# Active Recall

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Active recall is a principle of efficient learning, which claims the need to actively stimulate memory during the learning process. It contrasts with passive review, in which the learning material is processed passively (e.g. by reading, watching, etc.). For example, reading a text about George Washington, with no further action, is a passive review. Answering the question Who was the first US President?, is active recall. Active recall is very efficient in consolidating long-term memory.

A study done by J.D. Karpicke and H.L. Roediger, III (2008) lent support to the idea that practicing information retrieval is integral to learning. They had college students study 40 pairs of foreign language words on flash cards. One group learned the words by going through the deck of cards each time until they could recall all the words. The other group's subjects dropped a card whenever they successfully recalled its paired word on the reverse side. Both groups alternated between study and test trials. Furthermore, half of the subjects were tested on the entire list during each test trial, while the other half were only tested on words they failed to recall on previous test trials. The results of a follow-up test on the entire list a week later clearly showed that those who were tested on the entire list during learning were able to recall a greater percentage of the word pairs (~80% as opposed to ~30% for the partial-list tested subjects). Results didn't depend on how the students studied (entire list or only unrecalled pairs), only how they were tested. The authors concluded that more rigorous testing leads to better retrieval in the future.

Karpicke and Janell R. Blunt (2011) followed up in this finding and questioned whether elaborative studying with concept mapping or retrieval-heavy studying was more effective. 200 Subjects who had studied various scientific concepts using more retrieval techniques did 50% better than the other group when tested a week later on their comprehension and ability to infer. Retrieval-heavy studiers performed better than concept-mappers in every measured way, even on questions requiring the creation of concept maps,. Thus, they concluded that retrieval techniques aid learning more than elaborative studying. Karpicke believes the next step is to discover better ways to use retrieval in learning.

McDaniel et. al. (2009) came up with the 3R (read-recite-review) method for learning from textbooks. They conducted two experiments that compared the 3R strategy to rereading and note-taking ones. Their results from one of the experiments showed that 3R improved both immediate and delayed (one week) free recall of information. The other one involved more complexity, and its results showed 3R studiers did better than those who reread and as well as note-takers, though the note-takers studied for longer than the 3R group.

Thus there is much support that active recall is better than rereading text for enhancing learning. In fact, Karpicke, et. al. (2009) believe that students get "illusions of competence" from rereading their notes and textbook. One reason for this illusion is that the text contains all the information, so it is easy to glance over it and feel as if it is known well, when that is not the case at all. Better put: in the text, the cue and corresponding target are both present, which is not the case during testing.

The results of their study showed that retrieval as a study strategy is rare among students. They prefer to reread instead.

Some critics of active recall claim that using retrieval techniques only improves learning a specific response. However, Karpicke et. al. (2009) and Butler (2010) proved that at the very least, information is better remembered.