fs | Learning Community

Mastering Metacognition For Better Learning

Learning anything new is, for most of us, an inexorable challenge replete with mistakes, failures, and moments of despair or frustration. It's also completely necessary to never stop learning in order to survive the modern world. So we shouldn't make it any more onerous than it needs to be. Improving our metacognition is an impactful way to streamline learning and save considerable time in the long run.

What is metacognition?

Metacognition is, quite simply, thinking about thinking. It's going beyond the object level and considering not just what you know, but how you learn and how you can improve it. As one of the most important components of learning, metacognition involves identifying successful approaches and being realistic about unproductive ones or errors. The more rigorously you're able to assess your learning and make pertinent adjustments, the more efficiently you can pick up new capabilities.

Berating yourself for mistakes and working as hard as possible is not metacognition. It's about working with your brain, rather than against it. Most people don't do this. They diligently trudge on with the techniques they picked up in school or with what looks the most productive or what makes it *feel* like they're learning. At the same time, they wonder why they stop improving or take forever to absorb anything new. Mastering metacognition can save you years of effort.

The origins of metacognition

Stanford developmental psychologist John Flavell coined the term in the 1970s as part of his research into childhood cognitive development. Flavell was heavily influenced by the Swiss psychologist Jean Piaget. He described metacognition in 1976 as *"one's knowledge concerning one's own cognitive processes or anything related to them, e.g., the learning-relevant properties of information or data. For example, I am engaging in metacognition if I notice that I am having more trouble learning A than B; if it strikes me that I should double-check C before accepting it as fact."* In his work, he classified it as a planned, conscious process.

Metacognitive knowledge

Flavell identified several components of metacognition, of which the most relevant for our purposes here is metacognitive knowledge. This, in turn, is made up of three types of knowledge: declarative, procedural, and strategic.

Metacognitive knowledge is what we know about what we know. It is our awareness of our existing abilities, our strengths and defects, and strategies for improvement. Flavell wrote that it is: [1] *"...that segment of your (a child's, an adult's) stored world knowledge that has to do with people as cognitive creatures and with their diverse cognitive tasks, goals, actions, and experiences. An example would be a child's acquired belief that unlike many of her friends, she is better at arithmetic than at spelling."* Such knowledge helps us to plan tasks, set goals, select appropriate strategies, and anticipate success or failure. Flavell then divided this into three categories.

Declarative (or person) knowledge consists of what you know about yourself as a learner, other people as learners, and universal facts about learning. For example, you might know that it is easier to pick up a foreign language while immersed in it and that you personally find it easy to learn vocabulary but struggle to pick up an accent.

Procedural (or task) knowledge is specific to the task at hand and what you know about how to complete it. For example, when learning a foreign language you may know that you need to master speaking, reading, and writing. Flashcards may work for learning to read but you'll need to practice with a native speaker to get your accent right in order to speak with fluency.

Strategic knowledge concerns the methods you know for learning and the insights you possess about how best to tackle problems. For example, you might know that spaced repetition is a potent way to encode vocabulary in your memory when learning a foreign language.

The four levels of metacognitive learners

Educator David Perkins, writing in *Smarter Schools: Better Thinking and Learning for Every Child*, defines four levels of metacognitive learning:

[1] https://pdfs.semanticscholar.org/7817/fe40a0c10af647a76753d9b53f511df704a7.pdf

1. **Tacit learning -** not thinking metacognitively. At this level, someone either knows that they know something or that they don't, but they do not consider other factors such as how well they know it or how they can improve their knowledge.
2. **Aware learning -** some awareness of the learning process, though without adequately thinking it through or acting upon any observations.
3. **Strategic learning -** awareness of how to organize learning and seeking out strategies to improve it. Someone at this stage knows that learning strategies vary in efficacy depending on the individual and the task, so they are willing to experiment.
4. **Reflecting learning -** doing the same as strategic learning, as well as monitoring the success of learning strategies and adjusting or changing tack in response to outcomes. (Readers may note that this is double loop learning.)

When you're seeking to learn something new, establish which level you're on and aim to move up to reflective learning.

Techniques for improving your metacognition

Anything that makes you more aware of what you know about an area, how well you're learning, where the gaps lie, and so on, can improve your metacognition. The aim is to become cognizant of your learning process and knowledge level whenever possible. We can divide improving metacognition into two parts: research and observation. You can observe yourself and the results you get to gather data about how you can learn better. And you can research the process of learning, such as looking up what we know about how memories are stored, or how long an optimal study session should be.

Here are a few techniques for improving your metacognition through observing yourself. We've listed some resources at the end of this article for discovering more about learning itself to aid in your assessments.

The muddiest point

After you've spent a session learning something, or as a general point about a competency you're working on, try noting down what you found the hardest about it. Consider why that might be and any specific techniques you could use to tackle it.

Known as 'the muddiest point', this helps identify where to focus your energy and encourages honesty about your abilities. We often shy away from admitting what we don't know, but writing it down is important because we learn the most by battling through confusion.

Keeping a learning diary

We recommend testing and improving your decision-making by keeping a notebook in which you record your process and the outcomes of decisions.

Keeping a learning diary has similar benefits. There are many ways to do this. When you try out a new learning technique, jot down your expectations and track how it works out. Write down your reflections as you learn and anything that stands out. Note any improvements for the future.

Writing summaries and recall

One of the most effective ways to both identify what you know and how to improve it, while also strengthening your knowledge, is by recalling it after a delay. This could involve writing a detailed summary or simply coming up with relevant keywords. After a delay we tend to have a better understanding of what we know and can monitor the progress of our learning, regulating what we do.[2] One reason recall is so effective is that a great challenge of learning is establishing what we actually know.[3]

Asking questions

We can improve a lot of things by simply asking better questions. Some example questions for boosting metacognition, suggested by Kimberly D. Tanner in *Promoting Student Metacognition*, include (note that these are obviously aimed at students):[4]

Planning:

- What are the goals of the session going to be?
- What do I already know about this topic?
- What questions do I already have about this topic?
- What do I need to do to successfully complete this task?
- If I have done something like this before, how can I do a better job?
- Which aspects should I spend more or less time on?

Monitoring

- What insights am I having as I experience this session?
- What questions are arising from this?

---

[2] https://wp.stolaf.edu/cila/files/2012/11/thiede_jedp.pdf
[3] https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.596.2852&rep=rep1&type=pdf
[4] https://www.lifescied.org/doi/full/10.1187/cbe.12-03-0033

- Do I find this interesting? Why or why not?
- How can I make this material personally relevant?
- What strategies am I using that are working well or not well?
- What is most challenging for me?
- Which of my confusions have I clarified? Which remain and how can I clarify them?
- How confident am I in my learning?

Evaluating

- What was this session about?
- What did I hear today that contradicted my prior understanding?
- What do I need to actively do to clarify my confusions?
- What would I do differently next time?
- What advice would I give a friend for learning this?

Conclusion

You can't outsource metacognition nor is anything we've covered here effective if you're not realistic about your own abilities. Metacognition should be an integral part of the learning process, not an afterthought. At every stage, you need to track your learning and make adjustments, seeking out unbiased feedback. Without the regulation aspect, metacognitive knowledge is futile. Combining it with action is a superpower.

Further reading

Metacognition and Cognitive Monitoring: A New Area of Cognitive Development Inquiry - John H. Flavell (PDF)

How Learning Works: Seven Research-Backed Principles for Smart Teaching - Susan A Ambrose & 5 more

Promoting Student Metacognition - Kimberly D. Tanner

The Elements (and Pleasures) of Difficulty - Mariolina R. Salvatori

How People Learn: Brain, Mind, Experience, and School - John Bransford and Rodney R Cocking

Make It Stick: The Science of Successful Learning - Peter Brown, Henry L Roediger III, and Mark McDaniel