

Cognitive load theory

3 things to know:

- Cognitive load theory is a handy model to understand challenge and how to learn information which isn't too hard, or too easy, but just right. (Sweller 1998) **Cognitive load** is the amount of information our working memory can hold at any one time. The capacity of our working load is limited and therefore students can maximise their working memory by practising a range of **strategies**.
- Research shows that strategies for reducing cognitive load can assist the human brain to learn and store knowledge, boost confidence and improve memory retention.
- Further research has identified that reducing the cognitive load can reduce stress and anxiety and the feeling of being overwhelmed with tasks.

3 things to do:

- Support your child to try out strategies to reduce the cognitive load. Examples include:
 - breaking down problems into smaller parts. This reduces the problem space and lightens the cognitive load, making learning more effective.
 - helping them to understand worked examples in order to work out how to complete tasks
 - encouraging them to take advantage of auditory and visual channels in their working memory and supporting them to create stories to help remember information in accessible chunks.
 - working with them to simplify information and build on it. Students should avoid overloading their brain with too much information at any one time.
- The learning environment is crucial to reducing cognitive load. Help your child to create a calming environment to work in with as few distractions as possible. Encourage them to turn off their phone, music or the TV whilst revising or doing homework. Distractions only add to our working memory.
- Help and encourage your child to review information from their lessons as they go along because this will help improve their retention, adding knowledge to their long-term memory. Help them get into a routine which works for them.

The chunking technique to revisit information

3 things to know:

- Chunking is a technique which can improve the **memory**. Chunking is the process of taking individual pieces of information (**chunks**) and **grouping them into larger units**.
- Research shows that chunking is useful because it can help students' memory system become far more efficient as they are able to retain information better. They will then be able to recall relevant information in their exams.
- The chunking process encourages students to break down larger amounts of information into smaller units, identify similarities or patterns, organise information and group information into manageable units. Studies have shown that students have gone from remembering seven pieces of information to over 80 by using the chunking technique.

3 things to do:

- Support your child to **challenge themselves** to remember lists of things, whether it's a shopping list, vocabulary words or important topics they are learning about.
- Help your child to **separate their revision into relevant sections** as this will help them digest everything and remember the information more easily. Encourage them to create links between different bits of information and put them into meaningful categories because it can help them remember them better.
- Chunking works well if work is **organised and neat** so help your child to use headings and titles for different sections, use tables to summarise data, bullet points to summarise key points and also combine illustrations with text to create visual associations.

The Interleaving technique to help revisit information

3 things to know:

- Interleaving is a method used to help students revise and remember more for the exam. It is about what students do with their time when they revise. With the interleaving technique learning is spread over time, in smaller chunks rather than dedicating a whole day for one subject or topic.
- Research says '**Mixing it up boosts learning**' when compared to more traditional methods of block learning where students master one topic before moving on to the next in preparation for exams. Studies have highlighted that students who use interleaving perform better on the examination if the examination was more than one day away.
- Evidence highlights that interleaving strengthens memory recall because by revisiting material from each topic several times, in short bursts, students can increase the amount they remember in exams.

3 things to do:

- Watch this video with your child to understand more about how interleaving works - <https://youtu.be/WbDpYMp8F6o>
- Help your child to decide on the **key topics they need to learn** for each subject. Work with your child to create **a revision timetable** which spaces their topics out across a good period of time.
- Short bursts of revision are more effective than long sessions so encourage your child to mix topics up and do little and often as quality is better than quantity. Encourage them to take regular breaks in their revision and not to focus on the same topic for a whole day!

Using flashcards to help revisit information

3 things to know:

- Using flashcards is a repetition strategy. They are a simple 'cue' on the front and an 'answer' on the back. Flashcards engage students in "active recall", which means they are creating connections with their memory.
- Research shows that using flashcards can enhance long-term learning and help students to memorise facts quickly. Flashcards are not an effective method for last-minute cramming!
- Studies have found that it's more effective to **review a whole stack of cards in one sitting** rather than to carry them around and have students' glance at them every so often.

3 things to do:

- Encourage your child to make flash cards as part of their revision strategy. The key is to have a **question or key term** on one side and the **answer or definition** on the other. Suggest using different colours for topics to help categorise information and to keep them neat. Flashcards containing just notes are not effective.
- Try testing your child using the flashcards and give them time to digest the question before answering. If they get the answer right, don't discard the card – they need to keep repeating it again and over time.
- When using the flashcards help your child review their cards using a system. With your child read through this article which explains how to use flashcards effectively using a system approach:
<https://www.parent24.com/Learn/School-exams/watch-how-to-study-using-flashcards-20160825>

The 'Flipped Learning' technique to help revisit information

3 things to know:

- Flipped learning is the pre-lesson preparation, reflection and questioning that pupils undertake to help inform a teacher's planning (Mazur, 1997). Prior to a lesson a teacher could direct students towards **specific resources** (often online media) that they need to **digest and respond** to.
- Flipped learning will help stretch students' learning and understanding of topics, allow them time in the lesson to ask questions and make lessons more purposeful.
- Research suggests that there have been some promising results from flipped learning where students have reported higher levels of satisfaction, greater engagement and consistent achievement.

3 things to do:

- Be willing to talk to your child about their homework or study tasks and help them to access different materials they may need to look at.
- Help your child identify the important information within a source, article or video and encourage them to write down questions about the areas of their learning that they do not fully understand, make notes on the topic or create a mind map.
- Support your child to be proactive by thinking ahead and asking the teacher which topics are coming up next so they can actively start to understand them. Help your child take responsibility for their learning, prioritise their work, set themselves targets and get into a good routine with out of school learning.

1. Spacing and timing of revision to revisit information

3 things to know:

- Spacing is a revision technique which is all about spacing revision so students don't get swamped and overwhelmed. It means introducing time intervals into their revision sessions as well as spacing out the days on which they revise for topics
- Research shows that doing something little and often is better than doing it at once, or cramming. For example, revising for eight hours in one day is not as effective as doing one hour of revision for eight days. This is because the time in between revising allows students to forget and re-learn the information, which cements it in their **long-term memory**.
- The '**Spacing Effect**' is one of the longest and most enduring findings in cognitive psychology. Research suggests there is an 'optimal gap' between revision sessions for students to retain information. In some studies, using spacing instead of cramming has resulted in a 10% to 30% difference in final test results.

3 things to do:

- Help your child create a revision plan which maps out what they are going to revise and when. Help them to choose a mixture of subject topics to focus on each day to make sure they are spacing them out.
- Encourage them to **review information** using different revision techniques to help them carry out some 5-10-minute reviews of topics such as reading through notes, highlighting information or making post-it notes. Students can also **transform their learning** by doing 30-minute activities, such as writing summary sheets, flash cards or mind maps for topics.
- Work with your child to practise testing them on different topics and to help them complete exam questions. Remind your child that, five hours of time, spent in smaller chunks and spaced periodically, is a far more effective way to learn something than five hours spent the night before.

2. Keeping active during revision

3 things to know:

- Research shows that physically active students have more active brains. Even walking for just 20 minutes can significantly increase activity in the brain. This means that it is really important for students to take regular breaks in their learning.
- Exercise triggers the release of various hormones and chemical compounds in the body and has many benefits to learning:
 - It improves cognitive brain function
 - It improves students' ability to focus for longer periods of time
 - It can reduce stress levels
 - It can improve memory retention
- Studies have shown that exercise helps to oxygenate the brain and **release tension**, helping students to **keep calm, mentally relax** and **study more efficiently**. Productive people often work smarter rather than harder and exercise has a huge part to play in this.

3 things to do:

- Support your child to take regular breaks so they are less likely to get distracted whilst revising. It's much better to spend 60 minutes revising well and **10 minutes on a break** than for your child to spend longer half revising and half playing with their phone! Suggest to your child that they take breaks every 60-90 minutes when revising.
- Encourage your child to do something active with their break, such as getting some fresh air, playing sport, going for a walk or a run, or doing housework. Remind them that exercise doesn't have to last for hours to count.
- Work with your child to help them work efficiently and find a routine that works for them. They need to be flexible to work around their timetables and could do some exercise early in the morning, at lunchtimes or early evenings. Alongside exercising help your child to take care of themselves by eating well, sleeping well, relaxing, socialising and having some down time.