

How to Take Smart Notes

Tags: [#note-taking](#) [#learning](#)

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Dialogue

Title: Make Your Reading More Meaningful

Move past the details and look for the meaning.

Example of the book - biology student learning the difference between arteries and veins.

Reading, especially rereading, can easily fool us into believing we understand a text. Rereading is especially dangerous because of the mere-exposure effect: The moment we become familiar with something, we start believing we also understand it.

Point: Real thinking requires external scaffolding.

We tend to resist external systems because we have to choose between keeping something in our head and having it somewhere else.

Transferring ideas into the external memory also allows us to forget them. And even though it sounds paradoxical, forgetting actually facilitates long-term learning.

Robert and Elizabeth Bjork at UCLA: there's a distinction in our memory between storage strength and retrieval strength.

Point: It's not so much about saving information, but in making connections between the information.

Niklas Luhmann (German sociologist) and the slip-box.

How does the slip box work?

What's the trigger to write one?

What's an example of a note?

Then what with the box/database/etc?

What have you changed your mind on?

Reserve

Richard Feynman once had a visitor in his office, a historian who wanted to interview him. When he spotted Feynman's notebooks, he said how delighted he was to see such "wonderful records of Feynman's thinking." "No, no!" Feynman protested. "They aren't a record of my thinking process. They are my thinking process. I actually did the work on the paper." "Well," the historian said, "the work was done in your head, but the record of it is still here." "No, it's not a record, not really. It's working. You have to work on paper, and this is the paper."

Quotes

10 Read for Understanding

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"I would advise you to read with a pen in your hand and enter in a little book short hints of what you feel that is common or that may be useful; for this will be the best method of imprinting such portcullis in your memory."—Benjamin Franklin[

10.1 Read With a Pen in Hand

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In a small but fascinating study, two psychologists tried to find out if it made a difference if students in a lecture took notes by hand or by typing them into their laptops (Mueller and Oppenheimer 2014). They were not able to find any difference in terms of the number of facts the students were able to remember. But in terms of understanding the content of the lecture, the students who took their notes by hand came out much, much better. After a week, this difference in understanding was still clearly measurable. There is no secret to it and the explanation is pretty simple: Handwriting is slower and can't be corrected as quickly as electronic notes. Because students can't write fast enough to keep up with everything that is said in a lecture, they are forced to focus on the gist of what is being said, not the details. But to be able to note down the gist of a lecture, you have to understand it in the first place.

10.2 Keep an Open Mind

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The slip-box forces us to be selective in reading and note-taking, but the only criterion is the question of whether something adds to a discussion in the slip-box. The only thing that matters is that it connects or is open to connections. Everything can contribute to the development of thoughts within the slip-box: an addition as well as a contradiction, the questioning of a seemingly obvious idea as well as the differentiation of an argument. What we are looking for are facts and information that can add something and therefore enrich the slip-box.

10.3 Get the Gist

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Luhmann's notes are very condensed (Schmidt 2015). With practice comes the ability to find the right words to express something in the best possible way, which means in a simple, but not simplified way. Not only will the readers of your text appreciate your ability to explain something clearly, those you talk to will benefit from this ability as well, as it is not limited to writing. It spills over into speaking and thinking. It is proven that readers regard an author and an audience a speaker as more intelligent the more clear and to the point their expressions are (Oppenheimer 2006).

10.4 Learn to Read

Highlight(yellow) - Page 74 · Location 1583

Reading, especially rereading, can easily fool us into believing we understand a text. Rereading is especially dangerous because of the mere-exposure effect: The moment we become familiar with something, we start believing we also understand it. On top of that, we also tend to like it more (Bornstein 1989).

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We can only improve our learning if we test ourselves on our progress. Here, too, rereading or reviewing does not confront us with the things we haven't learned yet, although it makes us feel like we have. Only the actual attempt to retrieve information will clearly show us if we have learned something or not. The mere-exposure effect would fool us here, too: Seeing something we have seen before causes the same emotional reaction as if we had been able to retrieve the information from our memory. Rereading, therefore, makes us feel we have learned what we read: "I know that already!" Our brains are terrible teachers in this regard. We face here the same choice between methods that make us feel like we learned something and methods that truly do make us learn something.

10.5 Learn by Reading

Highlight(yellow) - Page 76 · Location 1638

And as much as rereading doesn't help with learning, it certainly doesn't help with understanding. Admittedly, cramming does get information into your head for a short while—usually long enough to stay in there to pass a test. But cramming won't help you learn. As Terry Doyle and Todd Zakrajsek put it: "If learning is your goal, cramming is an irrational act" (Doyle and Zakrajsek 2013).]

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It is not surprising, therefore, that the best-researched and most successful learning method is elaboration. It is very similar to what we do when we take smart notes and

combine them with others, which is the opposite of mere re-viewing (Stein et al. 1984) Elaboration means nothing other than really thinking about the meaning of what we read, how it could inform different questions and topics and how it could be combined with other knowledge.

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Working with the slip-box, therefore, doesn't mean storing information in there instead of in your head, i.e. not learning. On the contrary, it facilitates real, long-term learning. It just means not cramming isolated facts into your brain—something you probably wouldn't want to do anyway. The objection that it takes too much time to take notes and sort them into the slip-box is therefore short-sighted. Writing, taking notes and thinking about how ideas connect is exactly the kind of elaboration that is needed to learn. Not learning from what we read because we don't take the time to elaborate on it is the real waste of time. There is a clear division of labour between the brain and the slip-box: The slip-box takes care of details and references and is a long-term memory resource that keeps information objectively unaltered. That allows the brain to focus on the gist, the deeper understanding and the bigger picture, and frees it up to be creative. Both the brain and the slip-box can focus on what they are best at.

11 Take Smart Notes

Highlight(yellow) - Page 79 · Location 1673

Experienced academic readers usually read a text with questions in mind and try to relate it to other possible approaches, while inexperienced readers tend to adopt the question of a text and the frames of the argument and take it as a given. What good readers can do is spot the limitations of a particular approach and see what is not mentioned in the text.

11.2 Think Outside the Brain

Highlight(yellow) - Page 82 · Location 1752

Richard Feynman once had a visitor in his office, a historian who wanted to interview him. When he spotted Feynman's notebooks, he said how delighted he was to see such "wonderful records of Feynman's thinking." "No, no!" Feynman protested. "They aren't a record of my thinking process. They are my thinking process. I actually did the work on the paper." "Well," the historian said, "the work was done in your head, but the record of it is still here." "No, it's not a record, not really. It's working. You have to work on paper, and this is the paper." [

Highlight(yellow) - Page 82 · Location 1762

Philosophers, neuroscientists, educators and psychologists like to disagree in many different aspects on how the brain works. But they no longer disagree when it comes

to the need for external scaffolding. Almost all agree nowadays that real thinking requires some kind of externalization, especially in the form of writing.

11.3 Learn by not Trying

Highlight(yellow) - Page 85 · Location 1820

Transferring ideas into the external memory also allows us to forget them. And even though it sounds paradoxical, forgetting actually facilitates long-term learning.

Highlight(yellow) - Page 87 · Location 1862

Robert and Elizabeth Ligon Bjork from the University of California suggest distinguishing between two different measurements when it comes to memory: Storage strength and retrieval strength (Bjork 2011). They speculate that storage strength, the ability to store memories, only becomes greater over one's lifetime. We add more and more information to our long-term memory. Just by looking at the physical capacity of our brains, we can see that we could indeed probably store a lifetime and a bit of detailed experiences in it (Carey 2014, 42). It is difficult, if not impossible, to verify this claim, but it does make sense to shift the attention from storage strength to retrieval strength. Learning would be not so much about saving information, like on a hard disk, but about building connections and bridges between pieces of information to circumvent the inhibition mechanism in the right moment. It is about making sure that the right "cues" trigger the right memory, about how we can think strategically to remember the most useful information when we need it.

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What does help for true, useful learning is to connect a piece of information to as many meaningful contexts as possible, which is what we do when we connect our notes in the slip-box with other notes. Making these connections deliberately means building up a self-supporting network of interconnected ideas and facts that work reciprocally as cues for each other.

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Stein et al. illustrate how commonsensical this is on the example of a biology novice who learns the difference between veins and arteries: "[he] may find it difficult at first to understand and remember that arteries have thick walls, are elastic, and do not have valves, whereas veins are less elastic, have thinner walls, and have valves" (ibid.). But by elaborating a little bit on this difference and asking the right questions, like "why?" the students can connect this knowledge with prior knowledge, like their understanding of pressure and the function of the heart. Just by making the connection to the common knowledge that the heart presses the blood into the arteries, they immediately know that these walls need to sustain more pressure, which means they need to be thicker than veins, in which the blood flows back to the heart with less pressure. And, of course, this makes valves necessary to keep the blood from

flowing back. Once understood, the attributes and differences are almost impossible to disentangle from the knowledge of veins and arteries.

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Writing notes and sorting them into the slip-box is nothing other than an attempt to understand the wider meaning of something. The slip-box forces us to ask numerous elaborating questions: What does it mean? How does it connect to ... ? What is the difference between ... ? What is it similar to? That the slip-box is not sorted by topics is the precondition for actively building connections between notes. Connections can be made between heterogeneous notes—as long as the connection makes sense. This is the best antidote to the impeding way most information is given to us in our learning institutions. Most often, it comes in modular form, sorted by topic, separated by disciplines and generally isolated from other information. The slip-box is forcing us to do the exact opposite: To elaborate, to understand, to connect and therefore to learn seriously.

References