

How Learning Works

Learning begins with our senses where we are constantly being bombarded with information: sights, smells, tastes, sounds, and feelings (touch). And some of that information is registered either consciously or subconsciously and transferred to our working memory. Other information is lost. We can also transfer information from our long-term memory (prior knowledge, skills, beliefs, and values) into our working memory and start to think about those different pieces. We can rearrange that information, reconnect it, store it in long-term memory, or some of it can be lost.

Working memory is a cognitive system involved in the *temporary* storage and processing of information; it's where we think and reason with information. Our working memory is limited to seven plus or minus a couple of pieces of information that we can remember at a given time. So, for example if I asked you to remember this string of numbers, you'd likely be able to do it.

395876124

You might break up the information into pieces to make it easier to remember (395-876-124) or reorganize it for the same purpose (123456789... not very useful if the sequence matters).

But it's going to become harder and harder to remember information like that if the symbols become increasingly unfamiliar.

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Learning also gets harder if you're learning in a new context, with more complex knowledge and skills, or if aspects of the environment are negatively impacting your learning.

Long-term memory is just what it sounds like. Ideally, you'll become purposeful in how those memories are organized and stored, to maximize their durability and transferability. For example, rather than organize information you're learning as a discrete (separate) set of facts, it's important to organize the new knowledge into patterns and principles (more expert-like organization). You'll also be able to practice retrieving those memories through techniques such as retrieval practice.

A few last aspects to consider in this initial discussion about how learning works. First, we're not robots. We're not simply transferring, storing, gaining, losing information (the basic information processing model). We're people. We have **emotions** and **cultures** and **environments** and teachers and friends and family (**social aspects**) and all of these affect learning positively and negatively, as do our **curiosity** and openness to **failure**. Our physical and mental health affect our learning, as do any learning disabilities or related factors (e.g., autism spectrum disorder, attention-deficit hyperactivity disorder, dyslexia). The things that we need or choose to learn also have important impacts on our learning, such as the **relevance** and **authenticity** of those things. We'll dive deeper into those aspects later in the module.

One of our learning super-powers is to identify what we know, and don't know, then to strategize and prioritize accordingly (metacognition). We'll do a lot of work in that area throughout the module.