Learning and strategies for support

One course of study, many different types of exams. Depending on the type of exam, specific learning techniques tailored to the requirements of the respective exam can significantly support academic success. Likewise, tailor-made learning strategies contribute to an increase in efficiency. This in turn can be expressed in a balanced relationship between work and recreation phases.

Below you will find different, evidence-based learning strategies. These can be divided into strategies for structuring the learning material (organizational strategies), for deepening the learning material (elaboration strategies), for monitoring the learning progress and strategies for repetition.
At the end of the document, you will find supporting strategies that can positively influence the ability to perform and concentrate during periods of learning.

Learning Strategies

Organizational Strategies

Why are such strategies useful? For example, the amount of learning content could be too large, so that one has difficulty selecting relevant content. Then strategies for organizing the learning content are useful. These strategies are independent of the exam form. You can apply these organizational learning strategies before each exam and thus start your exam preparation in a well-structured way. However, the best advice is to start early enough.

- Take advantage of the office hours offered by the lecturers to clarify subject-related and examination-related questions. Especially by attending office hours you can gain a deeper understanding of the exam requirements (What is part of the basic knowledge? What are the expectations for achieving the highest grade?)
- Establish permanent and regular learning groups. These will help you identify and address knowledge gaps and inadequate preparation more quickly.
- Whenever possible, critically reflect on other students' examination experiences and assessments.
- When preparing your own summaries, be sure to present everything in your own words and in "packages" that are related in content.
- For a better overview and to better understand connections between the different topics, it is recommended to create a mind map.

Elaboration Strategies

In order to deepen knowledge, it is useful to establish personal meaning with regard to the learning content. These so-called elaboration strategies improve how the learning content is stored in memory. Using these strategies, what is learned is actually memorized and retained in the memory for a longer period of time.

How is this supposed to work?

- First, add real-world examples to the content.
- Try to apply the contents in thought experiments in real life.
- Practice questioning the content: for example, what did you understand yourself and what not.
- Consciously create a connection between the new content and what you have already learned.
- Add suitable personal experiences to this connection. Example: You have learned that a certain substance has particularly good conductivity. Where could you make use of this information in your everyday life? For example, by only buying lamps that have the conductor in question.
- If possible, create your own exam questions. You can then discuss these with your learning group and also "write" sample exams.

Advice: The retention rate increases correlatively to the degree of knowledge deepening. The more intensively you have enriched the learning content with elaboration strategies, the better you can remember the learning content.

Control strategies

The learning strategies for controlling and monitoring are very important. Here you notice whether you have really understood what you have learned. Use these strategies consciously so that you do not succumb to memory illusions: You think, for example, "That was easy, I understood that", but you cannot explain the content to someone else or recall it in a way that is appropriate for the exam, e.g. you cannot answer an open question.

Here's how you can proceed:

- First, ask yourself the question: Did I understand what I learned?
- If you answer this with a definite yes, you can ask yourself if you can recall the content as you need it in the exam. For oral exams, you should be able to verbally reproduce and practically apply what you have learned. For written exams, your text production should be fluent in writing.
- Try to either speak out loud or lecture/discuss with your study group about the content and tasks you have been given. Written work on tasks should be done under the condition that you only have a certain time window available. Check early on how quickly or slowly you can solve the tasks in order to get used to the time pressure in exams.

Another way to check the learning level is the Feynman method:

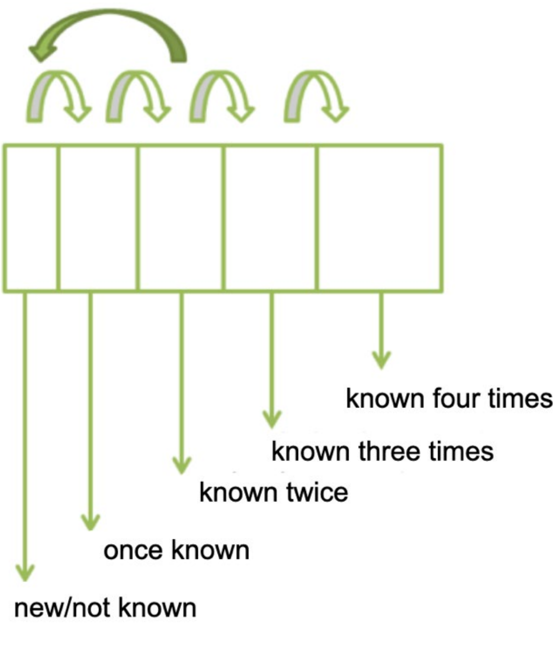
Imagine that you are explaining all the contents relevant to the exam to someone who is not familiar with the subject. Requirement: The person must be able to understand your explanations. You have really understood the contents if the person from outside the subject area could also successfully pass the exam after your explanations. Wherever you get stuck, you should do more research or go into more depth. The idea here is that you can explain even difficult content in a way that is easy to understand if you have understood and absorbed the subject matter very well. The methodical approach is to be understood as a process. While you imagine explaining what you have learned to someone, you will always encounter your own gaps in knowledge, which you will immediately investigate. Thus, step by step, one arrives at the deepened knowledge and at the same time checks one's own level of knowledge.

Repetition Strategies

Many students repeat the learning material by reading it over and over again, looking at it or putting the book under their pillow. Unfortunately, the latter rarely has any learning success. The repetition strategies represent learning in the actual sense: To be able to store the learning material permanently and recall it. This can be achieved, for example, with the help of index cards and a card box with several compartments.

Instructions:

- Prepare the learning content using index cards (front: term or question, back: explanation). These cards are located in the first compartment of the card index box. By the way, this is also an organizational strategy.
- If you can explain an index card correctly, it goes into the second compartment of the card box.
- Then, when you go through this pile, any cards that you can still solve correctly go into the third compartment.
- If you solve a card incorrectly, sort it directly back into the first compartment of the card index box.
- If you were able to explain a card correctly at least four times, then you can assume with almost certainty: Now I can do it!



- Perform the repetition strategy with index cards on a regular basis. If you solve all index cards correctly one day, check your memory performance again the next day. You can extend these intervals of repetition if you make few mistakes while repeating. For example, repeat in two days, one week, two weeks, one month.

Repetition strategies also include simply repeating math problems and answering exam questions repeatedly. Repetition can also mean regularly telling someone else or yourself what you have learned, e.g. with notes or by means of a presentation you have created yourself.

Consider the modality of the exam in the repetition strategy you choose. If the exam is written, with many open questions, it is advisable to practice and repeat in this modality:

- Formulate open-ended questions for yourself and answer them regularly in written form.
- For oral exams, practice oral recall regularly: formulate the learning content orally and speak it out loud or mentally to yourself.

Support strategies

In addition to learning strategies, there are also so-called support strategies. These include recommendations for action in order to create good conditions for a sustainable consolidation of the contents in addition to the learning strategies. Below you will find some of these support strategies.

Learning breaks

A common misconception is: I take a break when my body tells me it's time to take a break. This is similar to the human sensation of thirst: When your body signals you through thirsty sensations that you should drink, it's already a little late. You could have had a drink earlier. Therefore, start building a good break management system ahead of time. This protects against learning content interfering and prevents fake work time (you need a break so badly that you just look at the sheets without really reading). The Pomodoro technique is helpful here: work for 25 minutes, then take a five-minute break. And break also means a real (short) break: get up, air, drink something, walk a few steps.

More advice on how to organize your break times:

Break type	**When?**	**What (examples)?**
Intermission break (1')	as needed	lean back, look out the window
Mini break (5'-10')	after 30'- 45' working time	eat a snack, listen to music, get some fresh air
"Coffee Break" (15')	after 1-2 h working time	have a drink, eat a snack, listen to music, take a short walk, lie down for a while
Recovery break (60' - 120')	after 2-4 h working time	be active: e.g. longer walk, sports, meeting friends, nap

Sleep

The body needs sleep. Memory needs sleep to be able to do its work to the fullest extent and to regenerate. Only during periods of deep sleep is it possible to store new learning content securely in long-term memory. In the long term, sleep deprivation has a negative effect on cognitive performance. Therefore, plan sufficient sleep time into your exam preparation schedule so that sleep does not come up short.

Nutrition

The human brain consists of about 80% water. This is an unmistakable indication of how important it is to supply the brain with sufficient fluids, especially during learning phases. Learning also costs a lot of energy, which the body has to provide. Therefore, make sure that you eat regularly and, if possible, in a balanced way. Avoid too heavy/greasy food. This takes a long time to digest and prevents rapid energy absorption and renewed readiness to perform.

Movement

Ying and Yang, plus and minus, rest and move. We encounter perfectly complementary opposites everywhere. So if you spend a not inconsiderable part of the day doing mental work, motor overactivity builds up. To balance this, you should move regularly. This can be relaxing walks, but just as well the sports courses of the university sports, which you can take advantage of via livestreams comfortably from home or even in person on campus.

Summary

There are a variety of useful and efficient learning strategies. There is no such thing as one learning strategy. Try different ones and find out which technique suits you, your learning style and the exam. The options presented here will provide you with a solid foundation. Would you like to learn more or haven't found the right one yet? Contact us: In one-on-one sessions, we will reflect on your previous learning strategies and discuss possible adjustments depending on your current and individual exam situation.

On the websites on the topics of self- and time management, as well as exam preparation and exam anxiety, you will find additional materials that are helpful in connection with learning.