



A PARENT'S GUIDE TO SUPPORTING YOUR CHILD WITH REVISION

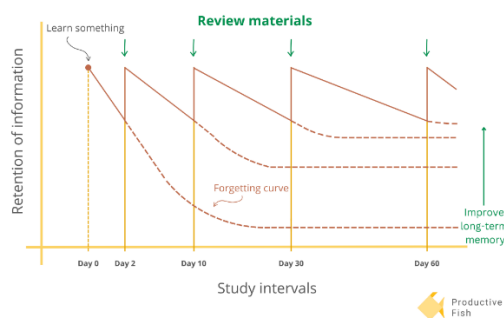
As your child prepares for their Science GCSE, you can play a crucial role in helping them succeed with revision. This leaflet is designed to outline some of the key research around revision and explain how you can use this to support your child.

The forgetting curve

Research shows that immediately after we have learned something, we start to forget it. This was demonstrated in some research carried out by Hermann Ebbinghaus in the 1880s (and replicated more recently by other researchers like Murre and Dros, 2015). There are several factors that affect this loss of memory, including stress, sleep and the difficulty of the material being learned.

It is possible to overcome the forgetting curve using a technique called spaced practice (sometimes called distributed practice). This technique is much more effective than massed practice (also known as cramming).

The graph below shows Ebbinghaus' forgetting curve and how distributed practice can help improve long-term memory. You can see that each time the materials are reviewed, the retention of information increases.



<Image is creative commons: [File:Forgetting curve and work of Ebbinghaus.png](https://commons.wikimedia.org/wiki/File:Forgetting_curve_and_work_of_Ebbinghaus.png) - Wikimedia Commons>

What does this mean for my child?

Revision works best if we space the learning out over time rather than cramming it in close to the examination. Learning things once doesn't mean we will remember it a day, a week or a month later – we need to return to information we have revised. Encourage your child to revise a section or topic area once, then come back to it again after a short break to remind themselves of what they have learned. They could then test themselves a week later to see what they remember.

The Pomodoro Technique

'To maintain a high level of mental effort invested in their learning tasks, students need to regularly replete working memory resources. Taking breaks helps to recover depleted working memory, for example, through active rest in between learning tasks (Chen et al., 2018) or through a relaxation pause (Lee et al., 2021). However, this self-regulation of breaks comes with a cost and might require additional effort (Seufert, 2018). For example, the decision if and when to take a break requires additional metacognitive resources, and switching between the task and break can cause additional load (Lee et al., 2021; Seufert, 2018).'

(Biwer et al., 2023)

Recent research (Biwer et al., 2023) suggests that we should take regular timetabled-in breaks, rather than choosing when to have a break. Taking regular timetabled breaks leads to lower levels of tiredness and less distractions, as well as higher motivation and levels of concentration. The Pomodoro Technique can be used to regulate the amount of time spent working, as well as the position and length of breaks.

So, how does the Pomodoro technique work? The technique, developed by Francesco Cirillo, uses a timer to break work down into set intervals. These intervals are known as pomodoros, named after the shape of the kitchen timer used by Cirillo. A pomodoro is a tomato - the kitchen timer was tomato shaped!



The technique consisted of six steps:

- Decide on the task.
- Set the timer for 25 minutes.
- Work on the task – with no distractions. It is important that the task is not interrupted. Phones and other forms of distraction should be placed away from the work area. Remember to put the phone on silent too!
- When the timer rings, take a short 5-minute break. Step away from the work. Make sure the break is no longer than 5 minutes.
- Go back to step 2 for four more pomodoros.
- Take a longer break, normally 20-30 minutes. Then return to step 2.

What does this mean for my child?

Revision works best if we concentrate on the task and are not distracted. If we spend too long on a task we can become tired, demotivated and more likely to lack concentration and be distracted. Using a timer to determine how long we work for and when we stop can help. Using a timer is better than watching a clock. It means we can completely focus on the revision, without staring at the clock to see how long we have been working for.

This works best if it is not the timer on a phone. If the phone is within reach it can act as a distraction – even when on silent we can see messages popping up on screen!

Cornell Notes

The Cornell note-taking system was devised by Professor Pauk (2010) at Cornell University. In the original system the page is divided into sections:

During a lecture the pupil would make notes, writing as much information as possible. The summary and the key words section would be completed after the lecture during a review stage. The key words section can include comments or questions the student might have whilst reviewing the notes.

This system can be adapted for use for revision:

- Pupils look through their notes, revision guide, textbook or other source and make notes on a topic in the notes section. This could be straight text, bullet points or a mind map.
- They then summarise this in the summary section at the bottom. This can be copied onto flashcards.
- In the key words section, they write questions which are designed to test the learning from the notes and summary section.
- To revise, they cover up the notes section with a piece of paper and attempt the questions. They can check their answers using the notes or the original sources of information.

Title	
Key words	Notes
Summary - a short summary of the information covered in the notes	

What does this mean for my child?

By carrying out this process, pupils are transforming knowledge by condensing it and then using assessment as learning through self-testing. Transforming the notes is much more effective than just highlighting or re-reading through their notes.

Flashcards

Research shows that self-testing, also known as practice testing, is an effective way of learning material and therefore revising. 'Practice testing works even when its format is different from that of the real test. The beneficial effects may last for months to years' (Dunlosky et al., 2013).

The success of self-testing is linked to the 'testing effect', which suggests that spending some of the learning time retrieving information from memory helps to increase long-term memory. Self-testing can be used for any form of factual knowledge recall.

How to use flashcards: the Leitner system

The Leitner system is a simple flashcard revision method that takes advantage of spaced repetition, which can help us to overcome the forgetting curve.

The learner can put cards into three different boxes. Box 1 contains the cards that the learner makes the most mistakes with and box 3 contains the cards the learner knows well. The pupil studies box 1 more often than box 2 or 3. For example, they could study box 1 every day, box 2 every 3 days and box 3 every 5 days. In the system, incorrect answers get demoted e.g. 3 → 2 and correct answers promoted e.g. box 1 → 2.

This gif shows how this method works:

Session 1



[File:Leitner system animation.gif - Wikimedia Commons](#)

What does this mean for my child?

What is written on the flashcard is absolutely key when it comes to the effectiveness of revision. Students may be tempted to copy out their revision guides onto the cards, but the knowledge needs to be condensed and they need to consider the purpose. What will need to appear on one side as a prompt and on the reverse side as the answer?

Examples include:

- Simple recall e.g. key words and their definitions
- The name of a process and a description or explanation of the process
- An image (graph, equipment, object, picture, worked example) with the explanation
- A question and the answer
- Fill in the blanks

They then need to learn what is on the cards using a technique like the Leitner system.

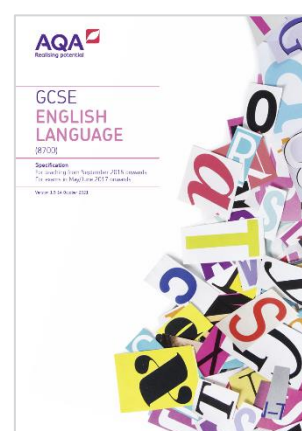
Revising knowledge and applying knowledge

Many pupils spend a lot of time revising: they have the right strategies and know a lot of information. When you test them, they are good at recalling and remembering the information. Despite this, however, they still do badly on their tests and examinations. This can be frustrating both for them, and for you when you have supported them. What is going on?

Good revision is not just about learning the information, although this is important – it is also about applying it to examination questions. It is good practice to include past paper questions as part of the revision structure. To get the right questions, you need to know which examination board and examination your child is taking. You can find this out from their teachers (it is a good question to ask at parents' meetings) or examination officer. Some schools include the information on their websites too.

When you go to the examination board website there are a few documents to look for:

- **The specification** – This tells you all the knowledge your child needs to know for the examination. The specification tells teachers what they need to teach. The examination papers will sample this domain, meaning they will ask questions based on this information. Students will need to demonstrate that they know it and can apply it to new situations. It is a good starting point for knowing what needs to be revised.
- **Past examination papers and mark schemes** – These are useful as they show the types of questions that came up in the past and what was needed to gain the marks. Be aware that these test the whole course – it is sometimes difficult to find questions to match what has been revised. Some websites provide summaries of questions by topic. These may be more useful when revising.
- **Examiner reports** – These are produced after each set of examinations and can show you where other students have done well or made mistakes in the past.



What does this mean for my child?

It is important to include practice questions when revising. Teachers may be able to provide packs of questions on different topic areas, and whole papers can be downloaded from examination board websites. Remember that children like to revise what they know as they feel good when they test themselves and get it right. They will often avoid what they don't know or understand. It is important to remember that the examinations sample from the whole specification, so questions might appear on any topic area.

Strive for Success



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