

# Depth of Processing

A phenomenon of memory in which information that is analyzed deeply is better recalled than information that is analyzed superficially.<sup>1</sup>

Thinking hard about information improves the likelihood that the information will be recalled at a later time. For example, consider two tasks that involve interacting with and recalling the same information. In the first task, a group of people is asked to locate a keyword in a list and circle it. In the second task, another group of people is asked to locate a keyword in a list, circle it, and then define it. After a brief time, both groups are asked to recall the keywords from the tasks. The group that performed the second task will have better recall of the keywords because they had to analyze the keywords at a deeper level than the group in the first task; they had to think harder about the information.<sup>2</sup>

This phenomenon of memory results from the two ways in which information is processed, known as *maintenance rehearsal* and *elaborative rehearsal*. Maintenance rehearsal simply repeats the same kind of analysis that has already been carried out. For example, people often use maintenance rehearsal when they repeat a phone number back to themselves to help them remember; no additional analysis is performed on the phone number. Elaborative rehearsal involves a deeper, more meaningful analysis of the information. For example, people engage in elaborative rehearsal when they read a text passage and then have to answer questions about the meaning of the passage; additional analysis as to word and sentence meaning require additional thought. Generally, elaborative rehearsal results in recall performance that is two to three times better than maintenance rehearsal.<sup>3</sup>

The key determining factors as to how *deeply* information is processed are the distinctiveness of the information, the relevance of the information, and the degree to which the information is elaborated. Distinctiveness refers to the uniqueness of the information relative to surrounding information and previous experience. Relevance refers to the degree to which the information is perceived to be important. The degree of elaboration refers to how much thought is required to interpret and understand the information. Generally, deep processing of information that involves these factors will result in the best possible recall and retention of information.<sup>4</sup>

Consider depth of processing in design contexts where recall and retention of information is important. Use unique presentation and interesting activities to engage people to deeply process information. Use case studies, examples, and other devices to make information relevant to an audience. Note that deep processing requires more concentration and effort than mere exposure (e.g., classroom lecture), and therefore frequent periods of rest should be incorporated into the presentation and tasks.

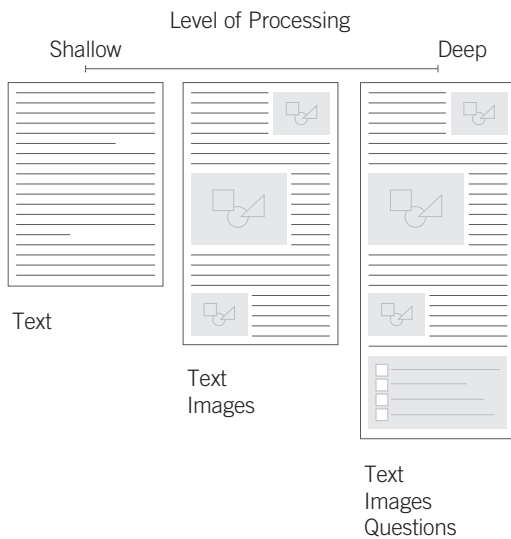
See also **Advance Organizer**, **Mnemonic Device**, **Picture Superiority Effect**, and **von Restorff Effect**.

<sup>1</sup> Also known as *levels-of-processing approach*.

<sup>2</sup> The seminal work on depth of processing is “Levels of Processing: A Framework for Memory Research” by Fergus I. M. Craik and Robert S. Lockhart, *Journal of Verbal Learning and Verbal Behavior*, 1972, vol. 11, p. 671–684.

<sup>3</sup> See, for example, “Depth of Processing and the Retention of Words in Episodic Memory” by Fergus I. M. Craik and Endel Tulving, *Journal of Experimental Psychology: General*, 1975, vol. 104, p. 268–294.

<sup>4</sup> See, for example, “The Self as a Mnemonic Device: The Role of Internal Cues” by Francis S. Bellezza, *Journal of Personality and Social Psychology*, 1984, vol. 47, p. 506–516.




The more deeply learners process information, the better they learn. Depth of processing is improved through the use of multiple presentation media and learning activities that engage learners in elaborative rehearsal—as in this e-learning course by Kaplan EduNeering.

**EDU**NEERING

Overview  
Fire  
Response  
Choices  
Use  
Challenge

Comments  
Exit

### How do I use a fire extinguisher?




**The PASS rule**

Click each button below to learn more about the PASS rule.

PASS

P



**Pull the pin**

Lift the fire extinguisher off its rack or hook with one hand using the handle on the back of the extinguisher. Place the fire extinguisher at your feet in a vertical position so the nozzle is facing away from you.

Holding the fire extinguisher handle firmly, slip the index finger of your other hand through the "pull" loop on the extinguisher pin. Pull the loop and release the pin.

**Safe work practices**

Apply these safe work practices when using a fire extinguisher.

safe work practices

Toxic fumes, gases, and particulates are often put off by fires, so it is important to stay upwind of the flames.

Know your workplace and always have an escape route.

If the fire is blocking your escape route, the fire extinguisher can be used to clear a safe path through the fire.

If the fire is in a room and you cannot easily control it, get out immediately, and shut the door to confine the fire.

If a fire is in a closed room, never open a door to attempt to extinguish the fire. The flames could jump out at you.

**How much have you learned?**

Practice your knowledge by completing the activity below.

**Q:** The first step in using a fire extinguisher correctly is to \_\_\_\_.

☐ A sweep from side to side

☐ B pull the pin

☐ C squeeze the handle

☐ D aim the nozzle

INCORRECT!

Incorrect Remember the PASS rule—pull, aim, squeeze, and sweep.

Items remaining: 3 CONTINUE