Active Recall: The Secret of High-Achieving Students

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ABSTRACT

The purpose of this article is to introduce the reader to the Active Recall technique as an essential learning strategy for today's medical students, detailing its practical implementation, its benefits for academic performance, and the scientific foundations that support it.

Active Recall is defined as a study method that consists of the active retrieval of previously learned information through the use of quizzes, tests, or flashcards, instead of passive memorization. The article explains that this technique forces the brain to make a retrieval effort, which facilitates the identification of gaps in knowledge and fosters a deep and lasting understanding of complex topics. It also highlights the importance of integrating this methodology with spaced repetition to consolidate long-term memory, optimize study time under the principle of "quality hours, not quantity," and prevent student burnout.

Implementing Active Recall is a fundamental tool for managing the vast amount of information in medical school. By taking an active role in their academic training, students not only improve their long-term retention of concepts, but also develop critical skills for their future clinical practice.

Keywords: active recall, spaced repetition, academic performance.

INTRODUCTION

In today's fast-paced world of education, the desire to achieve outstanding academic performance is a goal shared by students of all ages. However, simply investing time in studying is not enough; the true key to success lies in adopting effective study strategies. In this article, we explore one of our favorite science-backed techniques: active recall [1].

Our aim is to equip students of all levels with the tools they need to significantly improve their academic performance. But why is it so important to approach study methods strategically? The answer lies in the fact that passive memorization is no longer sufficient in an information-driven world.

In an increasingly competitive educational environment, active recall emerges as a fundamental tool that not only optimizes learning but also fosters deep and lasting understanding [2].

ACTIVE RECALL

Active recall is an effective study method that involves recalling previously learned information through quizzes or flashcards [3]. In the context of a medical student, this technique is a fundamental tool since both the quantity and complexity of information can be overwhelming [4].

In the daily life of a medical student, active recall can become a valuable tool, as medicine involves learning a vast amount of detail, from basic sciences like anatomy and physiology to clinical sciences like internal medicine and surgery. Future medical minds need all this information to integrate it effectively when facing a patient. As mentioned earlier, this methodology focuses on details that are not always easy to recall after reading the material. Thus, the goal of active recall for medical students is to ensure that acquired knowledge remains with them over time [5].

Active recall works because it involves the constant repetition of information through questioning, answering, and self-assessment. By answering these questions, your brain is forced to actively retrieve information instead of passively studying [6]. Furthermore, by assessing yourself, you can identify areas of weakness and determine where you need to improve.

Now that we know how active recall works, the next step is to be able to implement it in our daily study routine. The first step is to identify the information you want to learn; this can include everything from definitions and concepts to dosage and handling.

One of the most recommended ways to apply active recall is through the use of flashcards and quizzes. These involve writing down questions and answers, and can include diagrams and images that can be helpful when studying the chosen topic. Finally, repeated active recall helps consolidate information in your long-term memory [4].

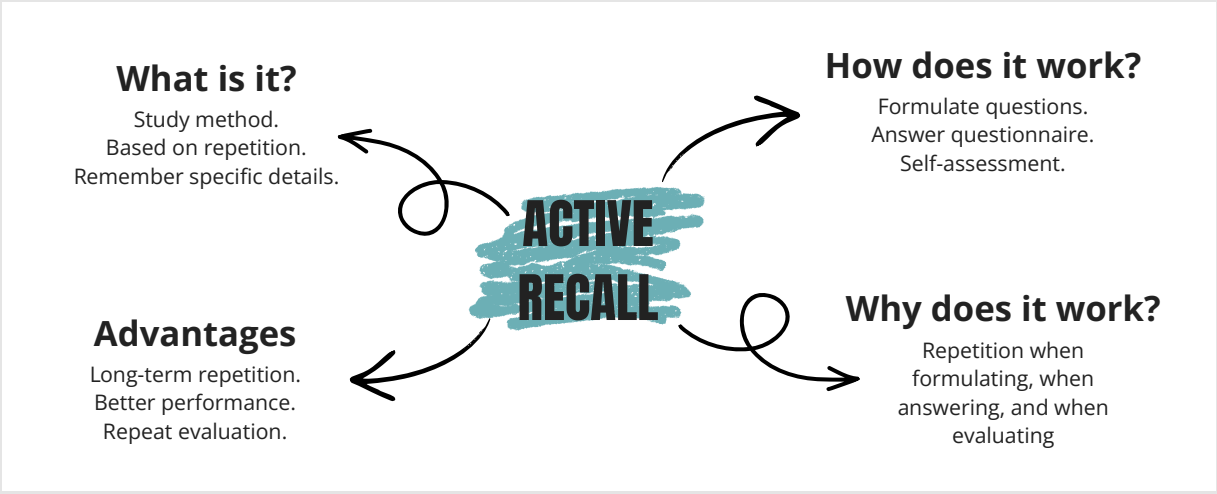


Figure 1. Key points Active Recall. *Image adapted for English translation from the original Spanish version.*

EXAMPLES AND METAPHORS

Upon entering university, students may feel overwhelmed and believe that the path they are on is not right for them. Many students face the major first-year challenge: "learning how to study". Active recall can be a lifeline for many of them. In this section, we will use anatomy as an example, a subject that is often daunting due to its large amount of content. However, what if students could learn effectively without having to spend all day studying? That is, studying quality hours rather than quantity. Active recall could be a very helpful tool.

For example, before anatomy class, students could read or look at relevant illustrations; on the day of class, they could pay attention, noting the most important points; and later that same day, they could review what they learned. In this way, the student will have studied the topic at least three times. Later, on the weekend, they could review the material using flashcards, quizzes, or questionnaires to identify what they remembered, what they forgot, and what they learned [3].

RELEVANCE AND PRACTICAL BENEFITS

Active recall is an efficient, practical, and effective learning technique that offers a wide range of benefits. In addition to reinforcing long-term retention, active recall has proven to be a key tool for fostering a deep understanding of academically challenging concepts and topics [1]. Spaced repetition is a process that demands active and constant student participation, but also, with its characteristic efficient distribution of academic material, plays a fundamental role in preventing student burnout [3].

CONCLUSION

Active recall is an effective study method that involves recalling previously learned information using spaced repetition strategies such as quizzes, tests, or flashcards [3]. Constant repetition promotes active information retrieval rather than passive short-term

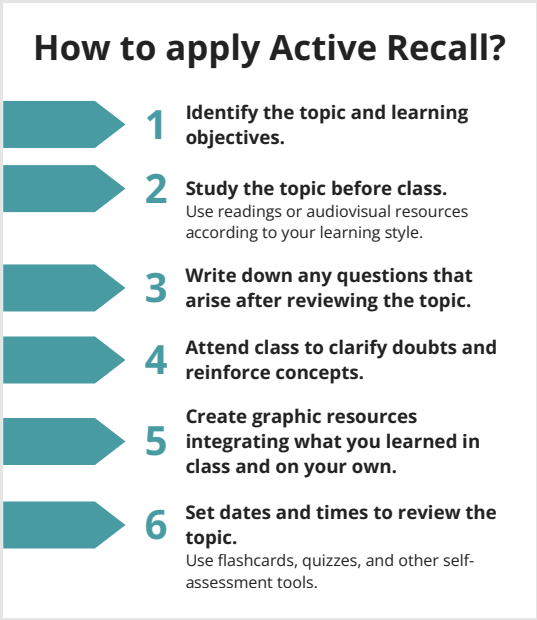


Figure 2. Key points to apply Active Recall. *Image adapted for English translation from the original Spanish version.*

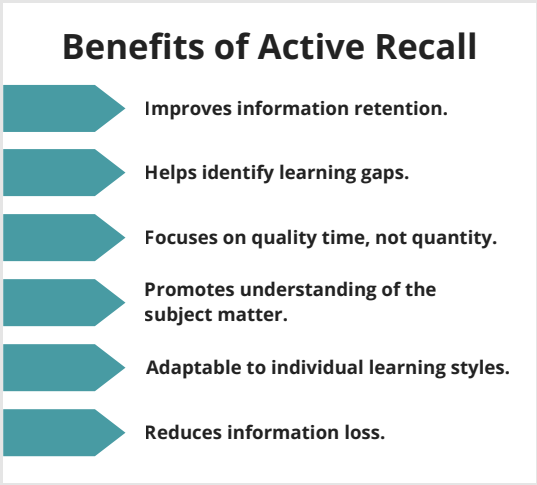


Figure 3. Key points of the benefits of Active Recall. *Image adapted for English translation from the original Spanish version.*

memorization, and the spaced distribution of topics and continuous self-assessment ensure that students take an active role in their academic training and achieve better long-term retention of the reviewed concepts [6].

The main objective of active recall in the context of a medical student is to ensure that previously acquired knowledge remains with them over time by implementing a strategy that not only optimizes learning but also fosters deep and lasting understanding [2].

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Conflict of interest

The authors declare no conflicts of interest.

Ethical considerations

This work did not involve the participation of human subjects or animals, nor the collection of primary data; therefore, it did not require approval from a research ethics committee. All data used came from previously published and publicly accessible secondary sources.

REFERENCES

1. Landoll RR, Bennion LD, Maggio LA. Understanding excellence: A qualitative analysis of high-performing learner study strategies. Med Sci Educ [Internet]. 2021 [citado el 19 de octubre de 2023];31(3):1101–8. Disponible en: https://pubmed.ncbi.nlm.nih.gov/34457953
2. Osmosis. Spaced Repetition in learning theory [Internet]. Elsevier; 2016. Disponible en: https://youtu.be/cVf38y07cfk?si=_M6HohJIBwN8anet
3. Nickson C. Learning by spaced repetition [Internet]. Life in the Fast Lane • LITFL. 2019 [citado el 18 de octubre de 2023]. Disponible en: https://litfl.com/learning-by-spaced-repetition/
4. Graffam B. Active learning in medical education: Strategies for beginning implementation. Med Teach [Internet]. 2007;29(1):38–42. Available from: http://dx.doi.org/10.1080/01421590601176398
5. Augustin M. How to learn effectively in medical school: test yourself, learn actively, and repeat in intervals. Yale J Biol Med [Internet]. 2014 [citado el 18 de octubre de 2023];87(2):207–12. Disponible en: https://pubmed.ncbi.nlm.nih.gov/24910566/
6. Owen M. Active recall: The most effective high-yield learning technique [Internet]. Osmosis. [cited 2023 Oct 18]. Available from: https://www.osmosis.org/blog/2022/02/21/active-recall-the-most-effective-highyield-learning-technique