

The human brain

- Many people compare brains to computers and teenage brains in particular have a great capacity to process and store new ideas.
- However the brain, unlike a computer, doesn't store information neatly in files and folders - information is scattered around the brain and it is often hard to recall at a later date.
- Effective revision overcomes this by strengthening our grip on key information and creating useful shortcuts.
- The brain responds to regular **retrieval practice (testing)** by prioritising the relevant information and strengthening the connections related to it.
- **Spaced repetition** (regularly testing yourself on something after spaced intervals) is a way of influencing your brain's agenda and getting it to learn information of your choosing. i.e. **hacking your brain**

Why revise?

- The ending of most coursework & modular exams means KS4-5 students sit almost all of their exams at the end of a 2 year course.
- Revision will enable you to recall and deploy accurate and relevant detail in your examination answers.
- Revision will also increase your familiarity with exam style questions and the technique required to reach the top level.

How should students revise?

- The two main aims of revision are to improve **knowledge** and to develop **technique**.
- Reading is a good first step in the process of revision but on its own it is not very effective. It doesn't automatically lead to accurate recall. *Having read a page of a novel or a website how much detail could you accurately recall?*
- Reading something a few times leads to recognition. We often recognise familiar songs but that doesn't mean that we can accurately recall the lyrics!
- In exams you have to do a lot more than merely recognise information - you will have to recall it accurately and use it effectively.
- You should start revision by carefully reading your exercise books / revision guides **but crucially you should then test (or retrieve) what you remember and review your answers:**



Read = remember some but forget most

Read + test + review = remember more

Read + test + review + test + review + test = remember most



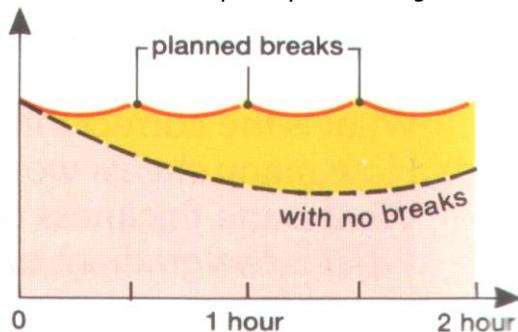
- **Known unknowns** – it is crucial that you **find out what you don't know** i.e. to identify your weaknesses. Testing allows you to do this.
- You could put revision **flashcards** in a box and then test yourself on these throughout a week. **The ones you struggle with should be put in a separate pile for more frequent testing.**
- Students often benefit from producing their own revision notes, cards etc. However producing these is not revision. You need to then test yourself on the content.
- **Memory Beep Test** – you will be amazed at how much revision you can do in 5 minutes. Identify 5 topics or questions you want to test yourself on. Give yourself 60 seconds on each one and write down what you know.
- **Blank paper and a pen are** really useful. You could read some pages from your exercise book or revision guide, close the book and then write down what you remember in 3-5 mins. You should then review your work (compare it with the revision guide) to find out what you haven't remembered. Repeat this 2 hours later, 2 days later, 2 weeks later.
- **Interleaving - mix up revision topics.** This makes the brain work harder and leads to stronger recall. It also allows the brain to identify links between information – something examiners love.
- **Spaced testing** – you should re-test yourself on a topic having left enough time to have forgotten it.
- **Practise output rather than input** – you should avoid exclusively focusing on learning information at the expense of applying that information to exam questions.
- You wouldn't practise for a tennis tournament by never playing tennis and students shouldn't study for an exam without practising answering exam style **questions** in timed conditions.
- You should practise writing whole answers, parts of answers (intros, sample paragraphs, conclusions) or drafting a plan for an answer.
- Students should ask a teacher to review their answers or plans and to identify strengths they should repeat and weaknesses they should eliminate.
- In addition to learning specific details, quotes etc. students need to see the **Big Picture** – you should practise summarising a whole topic in one diagram, timeline, 50 words etc.
- Most revision can be done **without a screen** – however Memrise, SAM learning etc. can help students to learn some key info.
- Make **audio recordings** of key information and listen to this on mobile phones.
- Leave **'Post It'** notes or posters around the house or on a revision wall to act as constant reminders of tricky info
- Use **highlighters** to identify **key info** – *however reading and highlighting is not effective revision on its own. You must read & test.*
- Draw **mind maps** to present information more effectively.
- **Devise mnemonics** e.g. OIL RIG (Oxidation Is Losing electrons Reduction Is Gaining electrons)
- Getting other people to **test** you. If you choose your **parents** this will have the added advantage of reassuring them that you are revising and they will probably be even nicer to you as a result. You will then be nicer to them - a **virtuous circle**.
- If your parents don't think you are revising they will probably worry and become a bit stressed with you. You will then probably become stressed with them. **An unvirtuous circle!**
- Now that you are a teenager the 'buttons' they used to press to make you do things don't work as well as they once did. It is important that you motivate yourself and **take responsibility for your revision.**

If you feel...	Aim to be...
• Stressed	• Calm
• Nervous	• Confident
• Doomed	• Motivated
• Apathetic	• Energised
• Complacent	• Ambitious

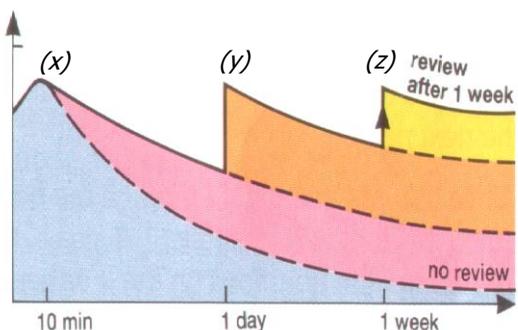
Jargon	Meaning
Retrieval practice	Testing
Interleaving	Mix up revision topics and subjects.
Spacing	Allow yourself to forget a topic before testing again

Top Tips

- Your parents/guardians can play a vital role in:
 - encouraging you to revise if you are reluctant
 - calming your nerves and encouraging positive thinking e.g. *I don't understand this yet but I will!*
 - persuading you to have a necessary break from revision if you have been working too hard.
- Enjoy the feel good factor** – identify the progress you are making with revision (eg covering the specification, sticking to your timetable or improving your scores on memory tests.)
- Try to see the value of revision i.e. link revision with your aspirations for the future.
- Revision is most effective when there are no distractions – mobile phones should be absent and computers should only be used for specific activities.
- Avoid 'binge' revision. 5 hours of revision spread over a week is usually better than 5 hours of revision on one day
- Students should take short breaks from revision after 30 minutes. This will improve your learning efficiency.



- After a 10 minute break students should briefly revise the same work again (x). This should be repeated one day later (y) and finally one week later (z). This will fix the work firmly into your long-term memory.



“A small daily task, if it be really daily, will beat the labours of a spasmodic Hercules.” Trollope

When should students revise?

- Low intensity - consistently throughout the year.
- Medium intensity – 3 months before the exams.
- High intensity – 1 month before the exams.
- Medium intensity – night before the exam.

Throughout the year

Revision should take place throughout the year – not just when exams are approaching. You should take a few minutes each day to skim through your recent class work, identify work you might have missed and questions you have. Without ongoing revision you can lose over 90% of the information entering the mind within a four week period. Regular reading of recent work will help to transfer information from your short term memory to your long term memory. It is important to review all subjects – not just your favourite ones. You should also aim to make ongoing revision notes for the different units of each of your subjects.

Approaching the exam period

Our brain doesn't like remembering lots of new information at once so cramming is a bad idea. Serious revision should begin at least 3 months before the exams and gradually increase in intensity. The hardest thing is to stop talking about revision and to start doing it. You need to build up **revision momentum** and this can be achieved by starting with just 15 minutes a day in February. This should steadily increase as the exams draw closer. The night before an exam you should still revise but you should also aim to get a good night's sleep.

Preparation is vital

“If I had six hours to chop down a tree, I'd spend the first hour sharpening the axe.” Abraham Lincoln

Revision Checklist for students:

- For each subject do you know..
 - ..the exam board and syllabus?
 - ..what the exam specification includes? (If there is any key content or vocabulary which you are unsure of you must ask your teacher.)
 - ..where to get past papers, mark schemes and model answers?
 - ..which revision books / websites are recommended?
 - ..if there are question types which feature every year?
 - ..how long you should spend on each question?
- Have you drafted a realistic week by week revision timetable which incorporates the ideas of spaced revision and interleaving?

Want to find out more?

- <https://www.theguardian.com/education/2016/may/07/the-way-youre-revising-may-let-you-down-in-exams-and-heres-why>
- https://en.wikipedia.org/wiki/Testing_effect
- <https://www.theguardian.com/education/2016/jan/23/spaced-repetition-a-hack-to-make-your-brain-store-information>
- <http://www.sec-ed.co.uk/best-practice/revision-and-study-skills-retrieval-practice>

And finally...

- Students need to **work smart** and not suffer in silence. If you are finding something impossible to understand you should phone a friend or speak to your teacher. 5 minutes with an expert can save hours of fruitless worrying.
- Revision is very personal. There are lots of effective revision strategies and you should choose the ones which work for you.
- If you are finding revision tough going that probably means you are doing it effectively. Revision isn't meant to be easy!
- Effective revision leads to better exam results and **you will reap the benefits for years to come.**