Effective Revision Strategies

What is revision?

Revision consists of a number of activities:

- identifying and organising the material you will be assessed on in the exam
- learning your subject more deeply so you can draw on it in the exam (even if sitting an online take-home paper, where you have access to books, notes and the internet, it helps to memorise core knowledge, so you don't waste time looking it up)
- practising and rehearsing working with that learning, so you can use it to solve the problems or answer the questions you are set, rather than just 'regurgitating' your knowledge in the same form that you learned it in.

Common revision strategies you may already be using and why they don't work:

- Reading and rereading lecture slides, notes and books.
- Copying information out or highlighting it.
- Reciting or repeating something over and over.

These are very passive strategies which don't require your brain to actively engage with the material, so while the knowledge may feel familiar the more you look at it, leading you to believe you've learned it, you are recognising it rather than recalling it. The knowledge is only shallowly processed and isn't incorporated deeply into your understanding, so you may not be able to remember it without the prompt of the material in front of you.

General principles

There are several underlying principles that are proven to make your revision more effective.

Approaching your revision:

Desirable difficulty

Many of the strategies listed here employ this principle. The study strategies that are easiest and most comfortable often don't lead to long term retention, whereas those which are challenging or seem harder, slower work often work far better. This seems counterintuitive but push yourself to use strategies outside your comfort zone, even if it seems they're not immediately working.

Retrieval practice

Testing yourself is one of the most powerful revision strategies at every stage of revision. Don't think of it as checking to see what you know or if you have learned the material, but as practising and strengthen the process of recalling it.

Dual coding

Combining more than one format of information (such as textual and visual) helps us remember things better, as it enriches the learning and gives us more than one way to remember it. Contrary to what many people believe about their preferred learning style, it is better to work with several modes of learning. Don't overdo it though, as too much detail may be irrelevant or overwhelming.

Organising your revision:

Spacing

Instead of revising a single module or topic in one intensive block (cramming), breaking up your learning and distributing your revision sessions over time helps you retain it better.

Increasing intervals

You could space these blocks regularly but leaving increasing gaps between revision sessions on the same material strengthens your long-term memory. The optimum intervals depend on how long you have until the exam.

Interleaving

Changing topic each study session, so you switch between different material, perhaps from different modules, keeps your learning fresh. Interleaving similar or related topics can also help make links and spot differences between them.

Memory and learning

Your working memory is only up to 30 seconds long and can only handle up to about 9 things at once, before they slip your mind. New learning needs to be processed in the short-term memory, and then needs to be consolidated into your long-term memory.

Beginning with encoding

These general principles will help with the early stages of encoding new information to better learn it in the short term:

Attention

Firstly, you need to persuade your brain that something is worth remembering by identifying it as something to pay particular attention to.

- Test yourself BEFORE you start revising a topic (pre-testing). You might set yourself a quiz or try a past paper. You probably won't get much right at this early stage, but this primes your brain to look for and retain that information as being significant and useful later on, as you have a purpose for it. This also helps you plan your revision and identify areas to target.
- Your brain will pay attention to something that is novel or unexpected, so use the startle effect – switch up formats, colours, fonts, etc so not everything looks the same, and use bizarre examples or mnemonics to help you remember – the more absurd the better.

Chunking

If your short-term memory can only handle a small number of things, increase its capacity by grouping similar things together into groups of 3-5 items, so each group then counts as a thing. Think about how you memorise phone numbers in groups of digits. If a topic is too big or complex to learn at once, try breaking it down further into smaller amounts you can then build up again.

Consolidating and retrieving

Cramming at the last-minute works for a while but is not long enough or comprehensive enough to be a reliable approach to exams, and does not result in long term learning following the exam. Fortunately, we're talking about revision, and information you've learned before, even if you've now forgotten it, is much quicker to learn the next time. It's still in there – the problem is retrieving it. Sometimes we can remember things very vividly, but only if those memories happen to be prompted, and it all comes back to us. Sometimes we can strengthen the pathways to those memories so we can recall them when we choose to, as they are more 'to hand'. Those connections and pathways need to be reconstructed each time you recall something, but good revision strategies can strengthen this process. How you do this depends if you are revising to memorise knowledge (facts and information) or for deeper understanding and using this in the exam to apply it to problems set and think critically about it.

Different approaches for different types of learning

Revising for knowledge

Some things you just need to memorise- facts, information. Having a solid background knowledge will also help the rest of your revision giving you a basis to build on (you learn faster and more deeply when assimilating new knowledge into existing knowledge, giving it a context to link to). With a newer topic you feel less familiar with, it can also be more effective to start with this lower level and build up rather than jumping straight into revising for understanding without the necessary context and building blocks. Not all your revision will be at this level though – exams are not just a test of rote memorisation of facts (surface learning), but also test deeper understanding, critical thinking and problem solving with that information.

The kind of information you might wish to memorise will depend on your subject, but might include:

- Terminology, vocabulary, symbols, definitions and their meanings
- Names of key studies, theories or scholars
- Quotations or case studies (in brief, to use as examples - you can look these up to check them in an open exam, but a rough familiarity will help speed things up)
- Stages in a process, steps in a procedure
- Components in a model or parts of an object
- Formulae or calculations
- Key aspects, the plot or structure of a text

The strategies:

You may well be familiar with many of these strategies. Some work more effectively than others, and you might have preferences for one over another, but experiment and reflect – a combination is likely to be most effective, and don't limit yourself to your preferred 'learning style'.

Mnemonics

This includes acronyms (such as Richard Of York Gave Battle In Vain to remember the colours of the rainbow), using rhythm and rhyme, or numbers of things the check off (the Seven Characteristics of Living Things)

The Locus technique

This uses our episodic memory (remembering events or narratives or places we know, rather than facts) to locate new knowledge in space or time more concretely, and give them a structure or link them. You might imagine items placed around a room or house and picture yourself walking through it, or embed them in a story or scenario.

Chunking

If you have a list of things to learn, build it up slowly, learning the first 3 items, then adding 3, then another 3. make sure you are still rehearsing the earlier items as you build up, and later mixing them up in a different order to keep it flexible.

Personal meaning and association

Link new knowledge to existing knowledge that has meaning for you. This might be relationships with subject knowledge you are already familiar with, or it might be comical or nonsensical word or visual association (what it looks or sounds like).

Rhyme and Rhythm

Many of us will have used songs as children to learn things like the alphabet or times tables and embedding knowledge in rhyme and rhythm can still help to make it memorable, or enhance another technique.

Use the general principles such as testing yourself at increasing intervals, switching up the format and order, to help you consolidate revising for knowledge in your long-term memory.

Revising for understanding

Exams test not just what you know, but how well you understand it and how well you can use it to answer questions, explain ideas, construct arguments or solve problems. As exam questions are not just a test of memory, especially online exams, you will also need to use revision strategies to enhance your understanding of the material. Very often, once you deeply understand something, you don't actually need to memorise it as it just makes sense, having grasped the underlying concept.

The kind of things you might wish to understand will depend on your subject but might include:

- Concepts, principles and theories
- Explanations for why and how things happen
- How different factors interact and the implications
- Which models, principles or processes to apply in which circumstances and why

The strategies

Much of your learning at university level is likely to be at the level of understanding rather than just knowledge, so your revision should focus especially on these. The strategies here both strengthen your learning and also help you practise or rehearse the kinds of things you will be doing with the learning in the exam.

Summary and paraphrase

Putting information in your own words and making your own decisions about how to summarise it (what to include or leave out) makes your brain work to really understand it on a deeper level and integrate it more actively into your learning.

Rework material in different ways

Turning a paragraph into bullet points, a diagram or mindmap (and vice versa) helps you engage deeply with the material and work with it in a rich, active, flexible way which helps you retain it longer and understand it better.

Compare with other accounts

Find other explanations in different textbooks or online, or work with another student to see how they've made notes on it. Comparing and contrasting different explanations keeps revision fresh, helps you fill any gaps, gives you multiple perspectives or explanations that enrich your understanding and requires you to actively synthesise and integrate them all together into your own understanding.

Explain it to yourself/someone else

Talk yourself through an explanation of a concept or walking yourself through a process. Try doing this first with, and then without, notes and check yourself for accuracy and anything you've missed. Each time you rehearse it, you'll probably be adding in new details or seeing new things, enhancing and deepening your understanding as well as retention.

Interrogate with questions

Take those things you don't yet understand and turn them into questions. Ask yourself why or how something happens, what it means, how it works, why it's important, how it relates to other topics.

Apply to concrete examples

Where you are working with ideas, concepts or abstract theories and models, try applying them to different case studies or examples. This will add detail that helps you to remember them, but also enhances your understanding of the underlying principles as you use them in different ways

Make up your own exam questions, and rehearse answers

If you were the lecturer, trying to test students' understanding of this topic, what question would you set, and how would you answer it? This strategy not only puts you in the lecturer's shoes and helps you anticipate the exam, it also helps you think about what kind of knowledge you need to revise, how you might be asked to use it and at what level. And, of course, you can practise rehearsing different answers and marking them even if there's no past papers (but don't try to learn these answers by heart).

Sleep

A final strategy that has been shown to be effective is sleep. Both daytime naps and a good night's sleep before the exam give your brain time to process the learning, as well as giving you a rest and ensuring you're alert enough to think clearly the next day.