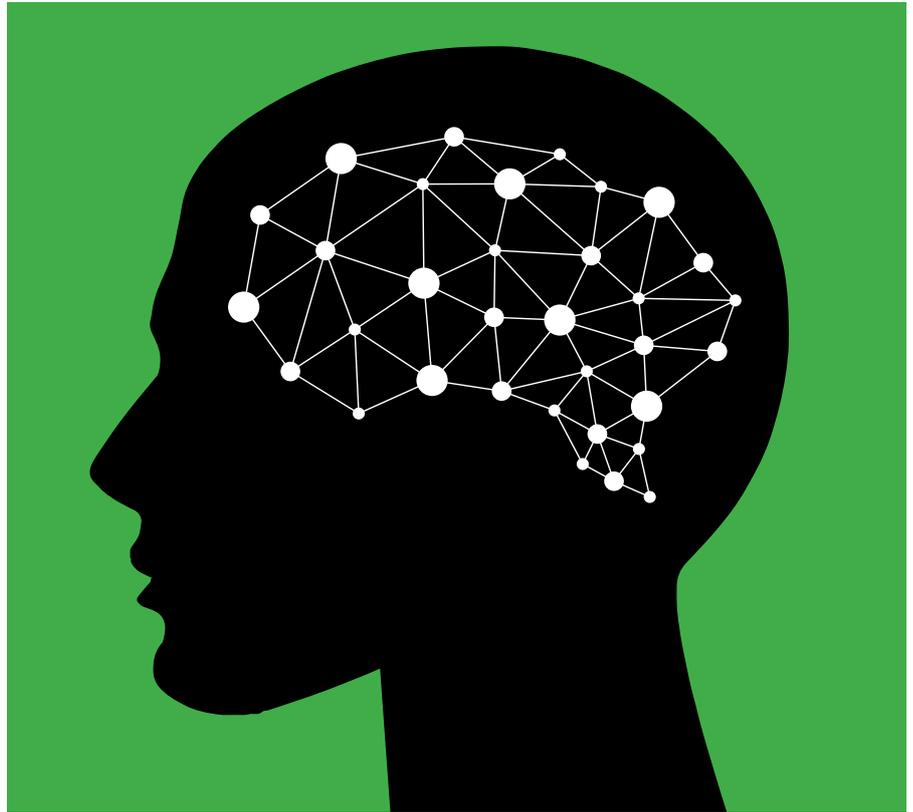


# LEARNING THAT LASTS A LIFETIME

BY JOSIE THOMSON



Have you ever wondered why some facts and data linger in your memory while other information simply vanishes? I did. That is why I delved into the field of neuroscience to complete formal post graduate studies to seek to understand this delicate function of learning and memory retention.

What I discovered was a complex system involved in facilitating real learning and memory function. There are three distinct stages:

**Encoding** - getting the information in (how memories are constructed)

**Retention** - keeping it in (how memories are retained)

**Retrieval** - ability to use it (how memories are accessed and used).

Reading information and learning information are two very distinct processes. In this world of information overload, our brain must discern what is useful versus what is interesting. There is a lot of interesting information that we do not necessarily need to

retain nor recall. But then there is much information that we truly wish to remember and apply. How do we prime our brain to retain more of what we want and need, and less of what is interesting?

Memories are like webs of connections between neural data points in the brain. When you think of a word, for example 'communication', you recognise another word more quickly i.e. 'people', or 'negotiation' - the network relating to 'communication' is activated. Every memory is like a web of connections across the brain, linked or organised in categories. A memory can be hard to find, but easier to retrieve when you increase access points across the web, which means there are more connections. This is a primary goal of effective learning strategies for long-term, sustainable memory and behavioural change.

The AGES Model (Attention, Generation, Emotion and Spacing) for making learn stick was developed by

# We live our lives not by avoiding failure but by grabbing a hold of failure as an opportunity to learn, to improve, to better ourselves and to master.

Dr Lila Davachi, Dr Tobias Kiefer, Dr David Rock and Lisa Rock. This model has assisted learning designers with their learning initiatives by focusing on, and experimenting with, the key variables to effective learning and memory retention. It highlights how we learn, and how to optimise the formation of memory for long term and sustainable behavioral change.

With just the right amount of attention, generation, emotion, and spacing, learners can create deep circuits for easy memory retrieval.

## Attention

Attention is the economy of the brain. It must be focused and directed well for memories and learning to last. But there is a challenge in the nature of work itself, where distractions, open plan spaces and multi-tasking inhibit the ability to focus sufficiently to learn something new, let alone retain it.

To optimise conditions for effective long-term learning to occur, learners need to be paying full attention to the topic being trained. In a world with so many distractions this is easier said than done. Dividing attention between two tasks significantly decreases the quality of attention, and the likely sustainability of any learning (Kensinger et al., 2003). Every tiny distraction during a learning task takes a big toll on later recall of ideas. Even having a mobile device 'on' whilst attempting to focus on a primary focus task can reduce IQ by 10-15 points.

Thus one of the foundational ideas for learning is ensuring you have 'undivided attention' - that people are focused closely on the learning task at hand.

Relevance and a feeling of reward helps the brain to pay close attention, as well as when we are open, curious, in a goal-focused state, or working to gain

something. This is where 'mindset' is important.

In her paradigm-shifting book *Mindset*, Carol Dweck's researched the impact of our mindset on how we deal with failures, setbacks and disappointments. The concepts proposed in *Mindset* fit right in to research on self-esteem, resilience and even posttraumatic growth. And the good news is that we can actually choose to cultivate a more growth-oriented mindset.

Mindsets are major belief systems; changing your mindset is a major paradigm shift. The two mindsets Dweck details are:

**Fixed mindset:** a system of beliefs that talents, aptitudes, temperaments, personality traits and preferences are fixed; either you have the smarts or the looks or the talents, or you don't. And that success or failure is a true measure of one's intelligence, competence, self-worth. People with fixed mindset feel an urgency to prove over and over again that they are as good as they believe they are (or, more likely, that others believe they are); to meet expectations, to succeed, to never fail.

Hence, they can be supersensitive to being judged and very vulnerable to feeling "rejected, a failure, silly, a loser, worthless, nobody loves me, pitiful." And the response to failure or a setback is to fear challenge, devalue effort, and avoid risk, to stop trying, to give up, retreat, or withdraw. The fixed mindset robs people of capacities to cope and learn.

**Growth mindset:** a system of beliefs that talents, aptitudes, temperaments, personality traits and preferences are simply a starting point for development. The growth mindset fosters curiosity and a passion for learning through effort

and experience. People with growth mindsets respond especially well when things are not going well; they tend to stretch themselves, confront obstacles, embrace risk, and stick through the hard times. Rather than being embarrassed or blocked by a sense of deficiency, they can acknowledge what skill or capacity is missing and set to work to cultivate it. They take direct, wise, and compassionate action. "Love of challenge, belief in effort, resilience in the face of setbacks, greater creativity and success" are hallmarks of the growth mindset.

## Choosing to Cultivate a Growth Mindset

What is important about distinguishing these two mindsets is that we can intentionally choose to cultivate a growth mindset. That would be characteristic of the growth mindset right there; our mindsets are not fixed; we can put in the effort to shift our orientation to learning and to life events from fixed to growth. We can shift how we filter our perceptions of ourselves and our experiences.

That means we live our lives not by avoiding failure but by grabbing a hold of failure as an opportunity to learn, to improve, to better ourselves and to master. Choosing to cultivate a growth mindset changes everything. In *Mindset*, Dweck shifts the paradigm from success v. failure to learners v. nonlearners.

In the fixed mindset, people are focused on proving their worth to themselves and others; they are focused on performance and immediate perfection and success; the focus on evaluation and outcome and the risk of not measuring up tends to cause people to hedge their bets and avoid risks; they become nonlearners.

In the growth mindset, people are focused on curiosity and the exuberance of learning, focusing on potential and stretching and making progress - if you are learning you're not failing - rather than outcome.

When challenges become difficult, people with fixed mindsets tend to give up and miss out on learning.

When challenges become difficult, people with growth mindsets tend to roll up their sleeves and dive in.

Making learning easy to digest, through chunking, visuals and stories, and making it interesting and engaging assist focusing our attention and are critical for optimising retrieval of information.

## Generation

What you do with information once it is attended to has a significant impact on memory. Just listening to information is not generation. Learners need to be doing something actively with the information i.e. simple exercises that encourage learners to make the information personally meaningful and relevant.

Insight, otherwise known as the 'aha' moment, is the deepest form of generation. The brain totally changes as a consequence of insight. New neural circuitry and connections are wired leading to the idea of neuroplasticity in the brain.

People need to be making their own meaning, literally generating their own links, not just passively listening to ideas. We need our own brain to create rich links to any new concept, linking ideas into many parts of the brain. Using different types of neural circuitry to link an idea is the key, for example listening, speaking, thinking, writing, presenting and other tasks about any important idea.

Structuring learning initiatives with these findings in mind might mean less teaching, or presentation of information,

and more time dedicated to the self-generation of learning with the goal of building more personal associations with existing knowledge for easier retrieval.

## Emotion

Learning happens in many complex layers, with emotion being one of the more important regulators of learning and memory formation.

The way in which emotion is thought to enhance memory is twofold. First, emotional content is thought to grab the attention of the individual, and, hence, help to focus attention. Second, it is known that emotion leads to the effectiveness of encoding information and memories.

Positive social connections and social issues are the experiences we feel strongest about. Incorporating more social activities into learning experiences is vital to enhance encoding, retention and retrieval.

## Spacing

Spacing works by changing the context in which the learning occurs. Spacing goes against the pressure of teaching more, in less time, with shrinking budgets. Spacing allows the brain to further digest new content and over time build and wire new connections, even when learners are at rest. Any spacing of learning (whether it be minutes, hours, or days) is better than no spacing at all.

Spacing is like a gift - no extra work for the learners. Spacing learning sessions across time leads to longer retention than cramming. Massed learning is effective for short term recall, but not for long term memory retention.

Adult learning is complex and multifaceted. How do we ensure people are motivated and interested in learning what is presented, and how do we

present the information to ensure that knowledge is sustainable, accessible, and easily applied in adaptive and contextual ways?

Suggestions could be that learning designers focus on:

- Creating maximum attention potential with a greater focus on learner motivation, ensuring one focus during each learning event;
- Encouraging significant generation of learning to encourage and build learner ownership and relevance;
- Cultivating a growth mindset - focus learning initiatives toward improvement and 'getting better' rather than proving or being 'the best'
- Creating a positive emotional environment with opportunities for learners to gain positive feedback and connect deeply with others; and
- Utilising more spacing of learning instead of massing and repetition, with more dispersed content.

Learning can be fun and it can be easy too. Learning is not a destination to be arrived at, but rather a life-long journey to be savoured and built upon over time.

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