

TRANSFER OF LEARNING METHOD COLLECTION FOR STUDENTS



IMPRESSUM

The *Impressum* of the TU Dresden applies to this document with the following additions: This collection of methods was compiled in the context of the project "Lerntransfermethoden – Entwicklung und Erprobung von Methoden zur Erhöhung des Lerntransfers von Studierenden in MINT-Studiengängen im Rahmen eines Multiplikatorenprogramms", which was sponsored by ESF and the state of Saxony. On the basis of renowned methods collected through literature research, all methods were thoroughly revised with the help of experienced educators from the TU Dresden, and fitted specifically to the needs of STEM-students. Some methods are inspired by external resources, which can be found at the end of the document in the *References* section.

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Diese Maßnahme wird mitfinanziert durch Steuermittel auf Grundlage des von den Abgeordneten des Sächsischen Landtags beschlossenen Haushaltes.



WHAT'S THIS ALL ABOUT?

With the aim of supporting you to optimise your learning strategies and simplify your academic life, we prepared the methods within this collection. Method design is adapted to the specific challenges in the STEMfields. Explanations are ready-to-go allowing direct application.

The methods focus on *Learn-ing Transfer*, which is the ability to apply acquired knowledge and skills to comparable situations.

It doesn't matter whether you need help with the preparation or revision of lectures, are looking for a better method for transcribing lecture content, want to reflect upon your learning process, or are curious to try out new working and learning techniques – ideally, this collection can be your companion for the entire semester. It provides you with the best conditions for life-long learning. Simultaneously, the methods support you in working on tasks, in writing seminar- and project-papers, and in the organisation of well-structured, stress-free exam preparation periods.

You have any suggestions for further optimisation and extension of this collection - don't hesitate to let us know.

Have fun!

METHOD OVERVIEW





SCANNING

Have you ever read a text and, afterwards, found yourself wondering how it was of any use to you? There are thousands of complex texts. They are part of your every-day studies and life in general. A well-structured routine helps you to reach your goals efficiently.



Work through texts quickly and precisely

Your benefit

You could try to just read through each and every text systematically. However, that often is unnecessary and time-consuming. Following this 7-step routine, you will get through the literature quickly.

Your workflow

o. Basic rule.

As soon as you realise a text won't help you, pick another one.

1. Define your goals.

Why do you want to read this text? Which knowledge or information do you hope to gain from it? Answer these questions clearly and honestly right from the start.

2. Get an overview.

What is each chapter about? Look at the table of contents and try to get a feeling for the logical structure of the text. Where do you find the information relevant for you? Which part can you leave out? Abstracts, summaries, illustrations, and the blurb might help you here.

3. Ask clear questions.

Regarding your goals, formulate clear questions to the text.

4. Analyse graphs and illustrations.

Less than usual

You will easily find valuable first answers by looking at illustrations, tables, and the respective paragraphs.

5. Read.

Now read the relevant paragraphs and leave out any unnecessary passages. You can always go back later, should you realise you are missing information. Work on the text by taking notes and highlighting relevant aspects, and stick to a clear-cut colourand symbol-code.

6. Summarise.

Repeat the main information of the text in your own words. Be precise in answering your own questions. Make sure that your notes are comprehensible even after a couple of weeks.

7. Reflect.

Did the text offer what you were looking for? Are there any unanswered questions? Did new questions arise? Document all your thoughts on the text now, and you won't lose track of your sources later.

Done? Then: Off to a fresh start with the next text.

PREPARATION



FLASHFORWARD

Doing a literatue survey on the content of the upcoming lecture? Maybe in a perfect life. Being well-prepared in 5 minutes? Shut up and take my money!



Being briefly prepared for lecture

Your benefit

Everyday academic life is not easy, always rushing from lecture to lecture. But what can you do to stay on top of your studies? It already helps a lot to systematically focus 5 minutes before the next lecture starts. Additionally, an active cooperation between students and educators is an essential basis for deep learning. If you do not only arrive physically but also mentally in your lecture, you can efficiently use the lecture time, ask better questions, and further support your learning progress.

Take control on your learning progress and use the time during and after lectures to ask questions that are valuable for your understanding and your interests. That's the only way to benefit from the scientific expertise of the eductors. On top of that you can add your personal perspective to the field.

Your workflow

5 min each

Use 5 minutes of the time before the next lecture starts to focus on the new topic. This does not necessarily mean that you already arrived in the lecture hall. You can also ask yourself the following questions without taking notes and discuss them with your colleagues. It is not about knowing each detail of the last lectures, but being mentally prepared for the topic and having revised your personal expectations:

- What did we do last time?
- What is still unclear to me?
- What do I expect from today's lecture?

Your choice

The *Flash Forward* can be directly integrated inro your notes, e.g. by using <u>Add It</u>. It is no surprise that the name of the method is similar to the <u>*Flashback*</u> for revision. Both can be used as a tandem to efficiently boost your learning progress and as a first stage for your <u>*Logbook*</u>.

PREPARATION



ADDIT

Who's faster: You or the lecturer? Sometimes lectures turn into real races. We show how you can win the race, not only by taking notes but also by already starting in-class with your exam preparation.

Take personalised and organised notes

Your benefits

It is often hard to follow the lecturer's words because you are already fully occupied by taking notes. However, especially his or her additional comments on the lecture's contents are essential for a fundamental understanding and an efficient exam preparation. This method improves your note-taking skills by providing a clever organisation method and space for your own thoughts. Most importantly, it saves time because while taking notes during the lecture you already start your course revision. Better notes in less time? Sounds like a great deal!

Dr. Walter Pauk of Cornell University has developed this method to better revise and internalise his notes. It is not only about taking notes in lectures, but also helpful when you work with PowerPoint slides and other prepared scripts. They also gain quality by extending them with lecturer's comments and your personal thoughts. Your workflow

30 min each

Split your pages into three sections as shown in the Figure. Prepare them before each lecture so that you can focus on taking and organising your notes. Use the main space for the content of the lecture. The second section is the margin which should be 6 cm wide. Use it for highlighting important or unclear content, which supports the revision of your script. You can define symbols to safe time during the lecture, e.g. "!" can mark content that is highly relevant for the exam and "?" could mark content you should clarify by asking colleagues or doing a literature survey. By combining symbols with colours, the method becomes even more powerful. Aside from symbols you can use the margin for personal questions that come to your mind while following the lecture.

The third section is at the end of the page and should be 5 cm wide. Use this section for personal conclusions: Sum up the content of the page by your own words. What was most important to you? How is the content connected to other topics? These conclusions are an essential step towards active reception of knowledge and longterm exam preparation.

Your choice

The end of the page can also be used for a *Flashback*.

IN-CLASS



SAYIT

It's not only the students who have difficulties interacting with their educators. This also holds vice versa. Make the first move and ask what's important to you.



Take control over your learning

Your benefits

We (= former educators) already highlighted it multiple times - this is the pure essence: The quality of your education depends on how you define your own role. If you are passive, the educator needs to anticipate what's best for you. However, nobody knows that better than yourself. So, switch from passive reception towards interaction. We know this can be challenging, but it can boost your learning progress. So give it a try!

The German culture of conversation works probably differently than in your home country. There is usually no small talk. You come straight to the point by asking your questions. This might appear awkward but it is not a sign of rudeness. This comment shall not hinder you in doing small talk, but it hopefully helps you to understand the point-of-view of your educators.

Your workflow

ז min each

Find a way to get in touch with your educator. Sometimes it is easier to have a one-on-one conversation before the lecture starts or afterwards rather than asking questions and commenting on lectures inclass. Educators also offer appointments for consultations, which can give you the environment you need to open up. In the latter case, you can send your questions via e-mail in advance which allows your educator to be better prepared. Such appointments also allow better conversations especially if you worry about your English skills.

Aside from scientific questions, your feedback strongly helps educators to further improve their lectures according to student's needs. If formulated appreciatively, educators are always thankful for your comments. The Center for Continuing Education also offers the opportunity of performing Teaching Analysis Poll evaluations in your class. Here, educationalists moderate the feedback process between students and educators.

IN-CLASS



FLASHBACK

In your everyday academic life, you hurry through lecture after lecture, topic after topic. Still, it is important to briefly but intently recapitulate after each session. This will give you clarity and the ability to have a fresh start for your next task.

5 min each



Briefly revise content

Your workflow

Right after a lecture, shortly revise its key elements and their immediate consequences for you. There are some lead questions you can use:

- What have I learned?
- How do I benefit from this?
- What is still unclear to me?
- What do I have to do next?

In doing so, you come to a quick mental conclusion, and keep a clear head as well as an overview over all pending tasks, even on stressful days.

If you are unsure about the correct answers or feel like you missed something, ask your professor or tutor for help. To save time, you can have the questions prepared on a sheet of paper and tape it to the end of your script. Try creating a routine which efficiently supports your learning process while only using little resources.

Your choice

You might want to attach the *Flashback* to a reminder. Write it on a piece of paper after the lecture and put it in your trouser pocket. This way, you will be confronted with the content in unexpected situations, which leads to a continuous repetition.

The *Flashback* is also a good basis for a *Quintessence*.

IN-CLASS



QUINTESSENCE

Wait, what was discussed in the last lecture again? Boost your memory by writing short and concise summaries. Once you get to the point of exam preparation, all your information is well organised and easy to learn.

20 min each

Following up, getting to the content's heart

Your benefits

Revising and comprehending old lecture scripts can be very exhausting. Sometimes, even preparing exercises for the next tutorial is difficult, especially, when the last lecture simply provided too much information to take in. One effective method for revision is the *Quintessence*. Ideally, it renders the lecture script redundant, and saves you loads of time during your next exam preparation.

Your workflow

Regularly compile clearly structured summaries of your lectures. The style is completely up to you and your time budget. Whether it's full text, meaningful bullet points, formulas, or drafts, the most important thing is that you put the content into your own words.

Doing this revision regularly is at least as important for a long-term learning success as the finished collection itself. Ideally, you write a *Quintessence* for each course and each lecture. If that takes too much time, either cover only selected, important courses or organise a study group with your peers, and share your *Quintessences* with each other. By working digitally, e.g. with the "file discussion" option in OPAL, you can even comment on each other's *Quintessences*, add information, or correct them if necessary.

When working in groups, make sure all of you have a similar note-taking style, so you can work with your peers' contributions as if they were your own. Also, write at least one article for each main topic yourself.

You want more information? Check our video: \bigcirc

Your choice

You can upgrade this method to a *Logbook* by adding a reflective part. If you are looking for an even quicker form of revision, check out the *Flashback*.

REVISION



GLOSSARY

Terminology. It's everywhere, it can be frustrating, but: In a professional environment, you can't survive without it. Thus, you need a translation into your own language.

10 min each

Learning terminology, getting to the definition's heart

Your benefits

Understanding terminology is essential for understanding content. All the more important to study definitions intensively, right from the start. The *Glossary* is an efficient tool for translating terminology into your own language, and to structure it into a well-organised collection. In doing this, you intensify the revision of your lectures, while not necessarily needing more time, and you create a valuable basis for the interdisciplinary communication awaiting you in your professional life.

Often, important terms are introduced more than once, in different lectures, and with slightly different meanings. This gets worse when talking with people from different scientific areas, and is cause for a lot of misunderstanding.

Your workflow

Using index cards, you develop your personal reference book. It can be compiled of your own textual definitions, but also of sketches, examples, equations, or a classification within the overall terminology. To evaluate the correctness of your entries, you can compare your definitions with entries from the internet or – even better – you can discuss them with your fellow students. A *Glossary* is also useful for taking apart physical terms and equations: What do the different variables represent? How do they depend on each other? Does that reflect your intuition? Can you visualise their relationship?

If you notice that you still have difficulties defining a certain term in your own words, figure out what exactly is missing for your understanding. Formulate a question for your lecturer and discuss it in the next session.

You want more information? Check our video: 🕑

Your choice

You can also upgrade your *Glossary* digitally to a Wiki and collect additional content such as images and audio files. *Here* is an explanation of how to do this in OPAL. Of course, you can also share the workload with your fellow students and create one *Glossary* together. However, make sure you internalise the definitions just as thoroughly as if they were your own.

Combine your *Glossary* with a series of *Quintessences* to produce an understandable and on point collection of your studies' most important content.

REVISION



STRATEGICINTERVIEW

Which learning strategies have you used so far? How do your fellow students organise their learning process? Where can you get inspiration and which of their methods are also valuable for you? Exchange ideas – and organise them!

Use each others experience to reveal learning strategies

Your benefits

Reflecting upon your individual learning process takes time and effort. Critically discussing it with someone else can make it easier. Simultaneously, you profit from the experience of others and get an honest feedback on your own learning behaviour. Thus, you can optimise your learning experience and reach your learning goals more efficiently.

Your workflow

Create a group-interview situation: Two of you will interview the third person about his or her applied learning strategies. Write down both those elements that work best and those that need to be improved. After 10 minutes, switch your roles.

Be critical! Allow each other to ask probing questions and insist on differentiated answers. You will feel much more comfortable with all your learning progress if you know you have discussed it to the core. 45 min

A good preparation and a trust-based exchange are key for the effectiveness of the interview. Prepare critical questions beforehand, as it will get you to the core aspects of the learning strategies much quicker. Some strategies might not seem as complex as you expect, but don't leave out the seemingly obvious: Sometimes, the simplest strategies work best, and success depends on using them efficiently and confidently.

Switch roles until everyone has been interviewed. Exchange your notes and develop clear guidelines for the improvement of your learning process. For the design of the guidelines, you can use the *SMART criteria*: It needs to be **s**pecific, **m**easurable, **a**chievable, **r**elevant, and **t**ime-related.

You want more information? Check our video: \bigcirc

Your choice

An occasional *Strategic Interview* can enrich your regular *Peer Group* meetings.

REFLECTION



LOGBOOK

Studying successfully needs an intensive personal revision of the content. Thus: Reflect, don't just consume! What does the taught content actually mean? What does it imply? Questions that need to be answered.

Reflecting content and your learning process

Your benefits

Your individual revision and discussion of the lecture content is the key element of this method. What do you keep from the lectures? What do you derive from it? How does it fit in the global picture? By confronting yourself with these questions, you not only increase your profound knowledge and understanding, but especially your motivation.

Your workflow

Before the first lecture, write down your personal expectations and goals. Then, regularly add your very own take-home message after every lecture. Try to find connections to other courses and reflect upon the expectations you formulated in the beginning of the semester. Maybe your thoughts give rise to questions to your lecturers?

You can also put your *Logbook's* focus specifically on the reflection of your learning process, or keep a second book to process an overall study reflection. Be honest and self-critical. 20 min each

Your expectations and goals may change during the semester. That is an interesting development, which you should discuss explicitly in your *Logbook*. You can also write entries which are not related to a specific lecture, e.g., if you stumble upon everyday situations which are related to your studies. At the end of the semester, finalise your *Logbook* by drawing your personal conclusion.

Your choice

The *Logbook* does not have to be a separate document. Leave room in your regular notes and integrate it from the beginning, e.g. by using <u>Add it</u>.

Additionally, or alternatively, you can discuss the lecture contents with a tandem partner. This reflection process can and should have an intimate atmosphere, which requires mutual trust between you and your partner.

REFLECTION



HEADLINE/TWEET

What did you learn? What did you have difficulties with? What did you find really easy? Sometimes, it's not easy to structure your thoughts and find the right words. Writing a fictive *Headline* or a *Tweet* can help you.



Quick revision and communication

Your benefits

By quickly writing down your most pressing thoughts right after a lecture, you will notice its relevant and irrelevant parts much faster. This is a valuable basis for an efficient reflection, both of the content and of your personal learning progress, as you can identify potentials and aspects that you still have to deal with more intensively.

Your workflow I: Tweet

Imagine the following situation: You come home and a friend asks you about your lecture. You will have to come up with an answer that includes all necessary information without having to go into too much detail. Try to formulate this answer in a Tweet format with 140 – 280 letters. You can also use hashtags to signify links between different lectures.

Nobody keeps you from actually posting your Tweets online. In doing so, you and your fellow students can use them to have a productive discussion along the way.

Your workflow II: Headline

2 min each

The *Headline* is the more direct and genuine form of lecture revision. You use the same strategy as in the *Tweet* method, but instead of formulating the *Headline* for a fictitious audience, you formulate it for yourself. Effectively, your thoughts don't need to be comprehensible for anybody else, but are representative of your very own opinions and feelings.

Your choice

For a more intensive reflection of your learning progress, you can also use the *Tweet*, or the *Headline*, as a basis for your *Logbook* entries.

If you rather want to have a revision of the content, take a look at the *Flashback*.

REFLECTION



MAPPING

Mind Maps and Topic Landscapes are perfect for visualising complex connections. Whether you favour a plain logical or a full-grown design approach – this helps you keep the bigger picture in mind.

20 min

Structuring, visualising, and linking knowledge

Your benefits

In scripts, content is usually organised linearly from one lecture to the next. A mapping serves as the perfect complement, as it allows you to get an overview and remember all the branches and complex interrelations. Also, maps excel at revealing knowledge gaps and misconceptions.

Your workflow I: Mind Map

To each clearly formulated main category, you associate sub categories and go into more detail with every step. It is important to respect the hierarchy in which – just as in the branches of a tree – only links to the next subcategory can exist. These can be terms and sentence fragments as well as drawings, graphs, and equations.

In order to create complex knowledge structures, you can also use more versatile branching for visualschematic representations. This will enable you to dig even deeper into the topic and review it from multiple perspectives. This method is especially effective in exchange with others. Why not use it in your peer groups to reflect upon your progress? By keeping track of the status quo of your learning process, a map also helps you develop an effective study plan.

There are also a lot of collaborative mapping apps: Coggle, XMind, FreeMind, OpenMind, ...

Your workflow II: Topic Landscapes

Topic landscapes add another layer of visualisation, by morphing all the information into an actual picture. For instance, the main categories can be continental mass, while the central elements are represented as capital cities. Other commonly used images are the different parts of the body, the steps of a pyramide, ...: There are really no creative boundaries here. As you process the content on a more abstract level, you automatically have to focus on the most important aspects and experience a creative and, thus, profound learning process. Consequently, topic landscapes are a challenging method for evaluating your personal level of knowledge at the very end of covering big topics in your exam preparation.

You want more information? Check our video: 🕑

FINALISATION



MASTEREXAM

No more last year's exam to practise with? And what if, this time, the professor chooses completely different questions? Better anticipate the right questions and provide the perfect exam preparation yourself.

45 min

Change perspective, reveal knowledge gaps

Your benefits

Creating good exam questions is not as easy as it sounds. You have to formulate clear tasks, present a sample solution, ideally with a representative scoring system – and all that for each main topic and for different competence levels. For improving your learning success, this complexity is a huge gain. This method ruthlessly uncovers gaps of understanding and shows you what content you have to revise.

According to the revised *Bloom's tax-onomy*, there are six educational objectives: Remember \rightarrow Understand \rightarrow Apply \rightarrow Analyse \rightarrow Evaluate \rightarrow Create.

Your workflow

Create about three different exam questions after each lecture. Try to include different competence levels: Your tasks should include a definition, but also a practical application, and possibilities to include personal thoughts and ideas in the solution. The competence levels should increase systematically. Obviously, pay special attention to the aspects that your lecturer has highlighted to be of particular relevance. Once you have formulated the questions, develop sample solutions. These should include your scoring system and an estimate of the time needed for answering. This way, in the actual exam, you have a better feeling for the complexity of the required answers, which allows you to formulate them more clearly, in less time.

No time to prepare a complete *Masterexam*? Try only composing the questions, then. You will keep most of the benefits, and already profit a lot from the change of perspective.

You want more information? Check our video: 🕑

Your choice

Why create exam questions if nobody tries to solve them? The *Masterexam* can be a guide for working in your <u>Peer Group</u>. Exchange your tasks and questions, work on them, exchange your solutions, and correct them. This will give you a more intense learning experience and room for discussing both questions and solutions. Eventually, if there are still gaps or difficulties, you can discuss and solve them together.

FINALISATION



CHILD'SPLAY

You *seem* to have understood a topic but are not sure whether there are still knowledge gaps and misconceptions? With this simple trick you can test yourself.

Reveal and get rid of knowledge gaps

Your benefits

In order to comprehend a topic and longterm memorise it, it is important to analyse it from different perspectives. This method allows you to get a feeling for your progress. How thoroughly did you work on the topic? In which areas do you need to go into more detail?

Nobel Prize winner Richard Feynman published this method under the name "Notebook of things I don't know about".

Your workflow

Take a blank sheet of paper and write down the topic as a headline. Now try explaining this topic to a child. Write in full sentences and try to represent the complexity of the topic without getting lost in translation. You can also incorporate equations and sketches, as long as they are selfexplanatory within the context of the whole text.

The key aspect of this method: These explanations don't work unless you have really understood a topic to the core. You will realise that this method mercilessly uncovers any knowledge gaps or uncertainties which you should research and rework as soon as possible. In doing so, you will concentrate on the aspects in which you still have weaknesses, and get an overview over those you have already understood.

30 min each

In conclusion, you should analyse your explanation: Would a child really be able to understand it? Does it still contain any complicated terms? Are any areas left in which you are imprecise? Try to simplify as much as possible. And if you are uncertain? Simply ask a curious child, whether it understands your explanation.

You can also try this with parents, grandparents, and friends from other fields of study....

Your choice

Use this method in your <u>Peer Group</u>, in order to explain difficult content to each other. Ask questions to consolidate your knowledge.

FINALISATION



PRACTICALCHALLENGE

Have you ever asked yourself: "What do I even need this for?" Get active, challenge yourself, and your fellow students! Explaining theory through practice can be challenging, it definitively is satisfying.

30 min

Combining theory and practice, recognising relevance

Your benefits

It is not always easy to recognise the relevance of the content taught for your own life and your professional future. Sometimes, it is discussed in the lecture, but the examples might not always fit your interests. Get a more holistic learning experience with this hands-on method.

Your workflow

It might appear simple, but the first step can be challenging already: Find practical examples which the theoretical content can be applied to. Firstly, look for products and possible applications within your fields of interest. Being curious in your everyday life is also very helpful.

You don't always have to look for new examples. Sometimes using a complex machine can already be an inspiration for a practical application of theoretical concepts. At the University of Ravensburg-Weingarten, for example, all technical concepts in the first semesters are explained using a chain saw. Now think about, how your theoretical knowledge contributes to the operation for example of processes, machines, etc.. Be as detailed as possible by trying to systematically transfer the lecture content to it's practical application. Close knowledge gaps through internet research. If you experience difficulties understanding a certain topic or field, formulate questions for your lecturers and tutors.

Your choice

A separate column in your script for comments regarding the practical application according to <u>Add it</u> will help you to organise your thoughts in a helpful structure. This information will complete and personalise your notes and help you memorising the content – not only for the exam, but also in the long-term!

After each individual learning period you should get together with your fellow students in a <u>Peer Group</u> and present and discuss your *Practical Challenges*.

APPLICATION



CASESTUDIES

We use theory to explain reality. However, sometimes we don't quite understand how they are related. Working on case studies can help you to connect the content taught to fields of application, which will also make the content much more comprehensible.

90-180 min



Lifelike, experience-based learning

Your workflow

Form a project team of three to five people and find practical examples, which you want to examine, answer questions about, and find own solution strategies for. Be careful though: *Case Studies* require an intensive analysis of the topic and a certain resistance towards frustration.

You can also get good case studies from your educators, in books, or online (e.g. *here*).

Read the case within your group and work on it by following these eight steps:

- 1. Choose a moderator. This person will not lead your group work but will only moderate your discussion.
- 2. Discuss your thoughts on the problem, clarify any uncertainties and define your research question.
- Have a brainstorming session about your research question. Every idea is valuable – and no critique allowed – in this phase.

- Organise your ideas by defining main approaches and workloads – then agree upon one approach.
- 5. Substantiate your choice. How do you want to approach it? Split the work-load among each other.
- 6. Bring all of your results together and discuss your main findings.
- 7. Discuss the overall result regarding the examination question.
- 8. Reflect upon your workflow and the group progress.

Write down a protocol of your discussion. Different moderation materials are available for this purpose (paper, stickers, pencils in different colours,...). Evaluate your solutions by asking experts or consulting scientific articles. This will give you another chance of proving the validity of your work.

Making mistakes is common when working with *Case Studies*. They give you a chance for deep, experiencebased learning and to avoid dead ends.

APPLICATION



PEERGROUPS

Are you having issues with self-motivation? Or didn't quite get last week's lecture topic? You need a different perspective on theory and practice? Sometimes, working in groups makes it all so much easier.

60 min



Learning with and from each other

Your workflow

A *Peer Group* should consist of about three to five people to enable a lively exchange that involves everyone. Try to find peers that have learning goals comparable to yours, but maybe different scientific backgrounds. Your close friends might not always be your ideal learning partners. Similar learning styles can also be advantageous, while different learning styles make for an exciting mix of perspectives.

Peer Groups cannot replace an individual revision of the content. Since you have your own speed of learning, a period of individual work should take place before each peer group session.

Before or at the beginning of each meeting, define the goals and an agenda. The latter can be a discussion of different practice tasks or aspects of the topic. Also include comprehensive questions. In order to save your resources, you might want to share and split the tasks before the meeting. This will help you to use your time effectively. Afterwards you can work on your agenda by taking turns presenting your individually prepared results and thoughts. After each presentation period plan a discussion phase in which you answer open questions, add missing aspects, solve any misunderstandings, and try to come up with a cumulative answer.

Boost your motivation by giving each other feedback: An interesting attempt can be as useful for you as a complete solution. By presenting the content in a safe environment, you will have to explain it in your own words, which is a great preparation for (oral) exams and the application of the content after your studies. In the discussion phases you ideally use the various perspectives offered in a peer group and, thus, create synergies.

Always write a script about all your ideas and conclusions – even in discussions. There are many helpful digital tools like OPAL, Conceptboard, or Etherpads. It can also be useful to take turns writing a protocol about your group sessions.

ORGANISATION



FRIENDLYREMINDER

How often did you intend to do something but in the end didn't realise it? Everyday life is full of distraction that prevents you from putting your learning plans into action. It's time to strengthen your resilience.

2 min



Put learning plans into action

Your benefit

Several studies have shown that resilience is one of the key parameters for successfully finishing your master's course because efficient exam preparation is based on systematic semester-long learning. However, we all know how difficult this is. But as it is a common challenge, let's tackle it altogether!

Your workflow

Design a learning plan for the individual modules in groups of two or more peers. It is essential to fix a joint learning schedule despite it is not necessary to use the same learning techniques or meet at these times. Already remembering each other via WhatsApp, Facebook, or SMS will improve your resilience: "Let's tackle quantum theory in 5 min, are you ready?" Staying positive is essential: Motivate and support each other to focus on the learning tasks. Did you finish the problem sheet? Then it's time to party. Did you miss an appointment? Talk about it and find ways to make it next time.

There is another bonus of this method: Your peers are working on the same topic at the same time. Consequently, they can help in real-time if you get stuck.

You want more information? Check our video: \bigcirc

Your choice

This method is a complement to your <u>Peer Group</u>. You can support each other also during self-study periods. Additionally, you can combine it with the <u>Masterexam</u>, where you can share and solve your exam problems.

ORGANISATION



MASTERPLAN

It's quite challenging to reconcile uni, learning, and leisure. Let us help you find the right balance for a bit less stressful everyday academic life.



Learning systematically

Your benefit

Your timetable only shows half the truth because deep learning often occurs aside from courses. You work in peer groups, solve problem sheets, or do an internet research - there are far more activities needed for your academic success. But it's often challenging to create a schedule that not only works on paper because life's got more to offer than learning. This method collection shows you a large variety of different learning activities that can lead to an effective, custom-made, time-saving learning schedule.

Create your learning schedule already at the beginning of the semester. Consider the different phases of your semester such as project work. You should also contact peers of higher semesters and ask for special challenges they faced. Then it is easier to achieve your own goals.

Your workflow

Create a separate schedule for each module. Read the module description first to identify learning goals, examination method, and time considered for selfstudy. The latter aspect can be calculated from the credit points.

20 min per module

Your learning schedule should combine complementary methods. How can you

consolidate and practise the knowledge gained on a weekly basis? Here, it is important not only to memorise but to assimilate. *Quintessence*, for instance, can help you with that. After larger sections - e.g. once a month - you should try to change the perspective and analyse the contents learned in a global picture. How is it connected to your personal background? *Mapping* could be a suitable method as it uses your creative thinking. In addition, you should reflect upon your learning strategies and learning progress. Smaller methods like Flashforward or *Friendly Reminder* can further spice your schedule up. In addition, you should mix self-learning phases with peer discussions. So, synchronise your learning schedule with those of your *Peer Group*.

Different examination methods require different learning strategies. If you need to prepare for an oral exam, your learning schedule should contain interactive elements with your peers. Also, exams of previous years can help a lot. But take care, preparation purely based on past exams is neither satisfying nor a basis for your future endeavours.

ORGANISATION

References

Add It: Pauk, W.; Owens, R. J. Q. (2010). The Cornell System: Take Effective Notes. In: How to Study in College (10 ed.). Boston, MA: Wadsworth, S. 235-277. Case Studies: Häfele, H. & Maier-Häfele, K. (2012). 101 e-Le@rning Seminarmethoden. Methoden und Strategien für die Online- und Blended-Learning-Seminarpraxis. 5. völlig überarbeitete Auflage. Bonn: managerSeminare., S. 156-160. Marx, Sabine (2003). Problemorientiertes Lernen (POL). https://ilias-hdw.fhbielefeld.de/goto.php?target=file_2306_download&client_id=IHDW *Child's Play:* Thomas Frank (2017). *How to Use the Feynman Technique to Learn Faster (With* Examples) https://collegeinfogeek.com/feynman-technique/ Glossary: Bundeszentrale für politische Bildung (2004). 7. Glossar erstellen. http://www.bpb.de/lernen/formate/methoden/46853/glossar-erstellen *Headline/Tweet:* Bundeszentrale für politische Bildung. *Methodendatenbank: Telegramm.* http://www.bpb.de/lernen/formate/methoden/62269/methodenkofferdetailansicht?mid=298. Universität Kiel (2013). Methode: 11-Worte-Telegramm. http://www.einfachgutelehre.uni-kiel.de/na/methodenpool/methode-11-wortetelegramm/ Logbook: Besser, R. (2002). Transfer: Damit Seminare Früchte tragen. Strategien, Übungen und Methoden, die eine konkrete Umsetzung in die Praxis sichern. 2. Aufl. Weinheim & Basel: Beltz, S. 74-76 Bastian, J. & Groß, L. (2012). Lerntechniken und Wissensmanagement. Wissen erwerben, speichern und verwerten. In: Studieren, aber richtig. Hug, T., Huter, M. & Kruse, O. (Hrsg.). Konstanz: UVK., S. 79-83 Mapping: Bastian, J. & Groß, L. (2012). Lerntechniken und Wissensmanagement. Wissen erwerben, speichern und verwerten. Konstanz: UVK., S. 65, 127f. Besser, R. (2002). Transfer: Damit Seminare Früchte tragen. Strategien, Übungen und Methoden, die eine konkrete Umsetzung in die Praxis sichern. 2. Aufl. Weinheim & Basel: Beltz, S. 84f Peer Groups: Besser, R. (2002). Transfer: Damit Seminare Früchte tragen. Strategien, Übungen und Methoden, die eine konkrete Umsetzung in die Praxis sichern. 2. Aufl. Weinheim & Basel: Beltz, S. 77-79 Quintessence: Häfele, H. & Maier-Häfele, K. (2012). 101 e-Le@rning Seminarmethoden. Methoden und Strategien für die Online- und Blended-Learning-Seminarpraxis. 5. völlig überarbeitete Auflage. Bonn: managerSeminare, S. 311-12 Scanning: https://www.uni-due.de/edit/selbstmanagement/content/content k41 3.html

 Strategic Interview: Besser, R. (2002). Transfer: Damit Seminare Früchte tragen. Strategien, Übungen und Methoden, die eine konkrete Umsetzung in die Praxis sichern.
 2. Aufl. Weinheim & Basel: Beltz, S. 51-53