



Effective Learning Strategies:

Elaboration

Much research has been carried out to find the most effective learning strategies. Just because they are effective doesn't mean that they are easy! In fact, you may find some of these strategies quite difficult to implement consistently. However, it is partly because they are challenging that they are so effective, so don't give up.



What is ELABORATION?

ELABORATION is an exercise in deepening your learning by asking questions that help you to make connections between different ideas and experiences. Rather than simply accepting ideas and trying to remember them, **ELABORATION** requires interrogation. Not only will this enable deeper understanding by helping you to recognize what is important, it will also help you to identify any misconceptions you may hold. When it comes to answering questions on a topic, it will also help you to describe and explain in greater detail. Questions you might consider include how does x work? Why does x happen? When did x happen? What caused x? What is the result of x? How is x similar/different to y? and so on.

How do I implement ELABORATION?

Step 1: Make a list of all the ideas you need to learn.

Step 2: Write questions that relate to these ideas that require you to explain how they work and why. Don't be afraid to write down questions you don't know the answers to!

Step 3: (At this point you could practice retrieval by answering the questions from memory!) Use your notes, textbooks, and other resources to help you answer the questions you have asked.

Step 4: As you continue to elaborate on the ideas, make connections between ideas and explain how they work together. Ask yourself in what ways they are similar or different.

Step 5: Make a personal connection with the ideas by applying them to your own life experiences or memories. Take notice of how the concepts learned apply in the world around you and in your own life.

Can you give me an example of ELABORATION?

Biology / Psychology

Imagine you are studying neural communication in a Biology or Psychology lesson. You might begin by asking: **How does neural communication work?** Well, if we look at one neuron, the dendrites receive messages from many other neurons, and then the messages converge in the soma. If there is enough of a positive charge within the soma, then an action potential will occur, and an electrical signal is sent down the axon. When the signal reaches the terminal buttons, neurotransmitters are released into the synapse where they communicate with the dendrites of the next neuron. **Why does this happen?** The neurotransmitters are chemicals that allow neurons to communicate with one another. Overall, the pattern of activation among different neurons (which neurons fire, how quickly, what neurotransmitters they release) determines the message in your brain.

Now, imagine that you want to break neural communication down further. You might then ask: **How does the axon work?** The axon is a long tail-like structure that produces the electrical signal. **How does the signal travel?** The axon is covered in myelin sheath, a fatty substance that insulates the axon.

Now is a great opportunity to make a link to a personal experience: The myelin sheath works like the rubber around the cord of an electrical appliance, and it serves to make the electricity travel faster. **Why have myelin sheath?** Because we need our neurons to be able to send signals quickly, since we need to be able to react quickly, make decisions quickly, move quickly, perceive feeling in our skin quickly, etc.

Make sure to compare ideas to learn how they are similar and different. For example, an axon and terminal buttons are both parts of a neuron; however, the axon sends an electrical signal while the terminal buttons release chemicals. Both Schizophrenia and Parkinson's disease are related to the neurotransmitter dopamine, but Schizophrenia is the result of too much dopamine while Parkinson's disease is the result of too little dopamine.

History

Imagine you're studying World War II, and specifically the attack on Pearl Harbour. You could ask yourself: **How did this attack happen?** On December 7, 1941, the Imperial Japanese Navy attacked the United States Naval Base at Pearl Harbour. The attack included Japanese fighter planes, bombers, and torpedo planes. **Why did this happen?** The Japanese intended to destroy the United States' Pacific Fleet so that it could not interfere with Japanese operations. Here you could also ask another type of question: **What was the result of this historic event?** Well, Japanese casualties were light, while they damaged eight U.S. Navy battleships. The Arizona was among those that the Japanese sunk, and was not raised from the shallow water. U.S. aircrafts were also destroyed, and 2,403 Americans were killed (1,178 were injured). **Why is this event important?** The day after the attack, Roosevelt delivered his Infamy Speech, the United States formally declared war on Japan, and Japanese-Americans were then relocated to internment camps. You could then go on: **How did the U.S. enter the war? How did the Pearl Harbour attack lead up to the release of the atomic bomb? How did the war end?** And so on. There are so many ways to explain the idea and add details!