

Ways to Learn Effectively

25 Principles of Effective and Efficient Learning

Take advantage of what has been discovered about how we all learn to improve yourself and your grades.

1. Ideas that are connected need to be [studied](#) together (contiguously) in space and time. If one concept refers to another concept, study them together. (Education term: Contiguity Effects.)
2. Concepts benefit from being [grounded in actual experiences](#), particularly at early stages of learning. Visualize a picture of the concept, observe how it functions over time, and think about manipulating its parts and aspects. If you can do this physically, it will be that much stronger. (Education term: Perceptual-Motor Grounding.)
3. Materials studied in [multiple ways](#) (verbal, visual, and multimedia) form richer representations in your brain and are easier to recall than just one form of media. Use all the ways that you can find. (Education term: Dual Code and Multimedia Effects.)
4. [Testing](#) enhances your recall and slows your forgetting when aligned with important content. Do the self-tests at the end of each chapter and practise with any supplemental tests given to you by your instructor. (Education term: Testing Effect.)
5. Studying materials and self-testing over a number of sessions (spaced schedules) produces better long-term retention than a single study session or test. [Schedule your study time](#) in small chunks of 30 minutes to an hour with a break of at least 15 minutes between. (Education term: Spacing Effect.)
6. You keep materials more accessible in [memory](#) when you are aware that you will need it later, such as when you expect a final exam on what you are studying or can see how it will be applied in another course or activity. (Education term: Exam Expectations.)
7. Learning is strengthened when you produce answers compared to only recognizing answers. Use the [Cornell Method](#) in your note taking and particularly focus on Step 3: Recite, which asks you to recall and expand information using only your summary notes. (Education term: Generation Effect.)
8. Get organized by outlining, integrating, and synthesizing information that has you [actively engaged](#) with the material to-be-learned. This leads to better understanding and long-term retention. When you are only re-reading materials your learning is much lower. (Education term: Organization Effects.)
9. Look for the [connections](#) in the main ideas that you are learning. Materials and multimedia that explicitly link related ideas and minimize distracting irrelevant material are the best types to use. (Education term: Coherence Effect.)
10. Stories have concrete characters, objects, locations, plot, themes, emotions, and actions which relate to everyday experiences. Stories and cases tend to be remembered better than lectured or read facts. Find the story in the materials you are learning. Use the case studies in the textbook or those supplied by your instructor. (Education term: Stories and Example Cases.)
11. Abstract concepts can be difficult to grasp. Your understanding improves with multiple and varied [examples](#). Listen for the ones your instructor provides, look for them in your text, and search for them in your own life experiences. (Education term: Multiple Examples.)
12. You benefit from timely [feedback](#) on your performance in a learning task and after testing. When you get feedback, verbal or written, study it for clues as to the next steps you should take. (Education term: Feedback Effects.)
13. We can learn wrong information, particularly by only guessing, but this can be corrected when feedback is immediate and followed. Always correct your mistakes as soon as you know they are incorrect. (Education term: Negative Suggestion Effects.)

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14. Challenges help you learning and remember when you make efforts to [organize the information](#) or do additional work during learning and have positive effects on long-term retention. (Education term: Desirable Difficulties.)
15. The information that you access should not overload your working memory. Keep the auditory, visual, and physical inputs on the same topic. This will allow you to concentrate on the subject at hand. Too many inputs and you can be distracted and confused. (Education term: Manageable Cognitive Load.)
16. A complex lesson needs to be broken down into manageable chunks. You know how much you can take in at a time. Limit your intake to [avoid being overloaded](#). (Education term: Segmentation Principle.)
17. You learn material better when you construct [coherent explanations](#) (mental models) of the material that you are studying, rather than memorizing isolated facts. These deep explanations need to contain causal analyses of events, logical justifications of claims, and functional rationales for actions. (Education term: Explanation Effects.)
18. Ask and answer [deep learning questions](#) that draw out explanations (e.g., why, why not, how, what-if) more than surface learning questions (e.g., who, what, when, where). Learn to ask as well as answer questions. (Education term: Deep Questions.)
19. Seek out “wicked problems”. Deep reasoning and learning is stimulated by [problems](#) that point out gaps in your knowledge and understanding, such as obstacles to goals, contradictions, conflict, anomalies, uncertainty, and other types of impasses that do not have clear answers. (Education term: Cognitive Disequilibrium.)
20. Your [thinking improves](#) with multiple viewpoints that link facts, skills, procedures, and deep conceptual principles. Work on problems that vary in content and complexity. This helps you see connections between the layers of facts, procedural knowledge, functional explanations, and deep principles. (Education term: Cognitive Flexibility.)
21. Look for balance in your studying. Problems and cases should not be too hard or too easy, but at a [do-able level of difficulty for your skill and current knowledge](#). As they get easier, try out harder ones. (Education term: Goldilocks Principle.)
22. We rarely have an accurate knowledge of our own understanding and mental processes, so our ability to judge our own comprehension, learning, and memory needs to be monitored. You need to be aware of your planning, selecting, monitoring, and evaluating of your strategies for self-regulated learning. Help is available from instructors and your [Learning Centre](#). (Education term: Imperfect Metacognition.)
23. Most people have trouble discovering important principles on their own, without careful guidance, scaffolding, or materials with well-crafted information. [Look for and analyze the main points](#) and key principles in what you are studying. (Education term: Discovery Learning.)
24. When we are learning how to learn, one of the most important aspects is how to self-regulate our learning and other cognitive processes. Pay attention to and respond to the feedback you are given to become more aware of what you do not know (yet). (Education term: Self-Regulated Learning.)
25. Learning is deeper and you are more motivated when the materials and skills are anchored in real world problems that matter to you and others. This provides a context for learning that motivates you as it stimulates problem solving and [organized social interactions](#). (Education term: Anchored Learning.)

Adapted from: Graesser, A.C., Halpern, D.F., & Hakerl, M. (2008). *25 principles of learning*. Washington, DC, USA: Task Force on Lifelong Learning at Work and at Home.