From the bestselling author of *A Mind for Numbers* and the creators of the popular online course Learning How to Learn

LEARNING HOW TO LEARN

How to Succeed in School Without Spending All Your Time Studying

A GUIDE FOR KIDS AND TEENS

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ADVANCED UNCORRECTED PROOFS
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CHAPTER 2

Easy Does It

Why Trying Too Hard Can Sometimes Be Part of the Problem

Has your teacher, or your mom or dad, ever told you to pay attention? Or to focus? You've probably told yourself to do it! That's because it's easy to become distracted. Sometimes whatever is going on outside the window seems more interesting than what's right in front of you. You can't help but think ahead to things like soccer, friends, or lunch.

Getting distracted is always bad. Right?

Maybe not. Let's see.

Take a look at the chess game in this picture. Look at the boy on the left. He's playing against the guy on the right. The boy’s rude, isn't he? Typical thirteen-year-old. No concentration. (Ever heard adults say things like that? They usually blame it on smartphones.)

The boy’s name is Magnus Carlsen. He has wandered off, looking at other games. The man is Garry Kasparov, one of the greatest chess players of all time. Magnus is not concentrating, so he must have no chance of winning. Right?

Amazingly, Kasparov didn't win the chess match. It was a tie. The world’s best chess player couldn't defeat what appeared to be a hopelessly distracted thirteen-year-old.

Surprise! Sometimes we need to lose concentration so we can think more clearly. Zoning out occasionally (not all the time) can be useful when you're learning or problem solving.
Soon after this photo was taken, Magnus returned to the table and focused on the game again. He had taken a little break so he could focus better when he returned.

The message of this chapter is that sometimes you need to be less focused in order to become a better learner. How can that be?

**You’ve Got Two Ways of Thinking!**

In the last chapter, I mentioned the word “neuroscience”—the science of the brain. Neuroscientists use new brain-scanning technology to look inside the brain and understand it better.

Neuroscientists have discovered that your brain works in two different ways. We’ll call these two ways of working the *focused* mode and the *diffuse* mode. Both modes are important in helping you to learn.

**Focused Mode**

When you’re using your focused mode, it means that you’re paying attention. For example, you might be trying to figure out a math problem. Or you might be looking at and listening to your teacher. You focus when you’re playing a video game, putting together a puzzle, or learning words from a different language.

When you’re focusing, you’re putting specific parts of the brain to work. Which parts are working depends on what you’re doing. For example, when you’re doing multiplication problems, focusing will use different parts of the brain than when you’re speaking. **When you are trying to learn something new, you must first focus intently on it in order to “turn on” those parts of the brain and get the learning process started.**

**Diffuse Mode**

If that’s *focused* mode, what is *diffuse* mode?

Diffuse mode is when your mind is relaxed and free. You’re thinking about nothing in particular. You’re in diffuse mode when you’re daydreaming or doodling just for fun. If your teacher tells you to *concentrate*, you have probably slipped into diffuse mode.

When you’re in diffuse mode, you’re gently using other parts of the brain that are mostly different from the parts you use when you are focusing. The diffuse mode helps you make imaginative connections between ideas. Creativity often seems to pop out of using the diffuse mode.

It turns out that your brain has to go back and forth between focused and diffuse modes in order to learn effectively.
Let’s Play Pinball

To better understand focused and diffuse modes, let’s turn to a game called pinball. It’s easy to play. You just pull back on a plunger. Once you let the plunger go, it hits a ball up onto a table. You score points as the ball bounces around on the rubber bumpers. Meanwhile, flashing lights and wacky sounds go off. You use the flippers on the lower portion of the table to keep the ball up and bouncing as long as possible.

Pinball tables are kind of like your brain. Their bumpers can be closer or farther apart depending on the table. When the bumpers are close together, it’s like your brain in focused mode. The ball bounces around rapidly in one small area before running out of energy and falling down.

Imagine that your mental ball leaves a trail when it travels. That’s like your focused mode—you make trails in your brain when you’re focused. These trails are laid when you first learn something and begin to practice using it. For example, let’s say you already know multiplication. If I asked you to work a multiplication problem, your thoughts would move along the same “multiplication trails” that had already been laid in your brain. To see what I mean, take a look at these pictures.

The diffuse mode is different. In this mode, the table’s bumpers are much farther apart. The thought–ball travels much more broadly around the table, hitting fewer bumpers.

Our brains act like both kinds of pinball machines. If we want to shift from thinking about the details to thinking freely about the bigger picture, we have to shift from focused to diffuse mode. You need two tables. (But importantly, your brain can only be in one mode at a time.)
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