学习时播

放的音乐或视频。然后他们要么阅读教科书的一章，要么解决一些数学问题；有的人在工作时播放音乐或视频，有的人则不播放。视频内容的结果非常明确：如果播放视频，工作的时间和精度或者两者都会受到影响。即便人们感觉他们完全忽视了它，把它当做背景噪音，效果仍然如此。

Music, however, is more complicated. Researchers have tried all the variations you would probably think of: music with lyrics versus instrumental, classical versus pop, and so on. None seems to make much difference. Music sometimes helps academic tasks and sometimes hurts, because it has two conflicting effects: it's distracting, but it also has the potential to energize listeners; that's why people listen to music while they work out. Whether the combined effect is positive or negative depends on how energetic you're feeling, the difficulty of the task, and other factors.

When we add another task while we're working, it tends to be one that provides an emotional lift. We listen to music, text a friend, or check social media. Since these tend to affect your performance negatively, rather than seeking a boost by multitasking, get your emotional lift during rest breaks.

The bottom line on media multitasking is this: playing a video, even in the background, will interfere with your work. Music may be okay at times, but be cautious in drawing that conclusion. As I've emphasized throughout this book, people aren't great at evaluating their own thought processes or the quality of their work.

In a sentence: Don't multitask; you can't truly share attention between tasks, so adding a second task always compromises the first.

然而，音乐更为复杂。研究者已经尝试过你可能可以想到的所有变化：有歌词的音乐对比纯音乐，古典音乐对比流行音乐，等等。但无一能使情况有什么明显的不同。音乐有时候会帮助学术任务，有时候会阻碍，因为它有两个冲突的效果：它分散了注意力，但也有激发听者精神的可能；这就是人们在锻炼时会听音乐的原因。这种综合效果是积极的还是消极的，取决于你的精神状态、任务的难度等其他因素。

当我们在工作时增加另一个任务，这往往是一个可以给我们带来情绪提升的任务。我们听音乐，给朋友发短信，或者查看社交媒体。由于这些往往会对你的表现产生负面影响，不要通过多任务来寻求提升，而应该在休息时段获取情绪提升。

有关媒体多任务处理的底线就是：即使只是在背景里播放视频，也会干扰你的工作。音乐在某些时候可能还可以，但对此结论要持谨慎态度。正如我在本书中一

直强调的，人们并不擅长评估自己的思考过程或工作质量。

总结一句话：不要做多任务处理；你不能真正地在任务间分享注意力，因此添加第二个任务总会损害第一个任务。

TIP 79 Rethink Your Evaluation

Recall the steps of mental control that apply to distraction from the start of the chapter: arranging the situation, shifting attention, evaluating, and responding. We've looked at ways to arrange a better situation, and we've thought about ways to make it more likely that you won't pay attention to a potential distractor. What about the evaluation?

Reevaluating a distractor might help with social media. When your phone pings and you reach for it, it means you have evaluated the ping as more important than whatever you're working on. But the truth is that you probably didn't really appraise it; reaching for the phone was automatic. One strategy you could try is to interrupt that automatic act and consider it. Think or, better yet, say aloud, "What are the odds that this notification is really important?" Indeed, how likely is it, if you wait until you take a break to view the message, that you'll regret it, that you'll think, "Why did I keep working? I should have listened to my instincts and checked my phone immediately." If reaching for your phone is so automatic that you feel you have no chance to pose such questions to yourself, you can put a safeguard into place by wiping your automatic login so that you must enter your login ID and password each time.

提示 79：重新思考你的评估

回想一下本章开始部分适用于分心情况的心理控制步骤：安排情况，转移注意力，评估和回应。我们已经探讨了如何安排更好的情况，我们也在思考如何更有可能不去关注潜在的干扰源。那么评估呢？

对于干扰源进行重新评估可能有助于社交媒体。当你的手机发出声音，你就会去拿它，这意味着你认为手机的声音比你正在做的任何事情更重要。但事实上，你可能并没有真正地评估手机的声音；拿起手机是一种自动反应。你可以尝试中断这种自动行动，并考虑它。思考或者，更好地说，大声说出来：“这条通知真的重要的可能性有多大？”的确，如果你等到休息的时候再查看这条信息，你会后悔吗？你会想：“我为什么要继续工作？我应该听从我的直觉，立即查看我的手机。”

如果拿起手机是如此的自动化,以至于你觉得自己没有机会向自己提出这样的问题,你可以通过清除自动登录设置,以确保每次都必须输入登录 ID 和密码。

You can try a similar reevaluation technique for mind wandering. Say aloud, “I don’ t need to think right now about what I’ m going to wear to that wedding next month. I will think about that as I’ m driving home.”

This technique is harder to pull off when the mind wandering content is emotional. For example, maybe you’ re upset because your manager cut your hours at work. You’ ve got an exam coming up and you need to study now, but you’ re obsessing about the money problem. Sure, if you ask yourself, “Is it helpful to think about money now?” you’ ll say, “No,” but it won’ t keep those distracting thoughts out of your mind.

You can try a technique I’ ve suggested in a couple of other circumstances in which emotions cause a problem: psychological distancing. Think to yourself—or again, better, say aloud—what you think you ought to do, but talk about yourself in the third person (ideally in a place where other people can’ t overhear you). For example, say, “Dan is really upset right now. He’ s very worried about money, because he’ s lost some hours at work and he’ s not sure how he’ ll make his rent. But there’ s no point in him thinking about that now. Dan has time tomorrow afternoon to go to the student employment office to look for another job. And he can take another look at his budget then. But he can’ t do those things right now. Right now, Dan needs to prep for this exam.”

The idea is that talking about yourself in the third person gives you some emotional distance from the problem and makes it easier to respond to a difficult situation in what you rationally know is a useful way.

The techniques described here focus on reevaluating a potential course of action: Do I really want to check my phone now? Do I really want to obsess about my outfit now? “Reevaluating” may seem unlikely to work, and let me emphasize again, it shouldn’ t be your first choice; it’ s much better if you never need to evaluate whether to check a phone notification because your phone was turned off in the first place. But sometimes, as in the example of the reduced work hours, you can’ t change the situation or your attention, so your only option is to try to reevaluate your thoughts.

你可以尝试一种类似的重新评估技术来处理思绪的流浪。大声说出来:“我现在不需要考虑我下个月要穿什么去参加那场婚礼。我在开车回家的时候再去考虑这个问题。”

当思绪流浪的内容是情绪性的时候，这种技术就更难实施了。例如，你可能由于经理减少了你的工作时间而感到不安。你有一个考试即将到来，你现在需要学习，但你却在为钱的问题而困扰。当然，如果你问你自己，“现在想钱的问题有帮助吗？”你会说，“没有，”但这并不能让那些分散你注意力的思绪从你的脑海中消失。

你可以尝试一个我在其他一些情况下建议的技巧：心理疏离。想想看自己应该做什么，或者更好的，大声地说出来——但是从第三人称的角度谈论自己（最好是在其他人听不到的地方）。例如，你可以说，“丹现在真的很不安。他非常担心钱的问题，因为他失去了一些工作时间，他不确定他如何能支付租金。但是他现在没有必要想这个问题。丹明天下午有时间去学生就业办公室找另一份工作。然后他可以再看看自己的预算。但是他现在不能做这些事情。现在，丹需要为这个考试做准备。”

这种方式的理念是，以第三人称谈论自己能让你在情绪上与问题保持一些距离，使得处理困难情况变得更容易。

这里描述的技术主要集中在重新评估一个可能的行动路线：我真的想现在看我的电话吗？我真的想现在就纠结我要穿什么吗？“重新评估”可能看起来不太可能有效，再强调一次，它不应该是你的首选；如果你的手机一开头就关了，那就不需要去评估是否要查看一条电话通知，这会更好。但有时，就像那个减少工作时间的例子一样，你无法改变情况或你的注意力，所以你唯一的选择就是尝试重新评估你的思绪。

In a sentence: If you’ re distracted by something such as your phone, you can try reevaluating the importance of the distraction; for mind wandering, the best strategy is to talk about your situation and the desirable evaluation of the situation in the third person.

TIP 80 Test Whether You Want Social Media or Enjoy It

在一个句子中：如果你被手机等事情分心，你可以尝试重新评估干扰的重要性；对于思绪飘扬，最好的策略是从第三人称的角度谈论你的情况以及期望的情况评估。

提示 80：测试你是否想要社交媒体还是真正喜欢它

Suppose you really love your phone but you keep it silenced when you work. When break time comes, checking social media is a reward, of course. But even more, you find that not being able to check during the work period is a punishment; it's hard to think of anything else.

But hold on. I just said, "checking social media is a reward, of course." Did you immediately accept that as true? When you can't check your social media feed for a while, checking it may feel really urgent—you want to check it. When you finally do, is it pleasurable? Sure, it's nice not to feel that urgent want any longer. But is reading the feed actually enjoyable?

Wanting and enjoying are not the same thing. For years, brain researchers thought they had enjoyment figured out; a dopamine-rich circuit was activated every time a rat received a reward, so it seemed obvious that the circuit must relate to feelings of pleasure. More recent research shows that it actually supports the feeling of wanting and is separate from the reward circuit. Scientists thought they saw the brain saying, "Feels great!" but really it was saying, "More!"

If your brain comes to associate a particular situation or action with a reward, it will simultaneously associate it with the desire for more. The problem is that the reward may decrease—the situation or action doesn't pay off the way it once did—but the brain doesn't unlearn its "More!" response.

假设你非常喜欢你的手机，但在工作时你会将它静音。休息时间到来时，查看社交媒体当然是一种奖励。但更进一步来说，你会发现在工作期间不能查看的痛苦；很难想到别的事情。

但请等等。我刚说，“查看社交媒体是一种奖励。”你是不是立刻就认同这个观点了？如果你有一段时间不能查看你的社交媒体，你可能会非常迫切地想要去看看。当你终于看到时，是不是感到快乐？确实，不再感到那种迫切的渴望是很好。但是阅读信息流真的享受吗？

想要和享受并不是一回事。多年来，大脑研究者们以为他们已经弄明白了享受，每次一只老鼠得到奖励时，富含多巴胺的回路就会被激活，所以他们觉得这个回路一定和愉快的感觉有关。然而，最近的研究显示，它实际上支持的是想要的感觉，并且与奖励回路分开。科学家们以为他们看到了大脑在说，“感觉很好！”但实际上是在说，“我要更多！”

如果你的大脑将某个特定情况或行动与奖励联系起来，它同时也会将其与对更多的渴望联系在一起。问题是奖励可能会减少—情况或行动不再像以前那样有回报—

但大脑不会忘记它的“我要更多！”反应。

You may have immediately recognized your feelings about social media in the distinction between enjoying and wanting. If not, here's a little experiment you can try: For one work session, give yourself permission to check your phone as often as you want, but commit to recording three things. When you pick up your phone, rate from 1 to 7 how much you want to check it. When you're ready to return to work, record how long you were on your phone, and rate from 1 to 7 how much you enjoyed it.

The next day, allow yourself only half as many social media breaks, but make them the same average duration. Again record how much you want to check your feed as your break starts and how much you enjoyed reading it when it ends.

I'm willing to bet that on day 2 your “wanting” ratings will be higher than they were on day 1, because you had to wait longer to check your phone. But I'll also bet that your “enjoy” ratings will be no higher on day 2 than they were on day 1. What's pushing you to check social media is not the thrilling reward of seeing what people have posted or seeing how many likes you've gotten. Sure, there's some fun in that, but the main driver of your compulsion is wanting.

In the days following the experiment, try sticking with your regularly scheduled breaks, and when you feel the compulsion to check your phone, try some self-talk. Remind yourself that when you objectively recorded how much you enjoyed checking your feed, you recognized that you didn't enjoy it that much. The urgency you're feeling now is not the anticipation of something you'll find really fun. It's just wanting, a memory of what used to be a great pleasure but is now just okay. And remind yourself that you will get to that pleasure in just a little while.

In a sentence: If you feel addicted to your phone, try an experiment to test whether your habit is really something you enjoy or is just something you want.

你可能已经立刻从“享受”和“渴望”之间的区分中，认识到了你对社交媒体的感觉。如果没这样，这里有个小实验你可以尝试：在一个工作时段里，给自己允许随时查看手机的权限，但承诺记录三件事。当你拿起手机时，从1到7评价你多么想查看它。当你准备回到工作时，记录你在手机上逗留了多久，以及你从1到7多么享受这个时间。

第二天，只允许自己进行一半的社交媒体休息时间，但保持相同的平均时长。再次记录开始休息时你有多么想要查看信息，并在结束时记录你有多么享受阅读。

我敢打赌，到第二天，你的“渴望”评级会高于第一天，因为你必须等待更长的时间来查看手机。但我也敢打赌，你在第二天的“享受”评级和第一天不会有所不同。推动你查看社交媒体的并不是看到别人的帖子或看到你获得多少互动的激动人心的奖赏。当然，这有一些乐趣，但驱使你冲动的主要动力是想要。

在实验后的几天里，尝试维持你的定期休息，当你感到强烈 urge 去查看手机时，试着自言自语。提醒自己，当你客观地记录下你多么享受查看你的信息时，你认识到你并不是那么享受。你现在感觉的紧迫感不是对你会找到真正好玩的东西的期待。这只是想要，对曾经带给你巨大乐趣但现在只是一般的事情的记忆。并提醒自己，你只需稍等一会儿即可获得那种乐趣。

如果你感觉对手机上瘾，尝试进行一项实验来测试你的习惯是否真的是你喜欢的东西，还只是你想要的东西。

TIP 81 Chew Gum

The evidence for this tip is not as strong as that for others, but there's some reason to think that chewing sugar-free gum might help you concentrate.

提示 81：嚼口香糖

这个方法的证据并不像其他方法那样强，但有一些理由让我们认为嚼无糖口香糖可能会帮助你集中注意力。

Only a handful of studies have tested the effect of chewing gum while performing real learning tasks. For example, in one study people were asked to study a twelve-page description of the human heart. In another, they were taught a strategy to multiply multidigit numbers mentally. Chewing gum (compared to not chewing it) made studying more effective and provided some evidence that people felt more alert while they studied.

In fact, the most consistent effect of chewing gum is that people say they feel like they have a little more pep. The positive effects on performance (in contrast to how you feel) aren't observed as consistently; a research review from 2011 was titled "Cognitive Advantages of Chewing Gum. Now You See Them, Now You Don't."

The upshot is that chewing gum may or may not help you concentrate; it may help some people but not others, or it may help only with certain tasks. Researchers just don't know. If it helps you, it will probably be for only a short period of time, so you might try it as an emergency boost, a bit of support that will keep you going until your next rest break. Experiment and see what you think.

In a sentence: Chewing gum may help you focus your attention and stick with a task, but the research findings on this effect are mixed.

只有少数的研究测试了嚼口香糖在执行真正的学习任务时的效果。例如，在一项研究中，人们被要求学习有关人类心脏的十二页的描述。在另一项研究中，他们学习了一种策略，可以在头脑中进行多位数的乘法运算。嚼口香糖（与不嚼口香糖相比）使学习更有效，并提供了一些证据，表示人们在学习时感觉更加警醒。

实际上，嚼口香糖最一致的效果就是人们会说他们感觉有更多活力。对于绩效的积极影响（与你的感觉相比）并不总是如此明显；2011年的一项研究回顾的标题就叫做“嚼口香糖的认知优势，忽隐忽现”。

总的来说，嚼口香糖可能有助于你集中注意力，也可能没有帮助；对某些人可能有益，但对其他人可能无助，或者只有在执行某些任务时才有所帮助。研究人员并不确定。如果它对你有所帮助，可能只是在短时间内发挥效果，所以你可能会把它当作紧急提振的小助手，一种能让你坚持下去直到下一个休息时间的支持。你可以实验一下，看看你自己的感受。

用一句话来说：嚼口香糖可能有助于你集中注意力并坚持任务，但是关于这种效果的研究结果并不统一。

TIP 82 Fight Chronic Mind Wandering

Mind wandering has been studied for only about fifteen years, and attempts to control it are still in their infancy. Still, I can offer a few ideas that you might find helpful.

提示 82: 战胜慢性心神游离

虽然对心神游离的研究只有大约十五年的历史,而试图控制它的尝试仍处于初级阶段。然而,我还是可以提供一些你可能会觉得有帮助的建议。

First, don't do it on purpose! Researchers study mind wandering in students by texting them during a lecture at random intervals (with the students' and instructor's permission), asking them to record what they were thinking about at that moment. Typically, a third of the students weren't thinking about the lecture. More surprising, about 40 percent of them had chosen mind wandering; they'd thought, "This is boring; I'm going to let myself think of something else." So this fix is relatively easy; if you wish you didn't let your mind wander, don't do it.

A second strategy applies to mind wandering during reading. A couple of research groups have tested whether people stay better focused on a text if they read it aloud. The research findings have been mixed; sometimes it helps and sometimes it doesn't, and researchers haven't sorted out whether it helps some people and not others, works only for certain types of content, or what. It's something you can try and see if you think it helps.

Two other techniques to reduce mind wandering have not been examined in experiments, but I offer them for your consideration.

When I'm involved in a task and making some progress, I find I can stay focused. The risky moment is when I finish one part of it; if I don't know what to do next, my mind is liable to drift off. My best defense is my to-do list. When I finish one task, I consult my list: What am I supposed to do next? I've described why a to-do list is helpful to planning and motivation (see tip 64). Laying out what you're going to do may make it less likely that your mind will drift away from work.

Finally, you might try an idea borrowed from practitioners of meditation. Some types of meditation require that you focus on one thing—for example, your heartbeat—but mind wandering can pose a problem. Some meditators set a timer to play a gentle chime every five minutes or so. It's a reminder to pull their thoughts back to their heartbeat if their mind has wandered. You might try the same technique. Set your phone to chime every ten minutes as a mental check-in to bring yourself back to work if you've drifted off.

首先,不要故意让心神游离! 研究人员在讲座期间随机地给学生发短信,让他们

记录下那时候在想什么，以此来研究学生的心神游离（当然，这是经过学生和讲师的允许的）。通常，三分之一的学生并未想着讲座的内容。更令人惊讶的是，约 40% 的学生选择了心神游离，他们会觉得，“这太无聊了，我要让自己想其他的事情。”所以这个修复方法相对简单；如果你不希望你的心神游离，那就别让它游离。

第二个策略适用于阅读时的心神游离。一些研究小组已经测试过，如果人们大声朗读文字，他们是否能更好地保持注意力集中。研究结果喜忧参半；有时候它有帮助，有时候它不起作用，研究人员还没有弄清楚它是否对某些人有帮助，是否只对某种类型的内容有效，等等。这是你可以尝试看看的一个方法，看看你是否认为它有帮助。

另外两种减少心神游离的技巧还未在实验中被验证，但我将它们作为你的参考提供。

当我参与一项任务并取得一些进展时，我发现我可以保持专注。风险的时刻是当我完成任务的一部分时；如果我不知道接下来该做什么，我的思绪容易产生游离。我最好的防御是我的待办事项列表。当我完成一项任务后，我查阅我的清单：下一步我该干什么？我已经解释了为什么待办事项列表对于规划和动机有帮助（参见第 64 条技巧）。列出你要做的事可能会让你的思绪不太容易偏离工作。

最后，你可以尝试从冥想者那里借用一种想法。一些类型的冥想需要你专注于一件事——例如，你的心跳——但心神游离可能会成为一个问题。一些冥想者设一个定时器，每五分钟左右放一次温和的铃声。这是一个提醒，如果他们的思绪漂离，他们需要拉回思绪专注于心跳。你也可以尝试这种技巧。设置你的手机每十分钟响一次，作为一次精神检查，如果你的思绪漂走了，你可以用它来回到工作中。

In a sentence: Reducing mind wandering has been studied very little, but you can try reading aloud, using a to-do list, setting a reminder chime for every ten minutes or so, and avoiding mind wander on purpose!

TIP 83 Make Yourself Less Susceptible to Mind Wandering

在句子中：对减少心神游走的研究很少，但你可以尝试大声朗读，使用待办事项清单，每十分钟或左右设定一个提醒铃声，有意避免心神游走。

提示 83: 降低自己对心神游走的易感性

I've offered ideas about fighting mind wandering during a work session. Is there anything you can do to make yourself generally less vulnerable to mind wandering? To change your cognitive system so you stay on task more often?

There are training regimens that promoters claim will boost your powers of concentration. Usually the training requires you to play “games” for some minutes each day. (I put games in quotation marks because they are not very much fun.) The games tax your ability to concentrate and mentally manipulate information. The hope is that with practice, those skills will improve.

That sounds as though it could work, but experiments show that it doesn't. People get better at the games, but they don't improve at other tasks that require concentration. At least for the time being, there's no mental training program that reduces mind wandering.

You can make your mind less susceptible to mind wandering, but the actions are kind of predictable. Mind wandering is more likely if you are hungry or sleepy, so you should eat well and get enough sleep. You probably expect me to say that regular exercise reduces mind wandering. Actually, there's limited evidence on that point, and the evidence we have is mixed. Exercise generally improves mood, but the relationship of mood to mind wandering is complicated and researchers aren't sure what to conclude.

The evidence is not ambiguous on another practice: mindfulness meditation. Mindfulness meditation can take different forms but usually involves sitting or lying quietly and paying attention to your thoughts as they occur and without judgment. Early research showed that the minds of people who meditate regularly wander less than the minds of nonmeditators do. But of course that doesn't necessarily mean that meditation makes your mind wander less; it could be that people who already have good concentration are attracted to meditation. Further research addressed the issue by taking ordinary folks who didn't meditate, teaching them to do so, and then seeing whether their minds wandered less when performing standard laboratory tasks. They did, and more recent experiments have shown that the benefit may start as soon as a week after people start meditating.

我已经提出了在工作过程中如何对抗注意力游离的想法。你有什么办法可以让自己对注意力游离的抵抗力更强一些呢？如何改变你的认知系统，让你更多地专注

于手头的任务？

有一些训练计划宣称可以提高你的注意力。这些训练通常需要你每天花些分钟时间玩“游戏”。（我把游戏用引号括起来是因为它们并不是非常有趣。）这些游戏考验你的注意力和思维操纵信息的能力。希望的是，经过实践，这些技能会得到提高。

这听起来可能有效，但实验显示并非如此。人们在游戏上变得更强，但在需要注意力的其他任务上没有改善。至少现在，还没有一个心理训练计划能减少注意力游离。

你可以让你的思维对注意力游离的易感性降低，但这些行动都是可以预测的。如果你感到饿或困，注意力更容易游离，所以你应该保证饮食并获得足够的睡眠。你可能期待我说定期锻炼可以减少注意力游离。事实上，关于这一点的证据很有限，我们所拥有的证据是混乱的。锻炼通常可以改善心情，但心情与注意力游离的关系复杂，研究者并不确定如何下结论。

但对于另一个做法的证据并不含糊：正念冥想。正念冥想可以采取不同的形式，但通常涉及安静地坐着或躺着，关注你的想法，并且不带有任何判断。早期的研究显示，经常冥想的人的思维比不冥想的人的思维更少游离。但当然这并不必然意味着冥想会让你的思绪游离得更少；可能是那些已经有良好的注意力的人被冥想所吸引。进一步的研究解决了这个问题，将普通不冥想的人教他们如何冥想，然后观察他们在执行标准实验室任务时的思维是否较少游离。的确如此，更近期的试验已经表明，从人们开始冥想后的一周就可能开始有益。

Taking up meditation may or may not appeal to you, but surely eating well and sleeping enough do. So do at least two of those three.

In a sentence: To make yourself less susceptible to mind wandering, eat well, sleep enough, and engage in mindfulness meditation.

TIP 84 Plan Breaks, Take Breaks

进行冥想可能会或者可能不会吸引你，但是良好的饮食和充足的睡眠肯定会。所以，请至少做好这三件事中的两件。

在一个句子中：要减少思绪飘忽不定，你需要吃得好，睡足够的觉，还要进行正念冥想。

提示 84: 计划休息, 享受休息

You will not be surprised to learn that rest breaks make you less susceptible to distractions and mind wandering. You feel more refreshed and better able to concentrate after a break.

That's fine, but you might wonder if you can maximize the effectiveness of breaks. How long should they be? How often should you take one? What should you do during your break?

One answer to the first two questions has gained great popularity in the last few years. Called the Pomodoro technique, it entails twenty-five minutes of focused work followed by a three-to-five-minute break. After four of these sessions, you take a longer break of twenty minutes or so. There's nothing wrong with the Pomodoro technique, but there's no research basis for the timing and duration of breaks. So try the Pomodoro technique for a start, but don't feel as though you can't change the time values.

你可能不会感到惊讶, 因为你已经知道休息时间能让你更不容易分心和走神, 使你感到更加焕发而能够更好地集中精神。

那么有没有可能助你最大程度地感受到休息的效果呢? 该休息多久? 休息的频率应该如何? 休息时间里应该做些什么?

对于头两个问题的回答, 在过去的几年中非常受欢迎。这被称为番茄工作法, 它要求我们进行二十五分钟的专注工作, 然后休息三到五分钟。每经过四个这样的周期, 你需要做一个更长的休息, 大约二十分钟。番茄工作法并没有错, 但并无研究证明其休息的时间和时长。所以, 你可以先尝试下番茄工作法, 但不要觉得你不能改变这个时间值。

You can also consider scheduling breaks by task, not by time. I find that when I'm writing, I sometimes get on a roll and don't want to interrupt my progress with a break at a prescribed time. I'd rather work until I finish a section. That's another reason I suggest that to-do lists be composed of tasks that can be completed in thirty minutes or so (see tip 69).

Whether by time or by task, I suggest you plan your breaks. In other words, don't sit down figuring, "I'll work until I need a break." People who find the Pomodoro technique helpful often say something like "The first

twenty minutes are usually easy, and then, when I want to quit, I can tell myself, ‘You just have five more minutes until your next break!’ ” That self-talk is possible only if you have planned your break.

Unfortunately, research is also not much use in prescribing what you should do during your break. Experiments have compared breaks where people exercised, rested quietly, went outdoors, or worked on a different task. There’s no evidence that you’re better off doing any one of these four activities than another during your break.

I suspect that a lot of people grab their phones during a break, so it would be nice if that activity were evaluated. There are a couple of experiments showing that quiet relaxation is better than checking social media, but I think it’s too early to draw strong conclusions. In addition, I can imagine that some people will be quite bothered by not being able to check social media as they work; knowing they can check it during a break helps them concentrate. (But see tip 80 on the difference between wanting and enjoying social media.)

It seems to me that a break ought to feel like a break. Do something that makes you feel revived.

你也可以考虑按任务安排休息时间，而不是按时间安排。我发现在写作的时候，有时候我会情绪激昂，不想在规定的中断我的进步。我宁愿工作到完成某一部分。这也是我建议待办事项列表应由可以在三十分钟或左右时间内完成的任务组成（参见 69 号建议）。

无论是按时间还是按任务，我建议你计划你的休息时间。换句话说，不要一边工作一边想着，“我会工作到需要休息的时候。”那些发现番茄工作法对他们有帮助的人通常会说类似于“前二十分钟通常很容易，然后，当我想要放弃的时候，我可以告诉自己，‘你只需再工作五分钟，就可以休息了！’”这种自我对话只有在计划了休息时间后才可能实现。

遗憾的是，研究也不能清楚地告诉你在休息时间里应该做什么。研究比较了人们在休息时间里进行运动，静静休息，外出，或者进行另一项工作。没有证据表明你在休息时间做这四项活动中的任何一项比另外一个更好。

我怀疑很多人在休息时会拿起手机，所以如果能评估这种活动就好了。有几项实验显示静静放松比查看社交媒体要好，但我认为现在得出强有力的结论还为时过早。另外，我可以想象有些人在工作时如果不能查看社交媒体就会感到很困扰；知道他们在休息时可以查看社交媒体可以帮助他们集中注意力。（但请参看 80 号建议关于人们期望和享受社交媒体之间的区别）

我认为，休息应该感觉像休息。做一些让你感到恢复活力的事情。

In a sentence: Rest breaks help you concentrate, and there are no firm rules about their precise timing, nor what you should do during them.

TIP 85 Regroup or Move Along

在一句话中：休息时间有助于你集中注意力，对于它们的确切时间没有硬性规定，也没有你在休息期间应该做什么的规定。

提示 85：重新集结或前进

Not long ago I was trying to think of an opening for a talk I was writing about technology and reading. I couldn't think of anything, so I started aimlessly casting around Google, hoping for inspiration. Predictably, I found nothing useful and started reading stuff unrelated to work. Then I got mad, told myself, "I need to think," and two minutes later my mind was wandering.

What should I have done? An obvious answer is "Take a break," but suppose I had just taken a break?

Another choice is to regroup: evaluate the task I've undertaken and the methods I'm using. Why am I making no progress? What am I trying to do? What have I tried? What's gone wrong? Maybe I don't need a clever opening for a talk on reading and technology; after all, educators are already interested in the topic. Or maybe I should have an opening but I should ignore Google and reflect on my own digital reading habits or those of my kids.

If regrouping doesn't work, consider moving along. I could work on the rest of the talk and return later to the nut I can't crack. Perhaps the fresh perspective will bring fresh ideas.

The important point here is that you must monitor your own distraction and notice when you seem to be stuck in a revolving door on a particular problem. Then you must avoid the stubbornness that often comes with a lack of progress. You think, "I can't quit now—I haven't solved it!" But

you shouldn't throw good time after bad. Rethink your approach.

不久前,我试图为一篇关于技术和阅读的演讲稿寻找开场白。我想不出任何东西,所以我开始在谷歌上胡乱搜索,希望找到灵感。不出所料,我没有找到任何有用的东西,开始阅读一些与工作无关的东西。然后我开始烦躁,告诉自己,“我需要思考”,两分钟后我的思绪就开始飘忽不定。

我应该做什么?一个明显的答案是“休息一下”,但是如果我刚休息过呢?

另一个选择是重新整理:评估我所承担的任务和我正在使用的方法。为什么我没有进展?我想做什么?我尝试过什么?出了什么问题?也许我并不需要一个关于阅读和技术的演讲的巧妙开场;毕竟,教育工作者已经对这个话题感兴趣。或者,我应该有一个开场,但是我应该忽略谷歌,反思我自己的数字阅读习惯或者我的孩子的阅读习惯。

如果重新整理没有效果,那么考虑继续前进。我可以先做下去,然后再回来解决我无法破解的问题。也许新的角度会带来新的想法。

这里的重要一点是,你必须监控你自己的分心,注意到你似乎在一个特定问题上陷入循环往复。然后,你必须避免缺乏进展时常常出现的固执。你想:“我不能现在就放弃——我还没有解决它!”但是,你不应该在错误的道路上浪费时间。重新思考你的方法。

In a sentence: We are especially susceptible to distraction when we work on a problem without making progress, so when you feel that happening, you can either regroup by trying a fresh approach to the problem or set the problem aside temporarily and work on something else.

For Instructors

在一个句子中:当我们在一个问题上工作但没有取得进展时,我们特别容易受到干扰。所以,当你感觉到这种情况时,你可以通过尝试新的方法来解决问题来重整旗鼓,或者暂时把问题放一边,做别的事情。

对教师的说明

Telling students about the strategies I've listed is easy enough, and they are not especially difficult to implement. The biggest problem lies in persuading them that they are needed or helpful. I've cited data showing that students do not think that multitasking carries a cost. You might consider a demonstration showing that it does. Here's one idea.

Find two brief videos (lasting, say, five minutes each) that relate to course content. For each, write six questions that test students' comprehension.

Show the first video to your students and administer the brief test. As they watch the second video, periodically say "Ping!" and hold up a poster board with a question written on it. This is a simulated text message. Students should read the message and write a response on a piece of paper. The messages should be simple questions of the sort they might get via text but should appear only briefly; if they don't answer quickly, their friend will feel ignored.

Base three questions on video content that appeared at the same time as a "text message" and three on content that appeared at times when students weren't distracted. Have the students compare their comprehension when they were multitasking versus when they were not. The goal is to show them that doing two things at once is actually harder than they think.

The other principle that students probably don't grasp is that distraction happens in stages, and as you move through each stage, it gets more difficult to turn your attention back to your work. To help them understand, try this demonstration. Ask half of your students to turn their phone off for one hour in the evening. At the end of the hour, ask them to rate how hard it was to have their phone off, from 1 (easy) to 7 (terrible). The other students leave their phone on and nearby but don't touch it for sixty minutes. They, too, should rate their discomfort at the end of the hour. The following evening, everyone switches tasks.

将我列出的策略告诉学生是容易的，而且这些策略并不难实施。最大的问题在于说服他们这些策略是必要和有用的。我曾引用过数据显示，学生们并不认为多任务处理有任何成本。你或许可以考虑通过演示来证明多任务处理确实会产生成本。下面是一个想法。

找两个与课程内容相关的短视频（比如，各五分钟）。针对每个视频，写六个测试学生理解的问题。

给学生们展示第一个视频，然后进行简短的测试。在他们观看第二个视频时，定期说 "Ping!" 然后举起写有问题的海报板。这是一个模拟的短信。学生们应该阅读这个信息，然后在一张纸上写下答案。信息应该是他们可能通过短信收到的简单问题，但只会短暂出现；如果他们不快速回答，他们的朋友会感到被忽视。

基于与“短信”同时出现的视频内容提出三个问题，另外三个问题是在学生没有分心的时候的视频内容。让学生们比较他们在做多任务处理时和不做的时候的理

解能力。目标是向他们展示同时做两件事其实比他们想象的要困难。

另一个学生可能并不理解的原则是，分心是分阶段的，当你经历每个阶段时，重新将注意力转回工作变得越来越困难。为了帮助他们理解，试试这个示范。让你的一半学生在晚上把手机关掉一个小时。一个小时结束后，让他们给关掉手机的难度打分，1（容易）到7（难以忍受）。其他的学生可以把手机开着并放在身边，但是不要触摸它六十分钟。他们也应该在用完一个小时后对他们的不适感进行评分。第二天晚上，每个人都换个任务做。

Most students find that ignoring notifications is harder than having the phone off because every ping is a reminder that they can't check their phone. The goal is to drive home the message that a little advance care in shaping their environment will make it easier for them to maintain their focus.

Summary for Instructors

Tell your students about the strategies described in this chapter.

大多数学生发现，忽略手机通知要比关掉手机更困难，因为每一次的提醒都让他们想去查看手机。我们的目标是让他们明白，事先适当地塑造自己的环境，将会让他们更容易集中注意力。

教师摘要

告诉你的学生这一章里描述的策略。

Use demonstrations to convince students that they cannot multitask and that distraction occurs in stages.

利用示范来说服学生们，他们无法同时处理多项任务，而且分心是分阶段发生的。

第 13 章 如何作为学习者获得自信

A common movie plot features a teacher helping “bad kids” show the world—and themselves—that they are actually quite smart. Movies such as *Lean on Me*, *Freedom Writers*, and *Stand and Deliver* depend on viewers accepting that people can be grossly misinformed about their academic ability—that they can be smart yet not know it. And most viewers accept that premise; it makes sense that factors other than the characters’ actual smarts contribute to their self-confidence—factors like whether their parents encourage them, for example.

Yet most people don’t believe that the same could be true of themselves: “Someone else might not understand herself very well, but my case is simple: I felt dumb in school because I was dumb. It’s true that, like the kids in the movies, my parents never encouraged me, but I didn’t deserve encouragement, because I got bad grades.”

A lack of self-confidence matters, because it affects your academic success. For one, it shapes how you interpret setbacks. When a college student who thinks of himself as a good learner flunks an exam, he assumes that he didn’t study hard enough and that he can do better next time. A student who was never sure he belonged in college in the first place might take the failing grade as evidence that he doesn’t.

Your self-confidence also affects your aspirations. For example, someone who always dreamed of being a registered nurse but sees herself as a poor student may conclude that she could never get through nursing school and so choose another career.

一个常见的电影情节是一个老师帮助“坏孩子”向世界和自己证明，他们实际上非常聪明。诸如“倚赖我”，“自由作家”，和“坚持和递送”等电影依赖于观众接受人们可能对自己的学术能力有严重的误解——他们可能很聪明却不知道。大多数观众接受这个前提；他们认为除了角色的实际智慧之外，还有其他因素影响他们的自信心——比如他们的父母是否鼓励他们。

然而，大多数人不相信他们自己也可能如此：“别人可能对自己了解不够，但我很简单：我在学校感觉自己很笨，因为我就是很笨。就像电影里的孩子一样，我的父母从不鼓励我，但我不配得到鼓励，因为我的成绩很差。”

自信心的缺乏很重要，因为它影响你的学术成功。首先，它塑造了你如何解释挫折。当一个认为自己是个好学生的大学生考试不及格，他会认为自己没有学习得够努力，下次一定可以做得更好。一个从未确定他是否适合大学的学生可能会把挂科当作自己不合格的证据。

你的自信心也影响你的抱负。例如，一个一直梦想成为注册护士，但认为自己学习能力差的人可能会认为自己无法通过护士学校的考试，因此选择另一种职业。Your self-confidence as a learner comes from your academic self-image: Do you see yourself as someone who learns easily or someone who struggles? Unsurprisingly, your self-image is shaped, in part, by grades and other feedback you've received over the years, but three other factors matter, too: who your friends are, who you compare yourself to, and the family values you grew up with.

There are no simple rules about how these four factors combine and therefore how to change your self-image if you think it ought to change. Still, if you lack self-confidence, it will benefit you to realize that at least part of that feeling comes from factors other than your competence and you should have more self-confidence than you do.

WHEN THINKING ABOUT YOUR SELF-CONFIDENCE AS A LEARNER

What your brain will do: It will construct an academic self-image based partly on your prior learning success but also on relationships, who you compare yourself to, and your values; this self-image determines your self-confidence.

How to outsmart your brain: Take steps to change your academic self-image once you know the factors that contribute to it.

作为学习者的自信，源于你的学术自我形象：你是认为自己学习容易还是困难的人？并不令人惊讶，你的自我形象在一定程度上受过去几年的成绩和其他反馈的影响，但还有三个其他因素也很重要：你的朋友是谁，你把自己与谁比较，以及你在成长过程中接受的家庭价值观。

关于这四个因素如何组合，以及如果你觉得需要改变你的自我形象，该如何改变，并没有简单的规则。然而，如果你缺乏自信，认识到至少部分缺乏自信的感觉来自 competence 以外的因素，并且你应该比你现有的更自信，对你是有好处的。

关于你作为学习者的自信

你的大脑会做的事：它会根据你以前的学习成功，但也基于你的关系，你将自己与谁比较，还有你的价值观，来构建学术自我形象；这种自我形象决定了你的自信。

如何智胜你的大脑：一旦你知道了构成它的因素，就采取措施去改变你的学术自我形象。

To get started, I' ll ask you to reflect a bit on the four contributors to academic self-image:

Feedback: What kinds of messages have you gotten about your competence from the world around you? Do you generally succeed when you try to learn? Did your teachers think that you belonged in advanced or remedial classes? When you had an academic setback, did your parents tell you that you could do better next time if you studied harder, or did they seem to assume that you weren' t cut out for school?

Social relationships: Your views of other people develop as you watch their behavior; so, too, your view of yourself is influenced as you observe your own behavior, including the people you associate with. Do your friends see learning as an important part of their lives? Do they make time to learn new things?

Comparisons: A student who gets mostly Bs may think of herself as capable if she compares herself to her best friend, who gets mostly Cs. Or she may think of herself as "the dumb one" if she compares herself to her sister, who gets mostly As. Did your parents or teachers compare you to other kids, and did you agree with those comparisons?

要开始，我将要求您稍微反思一下对学术自我形象的四大贡献者：

反馈：你从周围的世界中收到了什么样的信息，关于你的能力如何？你尝试学习时通常能成功吗？你的老师是否认为你属于高级课程或补习课程？当你遇到学术挫折时，你的父母是告诉你下次如果学习更努力就能做得更好，还是他们似乎认为你不适合上学？

社会关系：您对其他人的看法是通过观察他们的行为发展起来的；同样，你对自己的看法也会受到你观察自己行为的影响，包括你与之交往的人。你的朋友是否将学习视为他们生活中的重要部分？他们会抽时间学习新东西吗？

比较：主要得到 B 等级的学生如果与主要得到 C 等级的朋友比较，可能会认为自己很有能力。或者，如果她把自己与主要得到 A 等级的姐姐比较，她可能会认为自己是"笨蛋"。你的父母或老师是否把你和其他孩子比较，你是否同意他们的比较？

Values: In a family that prizes education, a child is less likely to question whether he really belongs in school because his parents so firmly

assume that he does. Other parents believe that there are many paths to a good life and learning may play a larger or smaller role for each person. Would you describe learning as a family value when you were growing up, and did you embrace that value or rebel against it?

In this chapter I' ll offer ideas for examining and perhaps rethinking the four factors that contribute to your academic self-image. The purpose is for you to come to a clearer sense of yourself as a learner and to be sure that your self-image and the self-confidence that follows are realistic.

价值观：在一个重视教育的家庭中，孩子不太可能会质疑他是否真的属于学校，因为他的父母如此坚定地认为他是。其他的父母认为有许多通往美好生活的道路，学习在每个人生活中可能起到大佬小的作用。你会把学习描述为你成长过程中的家庭价值观吗？你是接受了这个价值观，还是反对它？

在这一章中，我将提供一些观察和或许重新思考贡献于你的学术自我形象的四个因素的想法。目的是让你对自己作为一名学习者的认识更加清晰，并确保你的自我形象以及随之而来的自信是现实的。

TIP 86 Rethink What It Means to Be a Learner

Most people develop their idea of a “good learner” at school. The good learners are the ones who are not corrected when they read aloud. They raise their hands to answer teachers’ questions, and they never seem confused by math. Teachers may not overtly label them “the smart kids,” but they don’ t have to. It’ s obvious to everyone.

The early elementary school years are formative, so once you develop this concept of a good learner, it’ s hard to shake. But it’ s limited in two ways.

First, it puts a premium on speed. School curricula are packed, so teachers feel pressured to keep the pace brisk. The students who catch on to ideas quickly are at an advantage. The plodders might arrive at the same, or even deeper, understandings, but they might never have the chance to show

their intelligence.

提示 86: 重新思考做学习者的含义

大多数人在学校形成了对“好学习者”的理解。好的学习者是那些在大声朗读时不会被纠正的人。他们举手回答老师的问题，他们似乎从不被数学困扰。老师可能不会直接给他们贴上“聪明的孩子”的标签，但他们并不需要。这对每个人来说都是显而易见的。

小学早期的几年是塑造性格的关键，因此一旦你形成了这种对好学习者的认识，很难改变。但这种认识有两个方面的局限性。

首先，它强调了速度。学校课程繁重，因此老师感到压力，必须保持快节奏。能够快速理解新观念的学生具有优势。对于那些慢慢理解的学生，他们可能会得出相同或更深入的理解，但他们可能永远没有机会展示他们的智力。

Second, this description of a good learner makes it a characteristic intrinsic to the person, something they just are, like brown-eyed or sixty-eight inches tall. But as you've seen in this book, learning is effective because of what you do, not who you are. If you've had trouble learning in the past, it's not because you're not a learner. Maybe you're slower than others, but anyone who does the right things to learn is a learner. It's really part of your birthright as a human.

Does that seem a little overstated? Think about what you've learned outside of school. Maybe you learned to play a sport, to excel at a video game, to negotiate complicated social relationships among your friends, to play an instrument, to deal with a difficult parent, or to navigate a tough neighborhood. There's probably something you're pretty good at, but even if you're not great at anything, you've still done a lot of learning. Maybe you did most of your learning in informal settings. If you're reading this book, you're thinking of changing that, but that's not as big a change as you think, especially because you're now armed with the strategies you've learned here.

And once you're no longer a student, the measure of “success” will be different, so you shouldn't assume that your experience will be the same as it was in school. Outside school, successful learning is often coupled with other abilities or skills. For example, suppose you're a sales representative and you've been using some new project management software for the last six months. It's worked well, so your boss wants the engineers to use it, and she asks you to persuade them. That task certainly requires learning—you need to get up to speed on how engineers think about projects

—but it's as much an interpersonal task as a learning task.

School prizes raw learning, but the workforce prizes many other skills: building trust with coworkers, for example, or having the courage to try something new. Keeping that in mind may be the most important way to modify your thinking about what makes a “good learner.” Once you're outside school, you don't need to be great at learning; you need to be okay at it but also achieve proficiency in other skills.

It's a point made by Scott Adams, the cartoonist behind Dilbert. He wrote that one path to success is to become extremely good at one thing, but of course it's difficult to become that good at anything. It's much easier to become pretty good at two or more things. He noted that he can draw, but he's no artist. He's funnier than most people but not as funny as professional stand-up comedians. He also has a business background, so that's three areas of competence, which very few people have simultaneously, and the result is an extremely successful comic strip set in an office.

其次，这个关于好学者的描述把它看作是个体本身的内在特性，就像是有棕色眼睛或身高六十八英寸。但是，正如你在这本书中看到的，学习的效果源于你的行为，而不是你是谁。如果你在过去学习有困难，并不是因为你不是一个学习者。也许你比别人学得慢，但任何采取正确学习行动的人都是学习者。这实际上是你作为人类的权利。

这听起来有些夸大了吗？想一想你在学校外学到的东西。也许你学会了打运动，擅长视频游戏，处理朋友之间复杂的社交关系，演奏乐器，应对难缠的父母，或在艰难的环境中求生存。你可能擅长某些方面，但即使你没有特别擅长的地方，你依然学到了很多。可能大部分学习是在非正式环境中进行的。如果你正在阅读这本书，你正在考虑改变这一点，但这并不像你想象的那么大的改变，特别是你现在掌握了这里学到的策略。

一旦你不再是学生，“成功”的衡量标准将不同，所以你不应该假设你的经历会和在学校时一样。在学校外，成功的学习通常与其他能力或技能相结合。例如，假设你是一个销售代表，你在过去的六个月里一直在使用一种新的项目管理软件。这个软件使用效果很好，所以你的老板希望工程师们也使用它，并且她要求你去说服他们。这个任务当然需要学习——你需要了解工程师是如何看待项目的——但这个任务与其说是一个学习任务，不如说是一个人际关系任务。

学校重视纯粹的学习，但劳动力市场重视许多其他技能：例如，与同事建立信任，或有勇气尝试新事物。这可能是调整你对“好学习者”什么样的想法的最重要方式。一旦你离开学校，你不需要在学习上做得非常好；你需要在学习上做到可以，但也需要达到其他技能的熟练程度。

这个观点是由 Dilbert 的漫画家 Scott Adams 提出的。他写道，成功的一种途径

是在一件事上变得非常出色，但当然，变得那么出色是很困难的。在两件或更多事情上变得非常好是更容易的。他指出，他可以画画，但他不是艺术家。他比大多数人更有趣，但不如专业的脱口秀喜剧演员有趣。他还有商业背景，所以那是三个领域的能力，这是很少有人能同时拥有的，结果就是他创作了一个非常成功的描绘办公室生活的漫画。

If you’ re thinking, “I’ ve never been a good learner,” ask yourself whether you really need to be great at learning or whether being “pretty good” at learning, combined with some other skills, will yield a first-rate combination. If you use the strategies in this book, being “pretty good” at learning will surely be within your reach.

In a sentence: Remember that learning is something you do, not something you are, and that the definition of successful learning changes once you’ re out of school; you need to be good at several things, not excellent at one.

TIP 87 Be Around Other Learners

如果你在想，“我从未是个好学者”，那么你要问自己，你真的需要在学习上很优秀，还是“相当好”的学习，配合上一些其它技能，就能产生一流的结合。如果你使用这本书中的方法，能在学习上“相当好”肯定是在你的能力范围之内。

总而言之：记住学习是你所做的事情，而不是你的身份，并且一旦你离开学校，成功学习的定义就会改变；你需要在几件事情上做得好，而不是在一件事上做得出色。

提示 87：在其他学习者附近

To a greater degree than many of us like to admit, our behavior is influenced by the people around us. Evolution has left us with a mind that is sensitive to what others do and primed to mimic them, because if everyone else is doing it, it’ s probably the safe and smart thing to do. That’ s why people laugh more when a television show has a laugh track. People go to restaurants that they see are usually crowded and avoid ones that are usually empty.

When the decision is more consequential than “Should I laugh?” or “Where shall we eat?” we care less if strangers are doing it and are more influenced by close friends and family. For example, most people wouldn’t pay for a new game just because they hear it’s popular, but if a few friends say they like it, that may be enough.

If you mimic what your friends and family do, you’re guaranteed social support when you do it. For example, if most of your friends take learning seriously, they will make it easier to go to the library on the nights you don’t feel like going. They will listen and commiserate when your learning isn’t going well, and they’ll cheer when it is. They’re in a good position to provide practical help with your work, like offering studying tips they’ve found useful.

我们的行为在很大程度上是受周围人的影响的，虽然我们很多人不愿承认这点。进化使我们的大脑对他人的行为特别敏感，并倾向于模仿他们，因为如果大家都这么做，那么模仿他们很可能是安全且聪明的选择。这就是为什么有笑声带的电视节目能让人笑的更多，人们更喜欢去人多的餐馆而避免去人少的餐馆。

当决定比“我应该笑吗？”或“我们去哪吃？”更重要时，我们对陌生人的行为就不会那么在乎，而更容易受到亲友的影响。例如，大多数人不会因为听说一款游戏很热门就去购买，但如果有几个朋友说他们喜欢，那可能就足够了。

如果你模仿朋友和家人的行为，你就能在做同样事时得到社会支持。比如，如果你的大部分朋友都很看重学习，那么他们会让你在不愿去图书馆的晚上也能坚持下去。他们会在你学习不顺利时倾听你的苦恼，与你共情，当你取得学习进步时，他们会为你欢呼。他们处在一个能为你的学习提供实际帮助的位置，例如提供他们发现的有效的学习技巧。

It’s not that friends who aren’t interested in learning are bad friends, it’s just that the social support for learning in particular doesn’t come as naturally to them. They won’t cajole you into studying when you don’t feel like it, because they themselves aren’t studying. They’ll sympathize when your work isn’t going well, but it doesn’t have quite the same feeling because you know they probably don’t experience it the way you do. If you care about learning and the people in your social group don’t, there’s a part of your life in which you feel a little lonely. We like to affiliate with people like ourselves.

I’ve actually met people who hid their interest in learning because they were afraid that their friends would reject them. A few years ago I received a poignant email from a high school English teacher about one of her students. He was very devoted to the football team, and he was also devoted to reading literature, but he was so sure that he would suffer

socially if that news got out, he wouldn't even broach the subject with his friends. He ached to discuss books with someone and so asked the teacher if he could sometimes talk to her after school.

Obviously, you shouldn't drop friends who aren't interested in learning, but you might add some who are. Whether you're reading up on science for your own pleasure, seeking high grades in hopes of medical school admission, or trying to read more weighty news sources to understand contemporary politics, being around people who share your interest will offer the social support that humans crave.

In a sentence: We are social beings, and we are influenced by what our friends and family do; being around at least a few other people who care about learning will make it easier for you to express that side of yourself.

这并不是说对学习不感兴趣的朋友就是坏朋友，只是他们对特定的学习社交支持并不天生就有。他们不会在你不想学习时哄你去学，因为他们自己也不在学习。当你的工作进展不顺利时，他们会表示同情，但是感觉并不完全一样，因为你知道他们可能不会像你那样体验到这种感觉。如果你关心学习，而你的社交圈子里的人没有，那么你的生活中就会有一部分感到有点寂寞。我们都喜欢与和我们相似的人交往。

我实际上遇到过一些人，因为他们害怕朋友们会拒绝他们，所以他们隐藏了自己对学习的兴趣。几年前，我收到一封来自一位高中英语老师的深情邮件，讲述了她的一名学生。他非常热爱足球队，也热爱阅读文学，但他非常确定，如果这个消息泄露出去，他社交上会受到伤害，他甚至不会和朋友提及这个话题。他渴望有人和他讨论书籍，所以他请求老师能否在放学后和他谈话。

显然，你不应该放弃那些对学习不感兴趣的朋友们，但你可能会增加一些对学习感兴趣的朋友。无论你是因为个人兴趣在阅读科学知识，寻求高分以期望获得医学院的录取，还是试图阅读更深入的新闻来源去理解当代政治，与和你有共同兴趣的人在一起，会提供人们所渴望的社交支持。

用一句话说：我们都是社交生物，我们会受到朋友和家人的影响；与至少一些关心学习的人在一起，将更容易帮助你表达你自己的这一面。

TIP 88 Compare Yourself to Yourself

Which activities or attitudes have the greatest influence on your self-image? It seems as though they should be the ones you feel are most important to you, or maybe the ones that you spend a lot of time on. But on reflection you' ll realize that' s not right. A teenager who loves video games and spends a couple of hours each day playing may not see himself as a gamer. Why? Because everyone he knows plays games just as much. But if none of his friends reads, they' ll think of him as “the reader” in their group even if he reads just two or three books each year. It' s the contrast that matters.

The comparisons that affect your self-image are not just the ones that your friends make; you pick people to compare yourself to. Your self-image can vary widely depending on your selections, and there' s no good way to know which comparisons make sense. Sometimes we make comparisons to flatter or reassure ourselves. It' s a tragic truism that people with a substance abuse problem look for someone further out on the limb: “I may drink a lot, but I' m not as bad as him.”

提示 88: 与自己比较

哪些活动或态度对你的自我形象影响最大？你可能觉得这些应该是对你最重要的，或者是你花很多时间参与的。但是反思一下你会发现这并不正确。一个热爱视频游戏、每日花费几小时玩游戏的青少年可能并不认为自己是个游戏爱好者。为什么？因为他认识的每个人玩的游戏都差不多。但是，如果他的所有朋友都不读书，他们会把他视为他们群体中的“读者”，即使他一年只读两三本书。关键在于对比。

影响你自我形象的比较并不仅仅是你的朋友所做的比较；你会选择人与之做比较。取决于你的选择，你的自我形象会有很大的不同，而我们无法知道哪种比较才是有意义的。有时候，我们做比较是为了恭维或安慰自己。这是一个悲惨的事实，有药物滥用问题的人总是寻找比自己更糟糕的人：“我可能喝很多酒，但我没有他那么糟糕。”

But we don' t always make comparisons that gratify us. A friend told me about a graduate student in his lab who feared he was going to flunk out because he couldn' t hack statistics. Actually, he was near the top of his class, but he compared himself to his husband, who was getting a PhD in data science.

Anybody can observe these situations from the outside and say, “Your comparison doesn' t make any sense, and it' s distorting your self-image.” But how are you supposed to know who is a good comparator?

The question brings to mind a nineteenth-century Chasidic teaching, which I'll freely adapt. Everyone should have two pockets. In one, keep a slip of paper on which is written: "You are the crown of God's creation, closest to the angels." Reach into that pocket when you feel sad and worthless. But if you feel too high-and-mighty, reach into the other pocket. There, you keep a slip of paper on which is written: "God created the earthworm before you."

There's always someone you think is ahead of you and always someone you think is behind, and I can see the advantage of using that fact to manage my emotions. But I don't trust myself to use it wisely. I'm exactly the kind of guy who, when I'm feeling low, would reach for the earthworm paper.

Rather than shooting for clever comparisons, compare yourself to yourself. That means tracking your goals and your progress in meeting them. I've already suggested that you do this (see tip 65), so I'm not proposing any extra work; rather, it's an extra use to which you can put your recorded goals. In reflective moments, most people agree that comparing ourselves to others is at best unproductive and at worst damaging. What matters is striving to be the best we can be, and what other people are doing or not doing is irrelevant. Remind yourself of this when you start wondering if you're measuring up to your peers. Take out the computer file or journal where you record your goals, and review your progress.

但是，我们并不总是进行让我们感到满足的比较。一位朋友告诉我，在他实验室的一位研究生害怕他会因为不擅长统计而被淘汰。实际上，他已经接近班级的顶部，但是他总是拿自己和正在攻读数据科学博士学位的丈夫比较。

任何人都可以从外部观察这些情况，并说：“你的比较是没有任何意义的，它正在扭曲你的自我形象。”但是你如何知道谁是一个好的比较对象？

这个问题让我想起了十九世纪的一个 Chasidic 教法，我将自由地改编它。每个人都应该有两个口袋。在一个口袋里，保留一张写着：“你是上帝创造的皇冠，最接近天使”的纸条。当你感到悲伤和无价值时，就把手伸进这个口袋。但是，如果你感到过于高大和威严，就把手伸进另一个口袋。那里，你保存了一张写着：“上帝在你之前创造了蚯蚓”的纸条。

总是有人你认为在你前面，总是有人你认为在你后面，我可以看到利用这个事实来管理我的情绪的优势。但是，我不相信我自己能够明智地使用它。当我感觉低落时，我恰好是那种会选择蚯蚓的纸条的人。

与其寻找狡猾的比较，不如将自己和自己相比。这意味着跟踪你的目标和达成目标的进度。我已经建议你这么做（参见提示 65），所以我并不是在提出任何额外的工作；相反，这是你可以发挥你的记录目标的额外用途。在反思的时刻，大

多数人都同意，将我们自己与别人比较，最好是没有生产力的，最坏的是有害的。重要的是努力成为最好的我们，其他人在做什么或不做什么都无关紧要。当你开始怀疑你是否能媲美你的同龄人时，提醒自己这一点。打开你记录目标的电脑文件或日志，回顾你的进步。

In a sentence: It's natural to compare yourself to others, and comparisons contribute to your self-image, but they are seldom helpful; compare your present self to your past self when evaluating your progress.

TIP 89 If You Didn't Get Practical Learning Advice from Your Family, Get It from Others

在一句话中：与他人比较是自然的，比较有助于塑造你的自我形象，但这往往无济于事；当评估你的进步时，应把现在的自己与过去的自己做比较。

提示 89：如果你没能从家人那里获得实用的学习建议，就从他人那里获取吧。

Even if parents seldom discuss family values in so many words, children know what their parents care about via silent messages conveyed by actions. Children observe what their parents spend money on, what they devote their time to, who they think deserves respect, and what's important enough to merit a household rule. These clues make clear the value that parents place on religious observance, social advancement, a political perspective, financial success, learning, and more.

Children raised in families that value learning tend to do well in school. They take more challenging courses, earn higher grades, and are more likely to graduate from high school and continue on to college. That's partly because parents who think of learning as a family value tend to have more money and more education themselves, and so they can more easily give their children advantages; they can hire a tutor if need be, for example. But in addition, their children enjoy a deep confidence that they belong in school and can succeed.

In contrast, some people grow up with parents who are uninterested in learning. Other people's parents are interested in it but lack the time and money to act on that value. Either situation can lead to a long-term, nagging feeling that you just don't fit in at school.

In my years in higher education I've met scores of students who felt this way, but the most memorable example was one of my first graduate students. He was getting great feedback on his work, yet he was plagued by uncertainty, a feeling that he was missing something. He thought that there was a set of unwritten rules about how to act in graduate school and he was the only one who didn't know them, because of his background—he was the first in his family to attend college.

即使父母很少用诸多言语来讨论家庭价值观，孩子们也会通过父母行动传递的无声信息，了解他们关心什么。孩子们观察他们的父母在什么上花钱，他们把时间投入到什么上，他们认为谁应该受到尊重，以及什么事情重要到值得制定家庭规则。这些线索清楚地显示出父母对宗教观念、社会提升、政治观点、经济成功和学习等的重视。

在重视学习的家庭中长大的孩子们在学校往往表现良好。他们选择更具挑战性的课程，取得更高的成绩，更有可能从高中毕业并继续接受大学教育。部分原因是因为，视学习为家庭价值的父母往往自身经济条件和教育程度更高，因此他们能更容易地给予孩子优势；比如，他们如果需要的话，可以请家庭教师。但除此之外，他们的孩子也对他们在学校的归属感和成功有着深厚的信心。

相反，有些人的父母对学习没有兴趣。也有人的父母对学习有兴趣，但缺乏实现这个价值的时间和金钱。这两种情况都可能导致长期的痛苦感觉，觉得自己在学校里不适应。

在我从事高等教育的多年里，我遇到过很多有这种感觉的学生，但最令我难忘的例子是我最初的一位研究生。他的作品得到了很好的反馈，但他总是充满不确定感，觉得他缺少一些东西。他以为关于如何在研究生院行事有一套未经书写的规则，而他是唯一一个因为自己的背景——他是家庭中第一个上大学的人——而不知道这些规则的人。

That feeling may have been a carryover from high school and college, and there his suspicion would have made sense. Parents who themselves felt comfortable at school often have some knowledge about how to succeed there. They provide advice to their kids and advocate for them. For example, if you fail your first college exam, your father might tell you that he did the same but was able to bounce back. Or maybe your mother advises you to see the professor and ask how to succeed next time. Most important, if your parents have always assumed that you would graduate from college, you will feel you belong there, and one setback won't make you question that.

What should you do if your parents don't have that knowledge? In high school, your teachers can help. Pick your favorite teacher, even if it's been a few years since you were in his or her class, and ask for the guidance you need, even if you're unsure of exactly what you need help with. Talk it out. Most teachers will not see this request as a nuisance. On the contrary, they will be pleased that you sought them out.

College has a different set of rules for success than high school does. Your brain doesn't change, so studying and learning are the same, but the organization of the school is different, so you're faced with unfamiliar problems. How should you pick a major? A spot just opened for a great course, but you're three weeks into the semester; if you sign up for it, will you be able to catch up?

Unfortunately, many colleges ask faculty to advise students on these matters, and professors often don't have the knowledge or motivation to do the job well. If your advisor is not helpful, try the director of the undergraduate program for your major. (That person might also be able to assign you to a different advisor. Ask.) Or try the Office of Student Affairs or the Office of the Dean of Students or whatever it's called at your school. Every school has an administrative arm designed to help students understand the system. You won't be bothering anyone—helping you with this sort of thing is their job, and the job exists exactly because the system is confusing.

In a sentence: Some children gained self-confidence as learners and practical advice about school from their parents, but people who didn't can gain those things from other sources.

这种感觉可能是高中和大学时期的遗留下来的。在那里，他的怀疑是有道理的。通常那些在学校感到舒适的父母常常对如何在学校取得成功有一些了解。他们向孩子提供建议，为他们辩护。例如，如果你第一次大学考试失败了，你的父亲可能会告诉你他也曾经失败过，但是他能够振作起来。或者你的母亲建议你去见教授，问问如何下次成功。最重要的是，如果你的父母一直认为你会从大学毕业，你会觉得你属于那里，而一次的挫败不会让你怀疑这一点。

如果你的父母没有这样的知识应该怎么办？在高中，你的老师可以帮助你。选择你最喜欢的老师，即使你已经离开他或她的课堂几年了，也要寻求你需要的指导，即使你不确定你需要帮助的具体是什么。和他们聊聊。大多数老师不会把这个请求视为麻烦，相反，他们会很高兴你找到了他们。

大学对成功的规则和高中不同。你的大脑不会改变，所以学习的方式是一样的，但是学校的组织结构不同，所以你会面临一些不熟悉的问题。你应该如何选择一

个主修？一个好课程的名额刚刚开放，但是你已经进入了学年的第三周；如果你报名参加，你能够迎头赶上吗？

可惜的是，许多大学让教师去给学生提供这些方面的建议，可教授们往往没有知识或动力去做得好。如果你的顾问没有帮助，试着找找你的本科项目主任。

（这个人也可能给你指定一个不同的顾问。要问清楚。）或者试着找找学生事务办公室或者学生事务主任办公室，或者你所在学校的相应部门。每个学校都有一个行政部门专门帮助学生理解制度。你不会打扰任何人，帮你解决这类问题是他们的工作，而且这个工作存在的原因就是因为这个制度很复杂。

总的来说：有些孩子从他们的父母那里获得了作为学习者的自信和关于学校的实用建议，而那些没有得到的人可以从其他来源获得这些东西。

For Instructors

How can teachers contribute to making everyone feel capable and eager to take on challenges?

What you'd like is for self-doubting students to succeed in some way so that after you celebrate their accomplishment, you can gently push them to acknowledge their success. You want, in essence, to say, "See? You thought you couldn't do it, but you can."

对于教师来说

教师如何可以让每个人都觉得有能力并且渴望挑战？

你希望的是让自我怀疑的学生以某种方式取得成功，这样在你庆祝他们的成就之后，你可以轻轻地推动他们承认自己的成功。实质上，你想说的是，“看，你以为你不能做到，但其实你可以。”

But you may wait a long while for a student to feel that he has succeeded. And you'd rather that students focused on processes anyway. That is, you'd like for them to feel pride in working hard to prepare for an exam—in preparing a really complete study guide, for example—even if their performance on the exam was only so-so. That's asking a lot, but I think it's worth articulating; even if students don't embrace the message, they may register it and understand its importance.

That's a natural segue to another way that your feedback can support students' self-image: help them identify which tasks give them trouble.

They may think, "I'm a bad student," but as we've seen, many steps go into academic tasks like test preparation. If they know what they do well and what they don't, it might change their self-image: "I'm not a bad student, but I need to take better notes."

Personal connection may be more than a facilitator of these methods; it can be a potent, if indirect, source of positive feedback to students. Some studies of community college students show that a personal connection with someone at the school can be a powerful motivator for a student who feels hesitant about his or her place in the school. These studies show that the connection did not need to be made with a faculty member; sometimes it was with a cafeteria worker or someone on the secretarial staff. What's more, the person often did not serve any traditional mentoring function. The relationship might have been meaningful to a student in two ways. First, on a large, anonymous campus, it was someone who would notice if he didn't show up and would even feel disappointed. Second, it was someone who, as an employee, had seen many students at the college and seemed to take for granted that the student belonged there, which served as a silent affirmation of her status.

Helping students feel at home in school and confident about their learning is one of the most challenging tasks teachers face, partly because students' self-confidence is determined in some measure by factors outside of school and also because the messages that teachers send students that affect their self-confidence can be extremely subtle. Still, monitoring the messages we send is worth our care and attention, as they can have a profound impact on students' long-term success.

但是，你可能需要等待很长时间才能让学生感到他们已经成功了。而且你更希望学生能够关注过程。也就是说，即使他们的考试成绩只是一般，你希望他们能因为努力准备考试——比如准备一份非常完整的学习指导——而感到自豪。这的确要求很高，但我认为这是值得表述的；即使学生不接受这个信息，他们也可能记录下来并理解其重要性。

这自然地引出了你的反馈可以支持学生自我形象的另一种方式：帮助他们确定哪些任务让他们觉得困扰。他们可能会想，“我是个差劲的学生”，但是我们看到，像测试准备这样的学术任务需要多个步骤。如果他们知道自己做得好的地方和做得不好的地方，可能会改变他们的自我形象：“我并不是一个差劲的学生，但我需要做更好的笔记”。

人际关系可能不仅仅是这些方法的推动者；它可以是对学生积极反馈的强大而间接的来源。一些对社区大学学生的研究表明，与学校里的某个人建立个人联系对于对自己在学校地位感到犹豫的学生来说可能是一个强大的激励因素。这些研究

表明，这种联系并不需要与教职员建立；有时候是与食堂工作人员或者秘书处的人员建立的。而且，这个人往往并不担任任何传统的导师职能。对学生来说，这种关系可能具有两种意义。首先，在一个大而匿名的校园里，如果他不出现在，有人会注意到甚至会感到失望。其次，作为员工，他见过许多在学校的学生，并且似乎理所当然地认为学生就该在那里，这种观念对她的身份起到了无声的肯定。

帮助学生在学校感到宾至如归，并对自己的学习充满信心，是教师面临的最具挑战性的任务之一，部分原因是因为学生的自信心在一定程度上由学校之外的因素决定，也因为教师传达给学生的影响他们自信心的信息可以非常微妙。然而，监控我们发出的信息仍然值得我们用心和注意，因为它们可以对学生的长期成功产生深远的影响。

Summary for Instructors

Prompt students to acknowledge their successes.

Help students feel good about engaging the right processes for academic work and see that as progress, even if their grades aren't great.

教师摘要

鼓励学生承认他们的成功。

帮助学生感到自主积极地参与学术工作的过程是件令人愉快的事，即使他们的成绩不是特别好，也要看到这是进步。

Help students identify which parts of academic tasks they do well and which make them struggle; then you can help them troubleshoot the hard parts.

Forge personal connections. They go a long way in making students feel comfortable and confident in school.

帮助学生识别他们擅长的学术任务部分以及让他们感到困难的部分；然后你可以帮助他们解决难题。

建立个人联系。这对于让学生在学校感到舒适和自信非常重要。

第 14 章 如何应对焦虑

Some anxiety is not just normal, it's helpful. Anxiety prepares you for action by mobilizing your body to either flee or fight. What's more, it sometimes informs you. You might observe your body's reaction—a pounding heart, for example—before you're fully aware of what the threat is. Anxiety tells you that there's a problem so you can scan the environment to learn more about it.

When you think of anxiety and learning, you probably think first of test anxiety, of someone who knows the content well but fails to show it on a test because of nervousness. As I said in chapter 8, it's pretty typical to feel some anxiety while taking an exam. What's less common is for the anxiety to feel overwhelming and to affect you not just at test time but when you're performing other learning tasks, like reading or taking notes.

Anxiety goes from “helpful” to “damaging” when you habitually spend time and mental energy checking the environment for threats that aren't there. The spider-phobic thoroughly scans any room before entering to be sure the coast is clear and then keeps scanning it once he's there. That consumes attention and makes it hard to hold a conversation or even think. And anxiety can affect behavior as well as thinking. The spider-phobic might refuse to enter his own living room because he has seen spiders there before.

Where does this maladaptive anxiety come from?

一些焦虑不仅是正常的，而且是有益的。焦虑使你为行动做好准备，通过使你的身体动起来，准备逃跑或者战斗。更重要的是，它有时能为你提供信息。你可能会观察到你的身体反应，比如心跳加速，而这些可能会在你完全意识到威胁是什么之前就已经发生了。焦虑告诉你存在问题，所以你可以扫描环境以了解更多关于它的信息。

当你考虑到焦虑和学习时，你可能首先会想到考试焦虑，即一个人虽然很了解内容却因为紧张而无法在测试中显示出来的情况。正如我在第八章中所说，考试时感到一些焦虑是非常正常的。不太常见的是，当你不仅在考试时，而且在执行其他学习任务，如阅读或记笔记时，此时的焦虑感觉会变得压倒性。

焦虑从“有益”转变为“有害”时，是你习惯性地花费时间和精力去检查环境中

不存在的威胁。害怕蜘蛛的人在进入任何房间之前都会彻底扫描，确保一切安好，然后他进入后还会继续扫描。这占用了注意力，使人很难进行对话甚至思考。焦虑还可以影响行为以及思维。害怕蜘蛛的人可能会拒绝进入他自己的客厅，因为他以前在那里看到过蜘蛛。

这种适应性差的焦虑症从哪里来的呢？

There' s little doubt that a moderate proportion—perhaps a third—can be assigned to our genes. That doesn' t mean your DNA determines “Thou shalt be anxious” as inevitably as your eyes are destined to have a particular color. It means that you have a predisposition to the kind of vigilance, the watchfulness that easily blooms into anxiety. But what prompts it to grow?

There are two theories. One suggests that anxiety is a product of the same type of learning observed with Pavlov' s dog. You ring a bell, then feed the dog. Repeat that enough times, and the dog expects to be fed when it hears the bell and therefore salivates.

The same process can make you anxious about learning. I' ll use math as an example. Suppose that during a class you are asked to solve a math problem at the blackboard. You can' t solve it and you feel humiliated. Repeat that a few times, and you expect to feel humiliated every time you are asked to go to the board to solve a math problem, just as a dog expects to be fed when it hears the bell. The anticipation of humiliation makes you anxious.

But it doesn' t end there.

You know that math class is where you might be asked to go to the board to solve a problem, so now you get butterflies in your stomach the moment you walk into math class. And working math problems at home reminds you of working them at the board, so you feel uneasy when you do that. Anything associated with math can become a source of anxiety. This theory of anxiety emphasizes the way that something that started as neutral (math) becomes associated with something negative (frustration and shame).

毫无疑问，我们的基因可能占到了总的因素的三分之一左右。这并不意味着你的DNA决定了“你必须感到焦虑”，就如同你的眼睛被注定要有特定的颜色一样。这意味着你有一种倾向，那种容易发展为焦虑的警觉性、警惕性。但是，究竟是什么促使它的发展呢？

有两种理论。一种认为焦虑是我们在巴甫洛夫的狗的实验中观察到的学习方式产生的。你打个钟，然后喂狗。重复这样做足够多的次数，狗听到铃声就会期待被喂食，因此就开始流口水。

同样的过程也会让你对学习感到焦虑。我以数学为例。假设在一节课中，你被要求在黑板上解决一个数学问题。你解不出来并感到羞辱。重复这几次，你就会期待每次被要求到黑板上解数学问题时都会感到羞辱，就像狗听到铃声时期待被喂食一样。羞辱的预期让你感到焦虑。

但是，这并没有结束。

你知道数学课是你可能会被要求到黑板前解题的地方，所以现在你一走进数学课堂就会感到紧张。在家做数学题会让你想起在黑板上做题，所以你做题时会感到不安。任何与数学有关的事情都可能成为焦虑的来源。这种对焦虑的理论强调了一种最初是中性的事物（数学）如何与负面的东西（挫败和羞耻）关联起来。

Another theory helps us understand how anxiety can get out of control. The feeling of anxiety is so unpleasant that you always have your feelers out, so to speak, monitoring the environment for the thing you find threatening. This monitoring process is unconscious, but what's not unconscious is the feeling of nervousness, of anticipating that you might encounter the thing you dread. So you think, "Things must be really bad, because I'm very nervous and I can't find the thing that's making me nervous." Such thoughts make you even more concerned about threats, so you look even harder for them, you don't find them even though you think they must be there, and the vicious cycle continues.

Now, you may have noticed that there's actually something rational about what we're saying is irrational anxiety. In my example, math anxiety began with difficulty working problems at the blackboard. Shouldn't we just say, "Being bad at math makes you anxious about doing math?" Research indicates that that's a factor, but it can't be the whole explanation. A subset of the people who have math anxiety are actually pretty good at math. And there are others who are terrible at math but don't feel anxious about it. How can that be?

It appears that a person's interpretation of events is crucial. You're much more likely to feel anxious about math if you think a failed test tells you something important and unchangeable about yourself. If math is unimportant to you, a bad test score doesn't make you anxious. You're also okay if you do care about math (so you're upset about your low test score) but you think you can improve if you work harder. You get anxious only if you care and feel helpless.

When we turn our attention to reducing anxiety, two things become clear. First, given that your interpretation of events matters more than what actually happens, it would seem that the main thing we need to do is give

you a better way to think about what happens. Second, we shouldn't expect anxiety to go away quickly. Even with a better way to think about events, people need to unlearn their old associations and ways of thinking. It's like any other difficult task; you wouldn't expect to run a marathon your first day at the track. You need to work at it and expect modest progress.

In fact, eliminating anxiety takes long enough that most psychologists would say that it shouldn't be your goal. If you get anxious when you take a test, offer an idea in class, or work on a project with people you don't know, the important thing is to be able to take the test, offer the idea, or work on the project. Your goal should be the management of your anxiety. Don't feel "I can't do that task until I no longer feel anxious about it." Your target is to be able to do it despite your anxiety. 另一种理论帮助我们理解焦虑是如何失控的。焦虑的感觉如此不愉快，你实际上总会警觉着，监视着周围环境以找出你觉得威胁性的东西。这个监视的过程是无意识的，但是紧张、预期可能会碰到你害怕的事情的感觉却是有意识的。所以你会觉得：“情况一定很糟，因为我很紧张，却找不到让我紧张的事情。”这样的想法会让你更加关注威胁，所以你会更努力寻找它们，即使你认为它们必定在某处，但你却找不到，恶性循环就此持续。

你可能已经注意到，这种我们称之为非理性焦虑的事情实际上有些理性。在我的例子中，数学焦虑始于在黑板上解答问题的困难。我们难道不该说，“数学不好会让你对做数学感到焦虑吗？”研究表明这是一个因素，但它不能是唯一的解释。有数学焦虑的人中，有一部分人的数学实际上很好。还有些人数学很差但不会感到焦虑。这怎么可能呢？

关键似乎在于一个人对事件的解释。如果你认为一次失败的考试会揭示出你某些重要且无法改变的自我信息，你就更有可能对数学感到焦虑。如果数学对你来说并不重要，一个糟糕的测试分数并不会让你焦虑。如果你对数学真的在意（所以你对低分感到失落）但是你认为如果更努力的话你可以改善，你也会没问题。只有当你在乎并感到无助时，你才会感到焦虑。

当我们把注意力转向减少焦虑时，两件事变得明确。首先，你的事件解释比实际发生的情况更重要，所以我们需要做的主要事情就是给你一个更好的方式去思考发生的事情。其次，我们不能期待焦虑会迅速消失。即使有了一种更好的理解事件的方式，人们还是需要去忘记他们旧的联想和思维方式。这就像任何其他困难的任务，你不会期望你在操场的第一天就能跑马拉松。你需要去努力并期待适度的进步。

事实上，消除焦虑需要足够长的时间，大多数心理学家都会说这不应该是你的目标。如果你在参加测试，提出课堂上的想法，或与你不熟悉的人一起做项目时感到焦虑，重要的是你能够参加考试、提出想法，或者完成项目。你的目标应该是管理你的焦虑。不要觉得“我不能做那个任务，直到我不再对它感到焦虑。”你

的目标应该是，尽管有焦虑，你仍然能完成它。

IF YOU SUFFER FROM ANXIETY

What your brain will do: It will scan your surroundings for threats and continue to do so even if nothing threatening is observed. This scanning will heighten your anxiety in an upward spiral and will occupy your mind, making it difficult to focus on learning.

How to outsmart your brain: Focus on reinterpreting your thoughts to manage your anxiety.

This chapter includes a range of strategies. All have been shown to be effective in scientific experiments, but that doesn't mean that each one works equally well for every individual. I encourage you to try different strategies and see what works for you. It's probable that a single action won't do the trick and you'll need to put multiple strategies into play. Be patient. This will take time and practice.

如果你遭受焦虑困扰

你的大脑会做什么：它会扫描你周围的环境以寻找威胁，即使没有观察到任何威胁的存在，它也会继续扫描。这种扫描将会加剧你的焦虑，形成上升的螺旋，占据你的思绪，使你难以集中精力学习。

如何智胜你的大脑：专注于重新解读你的思绪以管理你的焦虑。

这一章包括一系列的策略。这些策略已被科学实验证明是有效的，但这并不意味着每一种策略对每个人都 *equally equally* 的效用。我鼓励你尝试不同的策略，看看哪种策略对你最有效。可能的是，单一的行动并不能解决问题，你需要使用多种策略。请耐心等待，这需要时间和练习。

TIP 90 Evaluate Progress as Any Improvement in Doing What You Want to Do

提示 90：将你想做的事情的任何改进都视为进步的评估

Feedback is important to the work of managing your anxiety. Because different strategies are more or less effective for different people, you must be able to get a sense of whether a specific tip works for you. How do you know if things are improving? You probably thought the definition of success would be “feel less anxiety,” but I’ve already “noped” that idea.

Consistent with your goal of managing anxiety, not eliminating it, define success as doing what you want to do, even if it makes you anxious.

At this point you may be snorting “Some tip! ‘Ignore your terror and just do it.’ ” Well, yes. Feeling anxious is uncomfortable, but it’s not dangerous. That’s hard to remember when your heart is pounding and your palms are sweaty—your body is telling you quite clearly, “There’s a problem here!” But in calmer moments you know that everything is actually fine and you can’t be harmed. You can push through. You may be very uncomfortable, but you’re not in danger.

Some years ago I had a student who exemplified this idea in a way that inspired me. She showed minimal evidence of social anxiety in other interactions, but every time she spoke up in class, a flush would start on her chest and rise to her neck. That and her somewhat halting speech showed that speaking in a group made her extremely anxious. But speak she did.

I’m sure I was seeing the product of a lot of work. She was articulating complicated ideas that required her to speak for sixty seconds or more, and I’ll bet she started with brief comments. Maybe she even planned actions in stages, for example:

反馈对于管理你的焦虑工作很重要。因为对于不同的人来说，不同的策略效果各异，你必须能够感知到具体的建议是否对你有效。你怎么知道情况是否在改善呢？你可能认为成功的定义就是“减少焦虑”，但我已经否定了这个想法。

你的目标是管理而不是消除焦虑，所以请将成功定义为即使令你焦虑也要做你想做的事。

此时，你可能会嘲笑“这个建议！‘忽略你的恐惧，就去做。’”是的，感到焦虑是不舒服的，但不是危险的。当你的心跳加速、手掌出汗时——你的身体很明确地告诉你：“这里有问题！”但在冷静的时刻，你知道其实一切都挺好的，你不会受到伤害。你可以挺过去。你可能会感到非常不舒服，但你并不处于危险

之中。

几年前，我有一个学生以一种震撼我的方式体现了这个理念。她在其他互动中几乎没有显示出社交焦虑的迹象，但每当她在课堂上说话时，她的胸部就会开始发红，然后蔓延到颈部。这以及她有些吞吞吐吐的话语表明，在小组中发言让她极其焦虑。但是她确实发言了。

我确信我看到的是大量工作的成果。她在阐述复杂的想法，需要她讲话六十秒或更长时间，我敢打赌她是从简短的评述开始的。也许她甚至将行动按阶段计划，比如：

Say something short once a week in class.

Say something short in each class.

Describe a more complete idea (taking, say, a minute) once a week.

Give a short presentation in class.

在课堂上每周说一次短句。

每节课都说一些简短的话。

每周描述一个更完整的想法（比如，用一分钟的时间）。

在课堂上做一个简短的报告。

I urge you to do the same. Count as a success doing a little of what you want to do. Perhaps all you say is “I just want to add that I really agree with that point” in support of someone else’s comment. If you avoid leaving the house because you fear social interaction, maybe the first step would be to take a walk around the block and promise yourself to say “Hello” to a passerby. The next tip elaborates on why the goals you set should be small.

Here’s what you should not be tallying in your mind: how you compare to others or how you compare now to where you’d like to be. Such comparisons are an invitation to unfair self-criticism and deciding that you’re weird or a loser. The right comparison is where you are now and where you used to be. That’s your focus. That and the next small step you can take.

In a sentence: You should evaluate whether the strategies you use are working, and the right definition of working is not that you’re feeling less anxious but that you are making some progress in doing what you want

to do.

我敦促你也做同样的事情。把做一点你想做的事情当作成功。也许你只是说：“我只想补充一句，我真的赞同那个观点”来支持别人的评论。如果你因为害怕社交互动而避免出门，那么第一步可能就是在街区周围散步，并向路过的人打声“你好”。下一个小窍门将详细说明为什么你设置的目标应该是小的。

以下是你不应在心中计算的事情：你如何与别人比较，或者你现在的情况与你希望的情况相比如何。这样的比较是对不公平的自我批评和认定你是个怪人或失败者的邀请。正确的比较是你现在的情况和你过去的情况。这就是你的焦点。那和你可以采取的下一个小步骤。

用一句话说：你应该评估你使用的策略是否有效，而有效的正确定义不是你感到不那么焦虑，而是你在做你想做的事情上取得了些许进步。

TIP 91 Avoid These Four Common Responses to Anxiety

Anxiety comes with a set of common thought patterns. Unfortunately, they don't improve things and, in fact, make anxiety worse. Here I'll list better alternatives to four common responses.

Don't give up. Don't fail to do things because you're anxious. For example, don't tell yourself, "I'm too anxious to talk to my advisor" or "I shouldn't take the advanced course even though I qualified, because the thought of it makes me uncomfortable." You're not required to seek out situations that make you anxious, but you still need to do the things you need to do. And you can. Anxiety makes you uncomfortable, not incompetent.

Instead, review your past successes. Remind yourself, "I have done this sort of thing before. Parts of it were hard for me and I did feel uncomfortable, but I got through it. I can do it again."

提示 91：避免这四种常见的焦虑反应

焦虑会带来一系列常见的思维模式。不幸的是，它们并不能改善事情，事实上，还会使焦虑情况变得更糟。在这里，我将列出四种常见反应的更好替代方法。

不要放弃。不要因为你感到焦虑就不去做事。例如，不要告诉自己，“我太焦虑了，不能和我的导师交谈”或“即使我有资格，我也不应参加高级课程，因为想到这个就让我不舒服。”你不需要寻找让你感到焦虑的情况，但你仍然需要做你需要做的事。你可以做到。焦虑会让你感到不舒服，但并不会使你无能为力。

相反，回顾你过去的成功。提醒自己，“我以前做过这样的事情。有些部分对我来说很困难，我确实会感到不舒服，但是我也挺过来了。我可以再做一次。”

Don' t catastrophize. When we' re anxious, our thoughts easily run away from us—we predict that things will end badly and there will be lasting consequences. So you don' t just think, “There' s a chance this presentation won' t be very good” ; you think, “My presentation will be terrible, I' ll flunk the course, and I' ll never be a radiation therapist.”

Instead, think from a distance. Try to make your assessment more rational by depersonalizing it, thinking about the situation as though it were happening to someone else. In other words, think, “Take someone like me, who' s a pretty solid B student. Now suppose that person gives a really terrible presentation on his project. The presentation is worth ten percent of the grade. Is that person likely to fail the course? What' s more likely to happen?”

Don' t deny that you' re anxious. Don' t just keep repeating to yourself, “Don' t be anxious don' t be anxious don' t be anxious.” Don' t think, “I can' t be anxious about this. This is nothing. Only a loser would be anxious about this. Okay, I am just not going to be anxious about this.” Suppression is not a winning strategy in the long run. You can' t keep anxiety out forever.

Instead, use suppression in the short term. Denial and suppression should not be your long-term plan, but suppression might be useful in the short term, especially if you have a plan to deal with the underlying issue later. For example, you might say to yourself, “I' m feeling nervous about that test I have on Friday, but I' m with friends now, and it' s okay for me to have fun. I have time mapped out each night for studying, and I can think about the test then. I' ve scheduled plenty of time for that, so it' s okay not to think about it now.”

Don' t self-medicate. Alcohol and other drugs may provide temporary relief from anxiety, and under a doctor' s supervision the limited use of medication may make sense for you. I' ve suffered from anxiety myself, and when it got really bad, I was too frazzled to put into practice any of the tips outlined here. Medication made space in my head for me to address my anxiety. But using drugs or alcohol solely for temporary relief

from anxiety and doing so without consulting a medical professional is not a road to improvement.

不要把事情想得过于严重。当我们感到焦虑时，我们的想法很容易脱离现实——我们预测事情会有糟糕的结局，并且会有持久的后果。所以你不只是想，“这个演示可能不会很好”；你会想，“我的演示会很糟糕，我会在课程中失败，我永远都不会成为一个放射治疗师。”

相反，要有所距离地思考。尽量用更理性的方式对其进行评价，把事情想象成发生在别人身上。换句话说，比如思考，“像我这样的—一个平均成绩为 B 的学生。假设这个人的项目演示真的很糟糕。这个演示占据的成绩比重是 10%。这个人会不会因此失败？更可能发生什么？”

不要否认你的焦虑。不要只是不停地对自己说，“不要焦虑不要焦虑不要焦虑。”不要想，“我不能对此感到焦虑。这没什么。只有失败者才会对这感到焦虑。好的，我就是不会对此感到焦虑。”压制并不是长期的胜利策略。你不能把焦虑永远挡在外面。

相反，短期内使用压制的策略。否认和压制不应该是你的长期计划，但是压制可能在短期内特别有用，尤其是你有计划之后去处理潜在的问题。例如，你可能对自己说，“我对周五的那场考试感到紧张，但我现在和朋友在一起，我可以放松并享受。我已经为每晚的学习安排了时间，那时我就可以想考试的事了。我预留了足够的时间，所以现在不想也没关系。”

不要自我安慰。酒精和其他药物可能会暂时缓解焦虑，而且在医生的监督下，有限的使用药物可能对你有所帮助。我自己也曾经焦虑过，在最困难的时光，我无法实践这里给出的任何建议。药物给我压力重重的头脑带来了一些空间，使我能够去解决我的焦虑。但是只为临时缓解焦虑而使用药物并不咨询医生并不是改善的一条路径。

In a sentence: Anxiety is usually accompanied by certain thought patterns that make it worse, so it's useful to be able to recognize them and direct your thoughts away from them should they occur.

TIP 92 Reinterpret What Your Mind Is Telling You

在句子中：焦虑通常伴随着一些会加剧其状况的思维模式，所以识别出这些思维模式并在出现时转移思维是很有用的。

提示 92: 重新解读你的思维告诉你的内容

I' ve described (and you may have experienced) how anxious thoughts can spiral out of control: your anxiety prompts you to search the environment for a threat, you find none, and that makes you even more anxious. How can you interrupt that cycle?

Here' s a three-step process to slow down your runaway mind. I urge you to write down your thoughts as you go through the first two steps. Writing helps because choosing which ideas are worth recording forces you to weigh and evaluate them.

To begin with, normalize your thoughts, rather than fighting them or addressing them directly. "This is normal, this thing that' s happening to me. It sucks, but it' s normal. I' m not crazy or weak, any more than someone who gets migraine headaches is crazy or weak. And it' s not unacceptable for me to feel anxious. It' s just something that happens to some people."

When you' ve been over that bit in your mind, it' s time to evaluate. What are the chances that one of the things you' re contemplating will actually happen? And what would the consequences be if it did? Is it really likely that the teacher will call on you when you don' t know an answer? Does that happen routinely? Or do you routinely worry about it, although it almost never does? Negative thoughts can seem powerful, but your thoughts can' t cause anything to happen. Thoughts are unsubstantial, temporary, and, we might add, private.

我已经描述过（你可能也有过体验）焦虑的思绪如何失控：你的焦虑驱使你寻找环境中的威胁，你找不到，这使你更加焦虑。你如何打破这个循环呢？

这里有一个三步过程来缓解你的失控思绪。我建议你在进行前两步时，记录下你的想法。写作有助于此，因为选择哪些想法值得记录，迫使你权衡并评估它们。

首先，要正常化你的思考，而不是对抗它们或直接应对它们。“这是正常的，正在发生在我身上的这种事情。这很糟糕，但这是正常的。我并不是疯狂或软弱，任何头痛的人都不会被认为是疯狂或软弱。我感到焦虑也不是什么不能接受的事。这只是有些人会遇到的事情。”

当你在脑海中梳理过这个部分后，就是时候进行评估了。你所思考的事情真的有可能发生吗？如果真的发生了，后果会是什么？老师真的有可能在你不知道答案

的时候提问你吗？这种情况是不是经常发生？或者你是不是经常担心它，尽管它几乎从未发生过？消极的想法可能看似强大，但你的想法不能导致任何事情发生。思维是不重要的，暂时的，我们可能还会补充，是私人的。

Suppose the terrible thing you contemplate does happen: you're called on and you don't know the answer, you fail a test, or the other members of your study group think you're poorly prepared. Well, then what? If you fail a test or even fail a course, your future is not down the drain. If you let down your study group, you apologize and try to make it up to them next time.

The final step is to reengage. You've normalized your anxious thoughts, you've evaluated them, and now it's time to get out of your head, beyond your thoughts. You need to reengage with the world. You need to show yourself that the thing that prompted your anxiety hasn't beaten you. It can be a baby step. Maybe you write one paragraph of the paper you're working on. Maybe you decide that you won't press yourself to say anything at the next meeting of your seminar, but you won't hide; you will make eye contact with people who are speaking and nod if you agree with what they're saying.

If you have something to do that you know will make you anxious, it is a good idea to use this three-step process a day or two beforehand. If you wait until you're feeling panicky because of a class presentation, you will be too jittery to put any of this thought work into practice. Instead, try to normalize, evaluate, and reengage a day or two before the presentation. As you're getting tense about the impending event and your thoughts start to spiral, you will be able to say to yourself, "I went through all this the other day. I figured out that this presentation is not as big a deal as I was making it out to be."

This is hard work. It's easy to say, "Normalize your thoughts," but much harder to do it. In fact when you start, it may feel nearly impossible—but it gets easier. And remember, all forward movement is progress.

In a sentence: Use a three-step process—normalize, evaluate, and reengage—to reinterpret what your mind is telling you when you're anxious.

假设你所担忧的悲剧真的发生了：你被提问却不知道答案，你考试不及格，或者你的学习小组的其他成员认为你准备不足。那么，接下来呢？如果你考试失败，甚至是课程失败，你的未来并未泯灭。如果你对你的学习小组失信了，你可以道歉，并尝试在下一次弥补他们。

最后一步是重新投入。你已经把你的焦虑思考正常化了，你评估了它们，现在是

时候走出你的思想，超越你的思想。你需要重新与世界接轨。你需要向自己证明，引发你焦虑的事情没有打败你。可以先迈出小步。也许你只需要写下你正在从事的论文的一段。也许你决定在下次研讨会上不再勉强自己说话，但你不会躲藏；你会和正在发言的人进行眼神交流，如果你同意他们的观点，你会点头。

如果你有什么事情知道会让你紧张，提前一两天使用这个三步过程是个好主意。如果你等到因为课堂演讲而感到恐慌时，你会过于紧张而无法实践这种思考工作。相反，尝试在演讲前一两天进行正常化，评估和重新投入。当你对即将到来的事件感到紧张，你的思绪开始混乱时，你会能够对自己说：“我上次经历过这一切。我发现这个演讲并不像我想象的那么重要。”

这是一项艰巨的工作。说“规范你的思维”很容易，但做起来却很难。事实上，当你开始时，这可能感觉几乎不可能——但是事情会变得更容易。记住，所有的前进都是进步。

简单来说：当你焦虑时，采用三步法——正常化，评估，重新参与——重新解读你的思想告诉你的信息。

TIP 93 Reinterpret What Your Body Is Telling You

Anxiety involves both your mind and your body, and your anxious body complicates your efforts to calm your runaway mind. You may experience a hammering heart, tense muscles, sweating, dizziness, or some combination of these. It's hard not to interpret these feelings as an indication that there's danger in the environment. You know quite well that you're feeling a fight-or-flight response.

提示 93：重新解读你的身体在告诉你什么

焦虑涉及到你的大脑和身体，你焦虑的身体会使你的平静思绪复杂化。你可能会体验到心脏砰砰跳动，肌肉紧张，出汗，头晕，或者这些感觉的某种组合。很难不将这些感觉解读为环境中存在危险的表现。你非常清楚你正在体验一种战斗或逃跑反应。

But there's actually another way to think about your body's reaction: you get the same feeling when you're excited. Your heart would pound if you watched your best friend surprise her girlfriend with a marriage

proposal, if your cousin were nominated for an Oscar, or if your favorite team had the chance to beat its rival with a last-second field goal.

I do a good deal of public speaking, and my heart pounds before every talk, but not due to anxiety. It's excitement. And a bit of excitement (or, as it's more typically called, arousal) helps you do a better job. If your arousal isn't high enough, you're sleepy. Next time your heart pounds and you start to sweat, don't start talking to yourself about how anxious you are. Think of yourself as excited. Your body is telling you that it's ready for adventure!

In a sentence: Don't assume that certain physical symptoms necessarily mean that you're anxious, because you feel the same symptoms when you are excited.

但其实还有另一种看待身体反应的方式：你感到兴奋时也会有相同的感觉。如果你看到你的好朋友惊喜地向她的女朋友求婚，如果你的堂兄被提名奥斯卡，或者如果你最喜欢的队有机会在最后一秒通过射门击败对手，你的心也会狂跳。

我经常需要进行公开演讲，每次演讲前我的心都会狂跳，但这并不是因为焦虑。那是兴奋。一点点兴奋（或者说更常见的说法是，唤醒）会帮助你做得更好。如果你的唤醒度不够高，你会昏昏欲睡。所以下次当你的心跳加速、开始出汗时，不要告诉自己你有多么焦虑。将自己想象成兴奋的。你的身体在告诉你它已经准备好去冒险了！

简而言之：不要假设某些身体症状一定意味着你正在焦虑，因为当你兴奋时，你也会有相同的症状。

TIP 94 Tame Your Wild Thoughts with Mindfulness Meditation

I've said that the anxious thoughts ricocheting around your mind are uncomfortable, even scary, but it's important to remember that they don't make bad things happen. They don't, on their own, have any power. That's easy to say but much harder to believe.

Mindfulness meditation can help you change your relationship with your thoughts. Mindfulness meditation is simply the practice of observing your thoughts, feelings, and sensations, and doing so without judging them and

without criticizing yourself. It's not "thinking about nothing"; it is being in the moment.

提示 94: 用正念冥想驯服你的疯狂思绪

我曾经说过，你脑海中纷飞的焦虑念头让人不舒服，甚至让人恐惧，但你要记住，这些念头并不会导致坏事发生。它们本身没有任何力量，这很容易说出口，但要真正相信却很难。

正念冥想可以帮助你改变与思绪的关系。正念冥想就是观察你的思绪、情绪和感觉，并在不加评判、不自我批评的情况下进行这种观察。它并非“空想”，而是在现在的时刻中存在。

People who are more qualified than I am have generously made detailed instructional resources freely available on the internet. But here's a quick overview to give you the idea. You set a timer for as little as two minutes (for starters), sit (or lie) comfortably, and breathe slowly. In many varieties of meditation you focus on your breath or your heartbeat. Your thoughts zip about, some bouncing around, some streaking past. You simply watch them go, refraining from judging them or judging yourself for having these thoughts, and return your attention to your breath. Practitioners often use imagery to help let go of thoughts. You imagine them as leaves passing by on a stream, as clouds drifting by on the wind, or as waves crashing on a beach. Each thought comes, it recedes, and then it's gone. That's it.

"That's it," but people who have meditated daily for years will tell you that (1) it's hard work and (2) they are still learning new things in their practice. Yet even a beginner can see benefits. That's why medical practitioners have suggested mindfulness meditation to patients with a broad range of ills both mental and physical. One of the most common is stress and anxiety, and researchers report positive effects of even brief mindfulness meditation training. Indeed, hundreds of medical centers around the United States (including the University of Virginia, where I work) have mindfulness-based stress reduction (MBSR) programs.

Why does watching your thoughts reduce anxiety? Two mechanisms may be at work. One is that you come to know a feeling of quiet in your mind—what it's like not to have a torrent of troubling thoughts. Having felt that mental quiet frequently makes you more confident that you can find it again when you're waiting for a final examination to begin or are in some other situation that makes you anxious.

Mindfulness meditation might also help you improve your ability to recognize your thoughts more fully rather than react to them emotionally based on a glimpse of them. Thus, when you sit alone at a restaurant table, waiting for your friend who is fifteen minutes late and has not responded to your text, your first reaction may be mounting anxiety that something terrible has happened. But some introspection leads you to realize that your anxiety is really fueled by worry that your friend has simply decided not to come. And that thought is somehow easier to reject as irrational. Your old friend wouldn't suddenly ghost you.

Mindfulness meditation sounds daunting, but it fits the “baby steps” approach quite well. No one needs to know you're doing it—as I noted, there are lots of tutorials on the internet and plenty of apps (e.g., Headspace, The Mindfulness App, Calm) to guide you. You can start by meditating just two minutes each day—consistency from day to day is more important than the length of each daily session. If you decide to give meditation a go, do keep in mind that initially you will “fail” a lot—that is, you will find it hard to focus as you're supposed to. Meditation is a skill like any other, and it gets easier with practice.

比我更有资格的人已经慷慨地在互联网上免费提供详细的教学资源。但这里有一个快速的概述来给你一个大致地了解。你可以设定一个计时器，时间短至两分钟（初学者），坐下（或躺下）感到舒适，然后慢慢地呼吸。在许多种类的冥想中，你会集中注意力在你的呼吸或心跳上。你的思考快速前进，有些会弹跳，有些会快速掠过。你只是平静地看着它们，避免对它们产生判断或因为对自己的这些思想进行判断，然后把注意力回归到你的呼吸上。实践者经常使用意象来帮助放下思想。你可以把它们想象成在溪流上飘过的树叶，或者是在风中漂浮的云，或者是在海滩上破浪的波涛。每一个思考都会来，它会退去，然后就消失了。就是这样。

“就是这样”，但每天冥想多年的人会告诉你（1）这是一项艰苦的工作，（2）他们在他们的实践中仍然在学习新的东西。然而，即使是初学者也可以看到好处。这就是为什么医学从业者建议患有各种疾病（包括心理和身体疾病）的病人进行正念冥想。其中最常见的是压力和焦虑，研究人员报告了即使是短期的正念冥想训练也有积极的效果。实际上，美国各地的数百个医疗中心（包括我工作的弗吉尼亚大学）都有基于正念的压力减轻（MBSR）项目。

为什么观察你的思维可以减少焦虑呢？可能有两种机制在起作用。一个是你了解到你的内心的安静感——知道如果没有一连串的麻烦思想，那会是什么样子。经常感到这种精神宁静会让你更有信心说你能再次找到它，比如在等待一场重要考试的开始或者在使你感到焦虑的其他情况。

正念冥想也可能帮助你提高认识你的思绪的能力，而不是基于一瞥的他们情绪反应。因此，当你一个人坐在餐厅的桌子前，等待你的朋友，他已经迟到了十五分

钟，还没有回应你的短信，你的第一反应可能是越来越焦虑，发生了一些可怕的事情。但一些自我反思使你意识到你的焦虑实际上是由于你担心你的朋友只是决定不来了。那个想法就好像更容易被你认为是不合理的。你的老朋友不会突然幽灵你。

正念冥想听起来很艰巨，但它非常符合“小步走”的方式。没有人需要知道你在做——我提到过，互联网上有大量的教程，还有许多应用程序（如 Headspace, The Mindfulness App, Calm）来指导你。你可以从每天冥想两分钟开始——每天的一致性比每天的会议长度更重要。如果你决定尝试冥想，请记住，最初你会“失败”很多——也就是说，你会发现很难像你应该的那样集中注意力。冥想是一种技巧，和其他技巧一样，只有通过实践才能变得更容易。

There's no guarantee that mindfulness meditation will be a good fit for you, but it's low cost to try, and it makes a world of difference for some.

In a sentence: Mindfulness meditation is easy to try and is a great help to some people in dealing with anxiety.

For Instructors

没有保证正念冥想一定适合你，但尝试的成本很低，对某些人来说，它产生了巨大的改变。

简单来说：正念冥想易于尝试，并且在处理焦虑方面对一些人有很大的帮助。

对于教练

On average, 20 percent of the students you teach are anxious. Schools typically have policies dictating accommodations for students who have had a formal diagnosis of anxiety. What about those without a diagnosis?

I make a general appeal to students to self-identify, saying something like “If you have any health issues—for example, if you're battling anxiety or depression—please email me or stop by my office so we can work together to be sure you get the most out of this class.”

I always start by asking the student what he or she would like me to do. Part of the reason is that students know better than I do what they find troubling, and part is that I want them to take responsibility for addressing the issue themselves, rather than my leaping forward with

suggested remedies.

My rule of thumb is that I won't provide an accommodation to a student with anxiety that I wouldn't provide to a student without anxiety. For example, I won't let an anxious student miss class, submit work late, or simply not participate in group work. That may seem harsh, but it's in keeping with the approach I've emphasized throughout this chapter: you don't simply not do things because they make you anxious. Anxiety is not a disability, and students can do everything that's expected in the course.

Examples of accommodations I would make:

平均而言，你教的学生中有 20%感到焦虑。学校通常有政策规定如何为已经被正式诊断为焦虑症的学生提供适宜的环境。那些没有被诊断的学生该怎么办呢？

我通常会向学生发出一种普遍的倡议，寻求他们自我识别，大致上说点什么，例如：“如果你有任何健康问题-例如，如果你在与焦虑或抑郁症抗争-请发邮件给我或者到我办公室来，这样我们可以一起努力确保你能从这个课程中得到最大的收获。”

我总是首先询问学生他或她希望我做什么。部分原因是学生比我更了解他们发现的问题，另一部分原因是我希望他们能够负责解决这个问题，而不是我急于提出建议。

我的经验法则是，我不会为焦虑的学生提供我不会为没有焦虑的学生提供的便利。例如，我不会让一个焦虑的学生缺课，提交工作晚，或者简单地不参与小组工作。这可能看起来很严酷，但这符合我在整个章节中强调的方法：你不能因为某事使你感到焦虑就不去做。焦虑不是一种残疾，学生可以做到课程中期待的所有事情。

我可能会提供的便利的例子：

For test anxiety: Sitting in a particular seat. Wearing a hood during a test. Taking a sixty-second walk during an exam.

For anxiety about class participation: Posing a question and giving students two or three minutes to write out their answers, then calling on the anxious student to read her response so that she need not compose an answer on the fly. Adopting a classwide policy of using name tents that a student sets on end to signify that he wants a conversational turn, thus making entry into the discussion easier. Encouraging very brief comments in the conversation.

For generalized anxiety: Offering help in thinking through how to break down large assignments into smaller tasks. Providing clearly stated,

written explanations about what's expected for assignments.

Don't think that you need to "treat" or resolve any student's anxiety. You're not trained for that, and anyway the student isn't looking to you for that help. He or she just wants to succeed in your class.

对于考试焦虑：选择固定的座位。考试时戴着帽子。在考试中进行 60 秒的散步。

关于课堂参与的焦虑：提出一个问题，给学生两三分钟的时间写出他们的答案，然后让焦虑的学生读出她的回答，这样她就不需要即兴作答。采用全班一致的名牌策略，学生将名牌竖起表示他想说话，这样可以更容易地加入到讨论中。鼓励在对话中做出非常简短的评论。

对于一般性焦虑：提供帮助，思考如何将大任务分解为小任务。提供清楚的书面说明，说明作业的期望。

不要认为你需要“治疗”或解决任何学生的焦虑。你没有接受过那方面的训练，而且学生也不希望你提供那种帮助。他或她只是想在你的课上取得成功。

Summary for Instructors

Follow your institution's guidelines for accommodating students with a diagnosis of anxiety.

教师概述

根据您所在机构的指导方针，为被诊断为焦虑的学生提供适当的配套设施。

Ask students who are anxious or struggling to identify themselves to you so you will be aware of the reasons they are struggling.

Hold anxious students responsible for all the work in a class (again, subject to any guidelines set by your school).

Offer the same accommodations that you would offer any student.

Remember that you're not responsible for treating or resolving your students' anxiety.

请让那些感到焦虑或正挣扎的学生向您揭示他们的情况，以便您了解他们挣扎的原因。

将所有课堂工作都交给焦虑的学生负责（再次提醒，受您学校设定的任何指导方针的约束）。

向焦虑的学生提供与其他学生同样的照顾和帮助。

记住，您没有责任治疗或解决学生的焦虑问题。

CONCLUSION

In the fall of my third year as a professor at the University of Virginia, I was required to provide a written account of what I'd achieved in research and teaching to that point. Two senior professors were to read this review and meet with me to offer guidance on how I could improve. I was eager for their feedback, as I was three years away from a much more serious review, one that would result in one of two outcomes: I'd be promoted or fired.

But I got no feedback during that meeting because my so-called guides did a very professor-y thing; they got into a debate with one another and ignored me. Professor X said that my work looked promising, but she had noticed that there was no sense of fun in the documents I had prepared. She felt that all great scientists regard their work with a certain playfulness, and I seemed awfully solemn. Professor Y quickly disagreed, saying, "Fun? Going to parties is fun. Research seems serious because it is serious." For fifteen minutes they argued about whether or not critical thinking is fun. Then they remembered why we were all there. Each told me, "It looks like you're doing fine," and the meeting ended.

That debate came to mind as I was finishing this book, because I've never even hinted that learning might be fun. In fact, I've mostly talked about how to make it less disagreeable and so implied that misery is the natural state of the learner. That has bothered me, because I'm actually much more in the "learning is fun" camp.

结论

在我作为弗映吉尼亚大学教授的第三个秋季，我需要提供一份关于我到那刻在研究和教学方面所取得的成就的书面报告。两位资深教授将阅读这份回顾，并与我见面，为我提供如何改进的指导。我对他们的反馈充满期待，因为我距离一个更严肃的评审还有三年，那次评审将导致两种结果之一：我要么被提升，要么被解雇。

但是，在那次会议中我并没有得到任何反馈，因为我的所谓导师做了一件非常教授式的事情；他们彼此开始了一场争论，而忽略了我。教授 X 表示，我的工作看起来很有前途，但她注意到我所准备的文件中没有乐趣的感觉。她认为所有伟大的科学家都以一种童趣的态度看待他们的工作，而我似乎过于严肃。教授 Y 立即反驳说，“乐趣？去派对是乐趣。研究之所以看起来严肃，是因为它就是严肃的。”他们花了十五分钟的时间争论批判性思考是否有趣。然后他们想起了我们所有人那里的原因。每人都告诉我：“看起来你做得很好”，会议就此结束。

在我完成这本书的时候，我想起了那次争论，因为我从未暗示过学习可能是有趣

的。事实上，我主要是在谈论如何让学习变得不那么令人厌恶，从而暗示痛苦是学习者的自然状态。这让我困扰，因为实际上我更倾向于“学习是有乐趣的”一派。

But perhaps a closer analysis shows that there's no inconsistency. Maybe learning is pleasurable when you pick the topic but a chore when someone else does. It made sense for me to write as though learning isn't enjoyable because I've focused on school-related tasks, which are assigned, not freely chosen. The strategies I've described would work just as well for content you choose to learn, but you probably didn't read this book for that purpose; you read it for help in learning the stuff you have to learn.

But how strong is the link between “have to learn” and “not fun”? Most students seem to think it's pretty consistent. Sure, sometimes you get lucky and an instructor assigns a book you actually enjoy, and sometimes a great instructor finds a way to intrigue you about a topic you initially didn't like. But even in those unusual cases, boredom or interest is still outside of your control.

The findings I've reviewed in this book indicate that that conclusion is mistaken. You can make yourself more interested in content that initially bores you. In this book, you've seen that:

If information is interesting, you'll attend to it more closely.

If you attend to it more closely, you will remember it better.

但也许更深入的分析显示，其实并无矛盾之处。也许，当你自选学习主题时，学习是愉快的，但当别人为你选择主题时，学习便成了苦差事。由于我关注的是被分配的、非自由选择的学校相关任务，所以我写作时表现得学习不是件愉快的事情是有道理的。我所描述的策略对你选择学习的内容同样适用，但你可能并没有为此而阅读这本书；你阅读它是为了帮助你学习必须学习的东西。

但是，“必须学习”和“不好玩”之间的联系有多强？大多数学生似乎认为这是非常一致的。当然，有时你会幸运地发现教师分配给你一本你真正喜欢的书，有时一个优秀的教师会找到方法使你对最初不喜欢的主题产生兴趣。但即使在这些不寻常的情况下，无聊或兴趣仍然不受你的控制。

我在这本书中审查的研究结果表明，这个结论是错误的。你可以使自己对最初觉得无聊的内容产生更多的兴趣。在这本书中，你已经看到：

如果信息有趣，你会更仔细地关注它。

如果你更仔细地关注它，你会记得得更清楚。

If you remember it better, you will more likely do well on tests.

If you do well on tests, you' ll have more confidence in yourself as a student.

If you' re more confident, academic tasks will seem more achievable.

If tasks seem more achievable, you' ll procrastinate less.

If you procrastinate less, you' ll keep up with your work.
如果你记得更清楚，你在考试中的表现可能就会更好。

如果你在考试中表现良好，你将对自己作为学生的能力有更多信心。

如果你更有信心，学术任务看起来就会更容易完成。

如果任务看起来更容易完成，你就会更少拖延。

如果你更少拖延，你就能更好地跟上你的工作进度。

If you keep up with your work, you' ll know more about more topics.

If you know something about a topic, new information on that subject will be easier to understand.

If you understand new information, it will be more interesting.

My students know about the first three effects; they find it easy to study and remember stuff that interests them. They seldom consider the other effects and often don' t know about some of them. For that reason, they view interest solely as a driver; they think that interest makes other processes (like attention and memory) work. They don' t see that interest can be a product of other cognitive processes.

如果你跟上你的学习，你将对更多的话题有所了解。

如果你对某个话题有所了解，那么对该话题的新信息会更容易理解。

如果你理解新的信息，那么它将会更有趣。

我的学生们知道这前三个效果；他们发现很容易学习和记住他们感兴趣的东西。他们很少考虑其他影响，并且通常对其中的一些一无所知。因此，他们只将兴趣视为驱动力；他们认为兴趣使其他过程（如注意力和记忆力）起作用。他们没有

看出兴趣也可以是其他认知过程的产物。

Here' s the information from the list above displayed as a figure.

The figure makes it more obvious that you need not begin with interest. The components of learning form a virtuous cycle, and you can enter it anywhere, or at multiple points. In chapter 12 you learned ways of maintaining attention even when you' re not very interested. In chapter 6 you learned how to improve your memory, in chapter 11 you learned how to overcome procrastination, and in chapter 13 I discussed different ways to think about self-confidence. As you change your self-confidence, your memory, your attention, and so on, the effects propagate around the circle, and your interest in what you' re learning will increase.

You have probably experienced this effect firsthand. There was a subject you found boring and confusing, but you persisted until you understood it, and found that made it somewhat less boring. Perhaps even intriguing.

I think the definition of independent learner goes beyond the ability to acquire information and skills on your own when others demand it. It' s also choosing what you want to learn. But how can you know what you want to learn if you don' t know what' s available to be learned?

这是上述列表中的信息的图示。

这个图更清楚地说明了你不必从兴趣开始。学习的各个组成部分形成一个良性循环，你可以从任何地方或多个地方进入。在第 12 章中，你学到了如何在不太感兴趣的时候保持注意力。在第 6 章中，你学到了如何改善记忆，在第 11 章中，你学到了如何克服拖延，在第 13 章中，我讨论了思考自信的不同方式。当你改变你的自信、记忆、注意力等等时，效果会在圆圈内传播，并且你对所学的兴趣将增加。

你可能已经亲身经历过这种效果。有一门你觉得无聊且令人困惑的科目，但你坚持下去直到理解了它，发现这使它稍微不那么无聊。甚至可能感到相当有趣。

我认为独立学习者的定义超越了在别人要求的情况下自己获取信息和技能的能力。这也包括选择你想学的东西。但是，如果你不知道有什么可以学习，你怎么知道你想学什么呢？

Truly independent learners maintain a state of intellectual openness and curiosity. They are always ready to discover something new that they want to know more about. It' s an optimistic way to live, because their curiosity is buttressed by the knowledge that new learning ultimately brings

interest, enjoyment, and satisfaction. Anything that's unfamiliar can be a source of fun, and because each of us knows so little, the potential for fun is limitless.

People sometimes describe learning as “exploring new terrain” or as a “journey.” I think the travel metaphor is apt; learning new things brings the same sense of adventure and satisfaction as traveling somewhere exotic, seeing the local flora and fauna, meeting the people, and observing how they live.

I set out to make the process of learning new information and skills easier, even in the absence of curiosity. To continue the travel metaphor, I hoped to create a map that ensured that you will arrive at the destination an instructor sets for you. But my fondest hope is that you'll think of this book as a travel kit and go exploring. I hope you'll be one of the people whose curiosity prompts them to see the world as brimming with hidden treasure.

真正的独立学习者保持一种智识的开放性和好奇心。他们总是准备好去发现一些新的、他们想要了解更多的东西。这是一种乐观的生活方式，因为他们的好奇心得到了新学习带来的兴趣、乐趣和满足感的支撑。任何不熟悉的事物都可以是乐趣的源泉，而且因为我们每个人都知之甚少，所以乐趣的潜力是无限的。

人们有时将学习描述为“探索新领域”或者是一次“旅程”。我认为旅行的比喻非常贴切；学习新东西带来的冒险和满足感就如同旅行到某个异国他乡，看到当地的动植物，遇到人们，观察他们的生活方式一样。

我开始致力于使学习新信息和技能的过程更容易，即使在没有好奇心的情况下。延续旅行的比喻，我希望能创造一张地图，确保你能到达教师为你设定的目的地。但我最大的希望是你会把这本书看作是一个旅行工具包，去探索。我希望你会成为那些因好奇心驱使他们看到世界充满隐藏财富的人之一。

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Dan Willingham received a PhD from Harvard University in cognitive psychology and spent over a decade researching how the brain changes as a consequence of learning. Now a professor of psychology at the University of Virginia, his bestselling first book, *Why Don't Students Like School?*, was hailed as “a triumph” by the Washington Post and “brilliant analysis” by the Wall Street Journal and was translated into many languages. His book *When Can You Trust the Experts?* was named recommended reading by *Nature* and *Scientific American* and made CHOICE's list of Outstanding

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