1.

Introduction

Being a successful student is far more about being a **smart user** of **effective strategies** than about being 'smart'. Indeed, we can predict how well a student will do simply on the basis of their use of study strategies. Forget intelligence. Forget hours put in. What is important is your use of effective study strategies.

To use a strategy effectively you need to understand how it works. You need to understand:

- *Why* it works

- *How* it works

- *When* it works

- *When* it *doesn't*

- *How to* use it effectively

You also need to understand your own learning style, to help you assess whether a particular strategy is right for *you*.

The effective and long-term use of any memory strategy requires two things:

- that you understand why and how and when the strategy works, and

- that you practise the strategy enough to achieve mastery

This workbook is the first in a series of workbooks on study skills. The workbooks build on the information about memory and memory strategies provided in my book The Memory Key[1], which sets out the principles of how memory works, and how those principles relate to memory strategies. Because *The Memory Key* aimed to provide an overview of memory strategies across the board, it couldn't go into depth about specific

---

[1] Dr Fiona McPherson: The memory key. First published in New Zealand in 1999 by Tandem Press. Published in the United States in 2000 by Career Press. Published in Germany in 2000 by MVG.

memory strategies. These workbooks aim to do that for study strategies. They provide more detailed instruction about specific strategies, examples to help you understand more fully how and when to use them, and exercises to provide practise in using them.

This workbook looks at the most important group of study strategies — taking notes. Notetaking encompasses many strategies, not simply the obvious ones such as how to format your notes, use headings and highlighting, how to summarize, how to review your notes, but also the more complex ones of how to evaluate text to work out which strategy is appropriate, and how to ask the right questions.

The distinction between notetaking and active reading (discussed in the next book in the series) is somewhat arbitrary. Reading actively often involves taking notes; taking notes often requires you to read. Some strategies are common to both. One such strategy involves activating prior knowledge in preparation for reading about / taking notes about a subject. This is called priming, and it really does help, especially when the subject matter is difficult or unfamiliar.

So let's get you primed, to help you get the most out of this book. Think about your answers to the following questions:

When do you take notes?

Why do you take notes?

Do you have different strategies for taking notes in a lecture and taking notes from a book?

Do you realize notes can be formatted in different ways?

Do you re-write your notes?

If you re-write your notes, do you simply copy them out again, or do you write them in different words, or in a different format?

Do you review your notes?

How do you review your notes?

Do you think skimming is a good strategy or something poor readers do?

Do you have a clear idea of what you want to get out of a text or a lecture beforehand?

In a lecture, do you try to take down everything?

Do you have trouble picking out what is important in a text or lecture?

Do you believe that successful students are simply more intelligent than less successful students?

Do you 'cram' before an exam rather than study regularly?

Do you find information only seems to stay in your memory for a short time?

Do you have trouble concentrating?

Do you have trouble sitting still in one place for long?

Do you have trouble holding sufficient information in your head to understand what's being said?

Do you have different strategies you use for different types of information or when you have different purposes?

When you started this book, did you study the Table of Contents for a few minutes, reflecting on the various topics indicated there?

The last question is also a hint! If you didn't study the Table of Contents (and most people don't, believing that it is only provided as a type of index — a place to direct you if you're looking for something specific), then I recommend you go back and look at it. I've deliberately provided a lot of sub-headings, so you can get a reasonable idea of what is covered in this book.

I'm not suggesting you pick and choose what interests you, because I think you will be surprised by some of the information for topics you may think are 'beneath' you (like highlighting), and the chapters do build on each other. But as I've just suggested, preparing your mind before reading a text is an important part of successful learning, and the Table of Contents is a good place to start.

Okay. I hope these questions and the Table of Contents have got you thinking about your current notetaking style, your problems, and what you want from this book. Let's dive in.

2.

Making notetaking an effective strategy

Notetaking is probably the most common study strategy. Everyone takes notes — not everyone knows how to do it well. Research into the effectiveness of notetaking has found — surprise, surprise — that sometimes notetaking helps you remember information, and sometimes it doesn't[1].

So what factors make notetaking an effective strategy? Let's start by looking at what notetaking is all about. First, a couple of distinctions to help define what notetaking is.

The first distinction is that between notetaking from note-**making**. We **take** notes from a book or a lecture; we **make** notes as preparation for an essay or presentation or exam, or to clarify our thoughts. Although this book is mainly about notetaking (about which most research has been done), some of the discussion — especially the section on concept maps — is relevant to note-making.

The other distinction we need to make is one within notetaking — the difference between taking notes from a lecture and taking notes from a book. Again, following the research, I talk mostly about notetaking from books . It is much easier to practise effective notetaking strategies from written texts before moving on to the much more challenging situation of a lecture. I discuss recommendations for taking lecture notes in chapter 10.

Okay, now we've got that out of the way, let's look at what notetaking is about.

Notetaking is a strategy for making information meaningful.

Most people believe notes are to provide a written record of information they want to remember, but although that is certainly important, research reveals the main value of notetaking is through its effect on how you encode the information in your brain. That is, the *act* of notetaking is more important than the result.

For this reason, notetaking is effective to the extent that you **paraphrase, organize and make sense of the information** while taking notes[2] — put the information in your own words. Verbatim notes (where you have recorded information word-for-word) are of minimal value, unless of course you are simply using them as a stepping stone, and later paraphrase and reorganize them.

Several factors affect whether or not notetaking is effective:

- the density / complexity of the information

- the style of the presentation (for example, a very formal, 'dry' text is more likely to be recorded verbatim while a more informal passage is more likely to be paraphrased — and thus more effectively recorded)

- how well the information is organized (by the presenter)

- how skilled you are at taking notes (in particular, your skill at capturing the most important points)

And in the case of taking lecture notes, we must add another factor:

- how fast the information is presented (notetaking is more likely to aid recall if presentation rate is slow and you can review your notes)

Of course, all these factors interact. How well the material needs to be organized depends on the skill of the student; how much complexity she can deal with depends on her skill, her prior knowledge, and her working memory capacity; how much density/complexity is manageable depends on the style of the text and how well it's organized.

And all of these depend on a component of the student's skill, which is his knowledge of which strategy is most effective in the specific situation, for him.

This book will teach you not only what strategies are effective and when, but how to assess the presented material in order to determine the most effective strategy, and how to choose the right strategy for *you*.

I don't want to over-emphasize the personality factor. Although personal styles and abilities are something you need to take into account when considering which strategies will be most effective for you, effective strategies are effective strategies, regardless of the user. Moreover, it's a mistake to simply go with the strategies you are most comfortable with. Indeed, research suggests that the most effective strategies are often those you are initially *not* most comfortable with.

But there is one personal attribute that you should take into account when considering your approach to learning and using these strategies, and that is your working memory capacity. So before we go any further, I want to discuss this.

The importance of working memory

Working memory governs your ability to comprehend what you are reading or hearing, your ability to learn new words, your ability to reason, your ability to plan and organize yourself, and much more.

In fact, a study[3] found that a student's ability to take good notes and benefit from them is better predicted by his working memory capacity than by his grade point average or his score on the American College Test. The notes of students with a high working memory capacity were fuller, with more complex propositions, more main ideas, and more words.

A student with a low working memory capacity also has more trouble understanding text. Part of the reason for this is their reduced ability to make inferences. When reading, we make inferences all the time. These are basically of two types: those that require knowledge out of our memory, and those that require us to make connections between statements within the text. To do this, we have to be able to hold all the relevant information in our mind at the same time. Clearly this is a more difficult task for those who can 'hold' less in working memory.

Indications are that students with a low working memory capacity use less effective strategies when reading because such strategies are less demanding[4].

So what is working memory, and why does it have this effect?

What working memory is

To put information into our long-term memory store, we must **encode** it, which means, for the most part, we must actively process it — work on it. This we term being "in working memory". Essentially, being in working memory is a way of saying information is currently being worked on. It's not necessary, by the way, for all of this to be conscious, although mostly it will be.

Similarly, when we retrieve information — get it out of the memory store; "remember" it — the information again passes through this state of consciousness, this working memory.

But here we come to the nub of the issue. Our long-term memory store is incredibly large, but the amount we can process at any one time — the amount we can "hold" in working memory — is very very small.

Working memory capacity and the magic number seven

Probably the most widely known 'fact' about working memory is that it can only hold around seven chunks of information (between 5 and 9). However, this tells us little about the limits of working memory because the size of a chunk is indeterminate.

1 2 3 4 5 6 7 are seven different chunks — if you remember each digit separately (as you would, for example, if you were not familiar with the digits — as a young child isn't). But for those of us who are only too well-versed in our numbers, 1 through to 7 could be a single chunk.

In any case, recent research suggests that it is not so much the *number* of chunks that is important. What may be more important is how long it takes you to say the words (information is usually held in working memory in the form of an acoustic, sound-based, code). It appears that you can only hold in working memory what you can say in 1.5 — 2 seconds. Slow speakers are therefore penalized. (This also explains why we tend to talk very fast when we have a lot of information we want to disgorge).

There's more than one working memory

But what we term "working memory" is not a single entity. It contains several functions, including the "central executive" which coordinates and manages the various tasks needed. The extent to which working memory is domain-specific (different "working memories", if you like, for different sensory and cognitive systems, such as language, spatial memory, number) is still very much debated. However, there is a reasonable consensus that verbal and visuospatial information have different "stores". This is important, because it means you can increase the amount of information you're currently holding by using both systems. For example, when I need to remember, say, a phone number and a name, I'll repeat one while holding the other as a visual image — writing the name, as it were, on a mental whiteboard.

But the most important part of working memory, it now appears, is the executive control — your ability to control attention; your ability to concentrate and not be distracted by competing demands.

Working memory is about attention

We tend to focus on the more deliberate concentration ability when we think of attention, but these two aspects of attention are both important, and indeed, it may be that the ability to ignore irrelevant information is the more important.

Indeed, it may be that working memory capacity may *only* be critical when there's interference[5] — suggesting that the ability to ignore competing demands is the really critical part of attention.

Of course, interference comes from many sources — not just distractions in the environment, but things happening in your mind. Anxiety[6] or any strong emotion (love!) is distracting. Thoughts about what you plan to do later, or decisions you haven't made yet, can be distracting. Trying to do two things at once can be distracting. But these are just the obvious sources of distraction. Simply having dual goals can be a source of interference —

for example, taking notes for an essay, while simultaneously thinking you might as well include information you might need for a future exam.

But most importantly and least obviously, conflicting, inconsistent, or merely different, information is a source of interference. For example, holding your goal in mind while you study is a possible source of interference. Reading about one thing and going on to another, if you're not completely sure how they're connected (if indeed they are connected), is a possible source of interference. Think of information gathering as rolling a snowball. As long as the information all sticks together in a coherent, consistent, meaningful ball, you're fine. But anything that doesn't fit into your ball is going to cause problems.

This has important implications for notetaking. One of these has to do with the [cognitive load](#) of your text or lecture. The cognitive load is the extent to which the material makes demands on working memory. There are two parts to it: intrinsic (how difficult the material is) and extrinsic (how it's presented). Research suggests[7] that the format of the material is only important when the intrinsic load is high — that is, the material is reasonably difficult. Of course, what is difficult for one person may be easy for another — difficulty level is entirely subjective.

Conditions for effective notetaking

Skill at notetaking

Slow or self-determined rate of presentation

Well-organized material

Material that is not too difficult for the strategy and the student's skill

---

Main points

Taking notes is only effective if the student has sufficient notetaking skill to deal with the learning material.

Notetaking is primarily a tool to encode information effectively in your memory.

Your working memory capacity affects your ability to take notes.

You can hold more information in working memory by forming information into cohesive 'chunks', and by using both verbal and visual memory systems.

How much information you can 'hold' in working memory is affected by your ability to ignore irrelevant information.

Cognitive load is the extent to which the material makes demands on working memory.