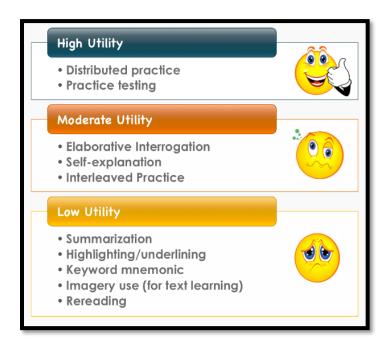
# **LARGS ACADEMY**





**EFFECTIVE STUDY STRATEGIES** 

#### **INEFFECTIVE STUDY TECHNIQUES**



We all have our favourite study techniques but often these are a force of habit or the ones we find the easiest or like the most rather than being the methods that have been proven by research to be most effective in getting learning to stick. It is important that we know not just 'what' to learn but 'how' to learn. The most extensive study on learning techniques was carried out in 2013 by J Dunlosky, a professor of Psychology at Kent State University. This list shows the most effective strategies, not just in terms of exam revision but in terms of creating better learners.

Source: Dunlosky, et al, 2013 'Improving students learning with effective learning techniques'



#### Re-reading

Recent research found that 84% of students re-read their notes when revising, whilst 55% claimed this was their number one strategy. Reading pages of notes or chapters from a textbook may give you the impression you have learned lots but unless you test yourself on this information, it will not stick. A study showed that pupils who just re-read notes did 30% worse in a final test compared to those who had tested their knowledge and understanding through self- testing.



#### Highlighting

Highlighting is another popular, yet largely ineffective strategy. Students tend to highlight too much and not just the most important information. Highlighting can also make pupils focus on individual concepts/ideas and prevents them from seeing the bigger picture and making connections. You don't need to throw out your highlighter pens but highlighting should just be the start of the journey and should be used along with other, more effective strategies.



#### **Copying out / Summarising**

This strategy can give the illusion that you have made a lot of progress as you have written proof of your efforts. However, copying is a passive activity which does not engage your brain. You will remember things better when you are forced to think hard about them. Summarising can be slightly better but it is a skill in itself and if you have not been taught to do this properly, there is a risk you will not focus on the right material.

#### **INEFFECTIVE STUDY TECHNIQUES**



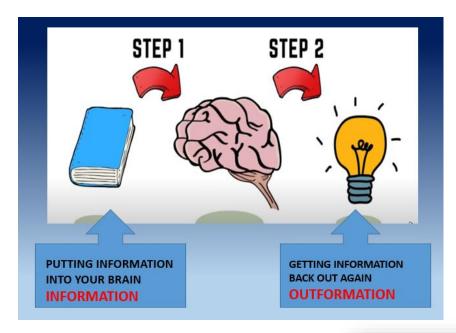
#### **Cramming**

The science of learning shows that your short term memory has limited capacity and trying to cram in lots of information in a short space of time can lead to cognitive overload, resulting in you not learning anything at all. Cramming is also detrimental to your wellbeing, can affect your sleep and can result in increased stress and anxiety.



#### **Comfort Zone Revision**

Comfort zone revision is when you focus your revision on topics/subjects you like or you are already good at, mainly because it makes you feel better about yourself. However, the problem here is that you are avoiding all of the areas which really acquire your attention. To make improvements to your performance, you need to push yourself outside of your comfort zone and revise the areas you find difficult, boring etc.

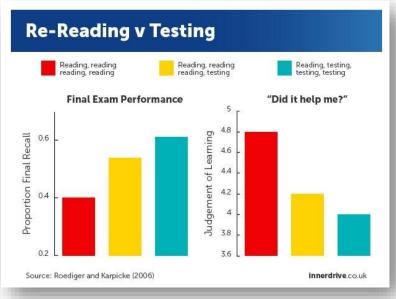


The reason that the above strategies are not very effective is that learning is a **two stage process**. To really learn something, you need to:

- 1. Put information into your brain
- 2. Get information back out again

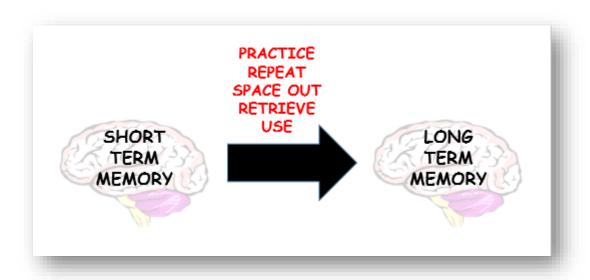
Therefore, the most effective learning or revision strategies will help you to retrieve the information that you have in your memory.

The key message is that students don't always know what is best for them in terms of improving their exam performance. Look at what the evidence tells you.



#### THE IMPORTANCE OF MEMORY

- To learn is simply to be able to remember something
- All information starts in your short term memory, but will be lost if not transferred to your long term memory
- To move information to your long term memory, you must PRACTICE, REPEAT, SPACE OUT,
   RETRIEVE and constantly USE the information
- Improving these skills can improve your memory and can improve your ability to learn

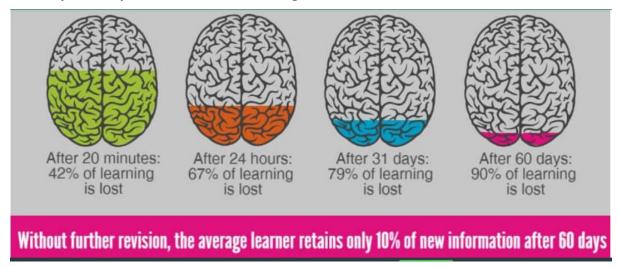


#### THE FORGETTING CURVE

Ebbinghaus, a German psychologist, proposed that humans start losing 'memory of knowledge' over time unless the knowledge is consciously reviewed time and time again. He conducted a series of tests on himself which included the memorization of a meaningless set of words. He tested himself consistently across a period of time to see if he could retain the information. He found that:

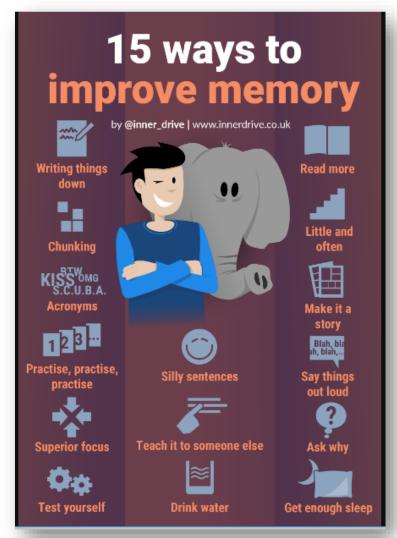
- Memory retention is 100% at the time of learning any particular piece of information (in the moment). However, this drops to 60% after three days.
- A range of factors affect the rate of forgetting including motivation, the meaningful nature of the information, the strategies for revision and also psychological factors (sleep for example).
- If each day, repetition of learning occurs and students take time to repeat information then the effects of forgetting are decreased. According to research, information should be repeated within the first 24 hours of learning to reduce the rate of memory loss.

Practice and retrieval help to break this 'forgetting curve' as it strengthens the long-term memory and stops information from fading.



#### In summary, what do we know about memory?

- Consistent practice and revisiting previous material strengthen memory and boosts learning.
- Our working memory is finite and limited and so overloading this or cramming for revision doesn't work.
- Information, if not revisited, is 'lost' from our memory.





#### **EFFECTIVE STUDY TECHNIQUES: RETRIEVAL PRACTICE**

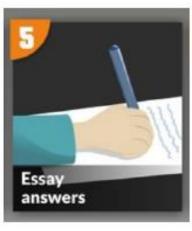
**Retrieval practice** is one of the most effective ways to revise. "Retrieval practice is a learning strategy where we focus on getting information out. Through the act of retrieval, or calling information to mind, our memory for that information is strengthened and forgetting is less likely to occur. Retrieval practice is a powerful tool for improving learning". (Kate Jones Lovetoteach87.com) By testing yourself rather than merely reading or highlighting information, you are much more likely to remember key facts and knowledge and therefore, you are more likely to succeed in your exams. There are various different ways you can test yourself but the 9 methods below are the most common and all work well.



















#### RETRIEVAL STRATEGIES

## Brain dump

Choose a topic and write down as much as you can remember, without referring to your notes. Check your notes and see what you missed then try to fill the gaps without the notes. Check your notes a third time and add the missing information.

# Map it out ₽ Past papers

Take an essay question or writing question and map out your answer, without writing a full response. Look at the mark scheme and decide if your plan meets the criteria. Do this for a number of questions, then choose one and write the full response.

Ask your teacher for practice questions or exam papers. Complete them without notes in exam conditions, then check your answers and identify the gaps in your knowledge, so you can target your revision.

one answer per card.

Flash cards

subjects, then mix them up for the most

effective revision. Check out the Leitner

System for effective spacing and interleaving.

Practise introductions

For essay subjects, take a past

Thinking hard: transform

exam question and practise writing effective

introductions and conclusions. Look back at

important things to remember. Practise for

your notes and remind yourself of the

different topics, texts and papers.

Keep your flashcards simple – one question,

Write flashcards for each topic, in all

#### Quizzes

Write a set of questions and answers and ask someone else to test you. It's important to either write or say your answers aloud. Reading through quizzes in your head can give you a false sense of security.

Read a section of your notes then
put them aside and reduce what you read to
3 bullet points, each one no more than 10
words. Look back at the notes and decide if
you missed anything important. Hide the
notes and write a fourth bullet point.

Thinking hard: reduce

Read a paragraph from your notes or a text book and transform it into a diagram, chart or sketch – no words allowed. Look at a diagram in Science, for example, and transform it into a paragraph of explanation.

## Thinking hard: connect

For each subject, consider the exam papers and group together questions that require the same technique to answer. Write down the requirements of each type. Find a previous example you've completed and identify where you've met the criteria.

## Key vocabulary

For a particular topic, make a list of key vocabulary, then do the following: define each word; use each term in a sentence; create a question where the key word is the answer; identify other words which connect to each of the words in your list.

#### **USING FLASHCARDS**

An effective flashcard may include the following (in each subject they will be used in a different way):

- A key term/key word with definition on the back.
- A key date with the event on the back.
- A key equation with its use in practice on the back.
- A past paper question/plan and a model answer on the back.

Gather information to create the flashcard. Use your books, textbooks and revision guides.

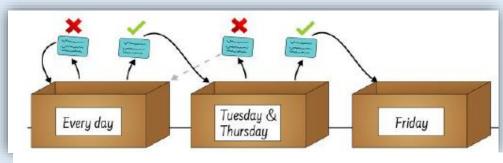


Select the most important information to put on your flash cards.



Write/draw the information on one side and write the answer on the other side.

#### THE LEITNER SYSTEM



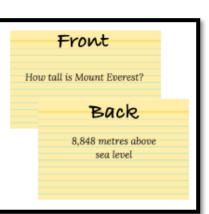
In order to use flashcards most effectively, the **Leitner System**, is a desired strategy for spaced testing. Once you have created a set of flashcards, create three boxes, areas marked as the following:

BOX 1: BOX 2: BOX 3: Once a week

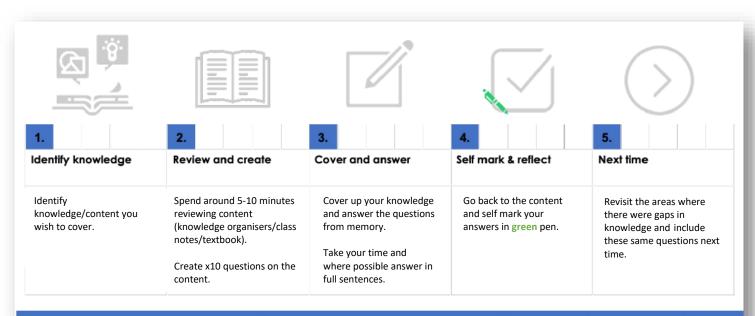
- Test yourself on the flashcards in the Box 1 pile. If you get the answer correct on the flashcard, move it to the Box 2 pile. If you get it incorrect, it stays in Box 1.
- Twice a week, test yourself on the flashcards in Box 2. If you get the answer correct
  on the flashcard, move it to the Box 3 pile. If you get it incorrect, it stays in Box 2. The
  aim is to get all of the flashcards to Box 3.

# Flash card top tips

- The most effective flashcards include one question followed by one answer (or one term followed by one definition).
- Don't force your brain to remember a complex and wordy answer.
   It's easier for your brain to process simpler information so split up your longer questions into smaller, simpler ones.
- You will end up with more flashcards this way but your learning will be a lot more effective.



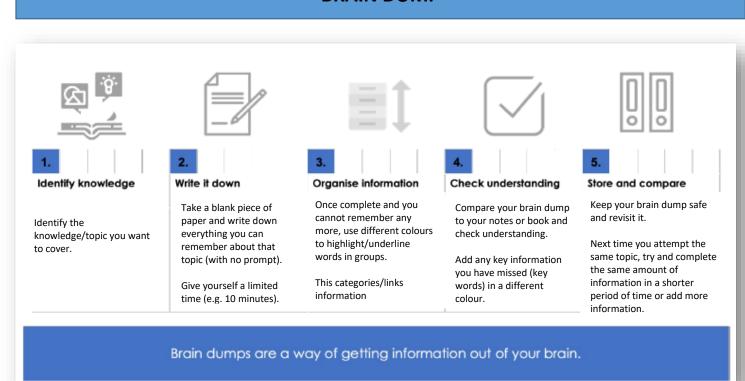
### **SELF-QUIZZING**



Ensure that you complete all subjects and all topics – not just the subjects you enjoy the most of find easiest.

Practice makes perfect!

#### **BRAIN DUMP**



#### MIND MAPS

#### **HOW TO CREATE A MIND MAP**











1.	2.	3.	4.	5.
Identify knowledge	Identify sub topics	Branch off	Use images & colour	Put it somewhere visible
Select a topic you wish to revise. Have your notes ready.	Place the main topic in the centre of your page and identify sub topics that will branch off.	Branch off your sub topics with further detail.  Try not to fill the page with too much writing.	Use images and colour to help topics to stick in your memory.	Place completed mind maps in places where you can see them frequently.

Avoid using too much information: mind maps are designed to summarise key information and connect areas of a topic/subject. If you overcrowd the page, you lose the point of the mind map and will find it harder to visualise the information when trying to recall it

# 6 Mind Mapping Mistakes

by @inner\_drive | www.innerdrive.co.uk



#### Mistake #1

#### Using only words

Students should combine words and pictures. Giving two representations of the information helps to cement it into long term memory.



#### Mistake #2

#### Using too many words

Rather than copying everything down, students should prioritise information, and only include the stuff they really need to know.



#### Mistake #3

#### Wasting time making it too pretty

Students should get onto testing themselves and actively using their mind map, instead of spending hours perfecting it.



#### Mistako all

#### Not using elaborative interrogation

Students should ask themselves questions like 'why is this true?' about mind map content, to get them thinking deeply about the information. Re-reading just won't do.



#### Mistake #5

#### Not utilising retrieval practice

Don't forget to test yourself! Try to re-create the mind map from memory, get a friend to test you, or teach the mind map information to a friend.



#### Mistake #6

#### Not transferring mind map knowledge

Students should use the mind map to answer quizzes and past paper questions, and be sure to transfer mind map knowledge so that they truly understand and can apply it.

#### **DUAL CODING**

Dual coding is the process of blending both **words** and **pictures** while learning. Viewing those two formats gives us **two different representations** of the **same** piece of information.











1.

Drawings

These boost learning by getting you to think deeply about information.

2.

Diagrams

These are helpful for breaking down complex concepts to make them easier to understand.

Posters

These are great for combining writing, pictures and diagrams all within one page of information.

Timelines

These can be used for information that happens in a particular order or sequence.

Graphic organisers

These organise verbal and visual information by the relationships between different concepts, e.g. mind map

#### 4 Key Principles for using dual coding



Cut - Reduce the amount of content, be selective and only use the most important information.



Chunk - Divide the content into groups of related information:



Align - Make sure that words and pictures are neatly ordered, making them easier to read:



Restrain - Avoid "overdoing" it. In other words, don't go crazy with different colours and fonts.



Dual coding is the process of blending both words and pictures while learning, but what are some specific different ways you can do this?



#### I. Drawings

These boost learning by getting students to think deeply about information



#### 2. Diagrams

These are helpful for breaking down complex concepts or processes to make them easier to understand



#### 3. Posters

These are great for combining writing, pictures, and diagrams all within one page of information



#### 4. Timelines

These can be used for information that happens in a particular order or sequence



#### 5. Graphic Organisers

These organise verbal and visual information by the relationships between different concepts. Examples include tree diagrams, mind maps, and Venn diagrams



#### Mistake #1 NOT LEARNING HOW TO DO IT

Knowing the theory isn't everything. After this, you need to actually learn ways to do dual coding, for example, making drawings, diagrams and posters.

#### Mistake #2 USING ONLY PICTURES YOU LIKE

What's much more important is using pictures that are meaningful and that represent the information you need to know.

#### Mistake #3 SPENDING TOO MUCH TIME MAKING IT LOOK PRETTY

Colouring, highlighting and styling everything wastes time, these things should be reserved to help make key concepts stand out.

#### Mistake #4 OVERDOING IT

Be selective and choose visuals that enhance the meaning of written information, rather than covering the page with an explosion of pictures and text.

#### Mistake #5 FAILING TO ORGANISE IT

Words and pictures should be neatly aligned and well-organised, to make the content easier to read and remember.

#### Mistake #6 ASSUMING THAT'S IT

To get the best out of a dual coding resource, students should re-study it, think deeply about the information, make memory connections, jot it down from memory, and make new resources from it.

#### INTERLEAVING

Interleaving is a theory that revising more than one topic in each session will help you make better links between them.

 $A \Rightarrow B \Rightarrow C \Rightarrow D$ 

B⇒D⇒A⇒C



1.

#### Switch

Switch between topics during each session.

It allows you to think about what you are doing with your time when you are revising.

2.

#### Review in different orders

When reviewing make sure you do it in a different order that you learnt them, or previously revised

By revisiting material from each topic several times in short bursts, it increases the amount of information you can recall in your exams.

3.

#### Make links to remember more.

Try to make links between ideas and review your revision notes.

This helps you make connections between topics and forces you to think harder about which strategies need to be applied to which problems.

#### Applying interleaving to your revision

- 1. Break units down into small chunks and split these over a few days rather than revising one whole topic all at once.
- 2. Decide on the key topics you need to learn for each subject.
- 3. Create a revision timetable to organise your time and space your learning.



Interleaving is for topics within one subject – not subjects themselves.

You can apply this in your revision timetable.

When revising science, mix up the topics that you study in that session, don't just focus on one.

# The Do's and Don'ts of Interleaving Don't: Interleave subjects instead of topics MATHS INGUST SCIENCE MATHS INGUST SCIENCE MATHS INGUST SCIENCE Don't: Interleave too many topics 1 2 3 4 5 6 1 2 3 4 5 6 Don't: Leave too long between interleaving sessions 1 2 3 1 2 3 1 2 3 Dor Master the basics first, choose a few related topics, and leave consistent gaps between sessions 1 2 3 1 2 3 1 2 3 Dor Master the basics first, choose a few related topics, and leave consistent gaps between sessions 1 2 3 1 2 3 1 2 3 Distribution of the forest topics of the forest topics

#### LISTEN TO THE EVIDENCE

Some benefits of using interleaving include:

- Improved academic performance students who use interleaving perform better than their peers who block their learning
- Improved memory using interleaving makes connections between topics, strengthening their memory associations
- Comparing and contrasting interleaving prompts students to
   focus on the differences in a topic
   which helps them ingrain the
   information into their memory

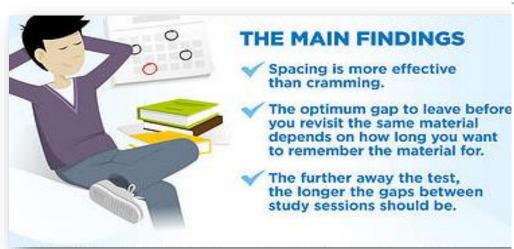
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#### **SPACING**

The spacing effect is one of the most enduring and effective research findings when it comes to study techniques. People tend to forget large amounts of information if they only learn something once. Spacing your learning allows you to forget and relearn the information. This process allows you to cement it into your long-term memory. The key points are:

- Spacing is regularly revising material so that you are doing little and often instead of all at once
- Doing a little amount regularly is more effective than doing a lot all at once.
- To commit something to memory, it takes time and repetition

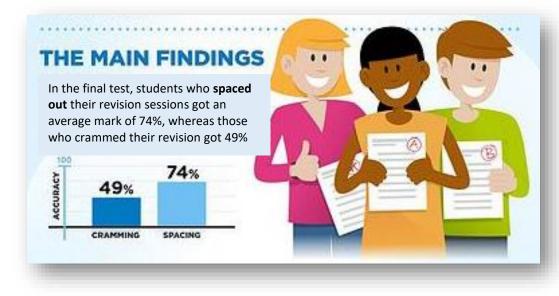
#### **OPTIMUM SPACING**



Time to the test	Revision Gap			
1 Week	1-2 days			
1 Month	1 week			
3 Months	2 weeks			
6 Months	3 weeks			
1 Year	1 month			

#### **SPACING VERSUS CRAMMING**

Spacing out your revision into smaller chunks over a period of time helps you to remember the material better and ensures you are less stressed with your revision. Cramming will overload your memory whereas leaving time between revising and testing will make your brain work harder and increase your chance of remembering.

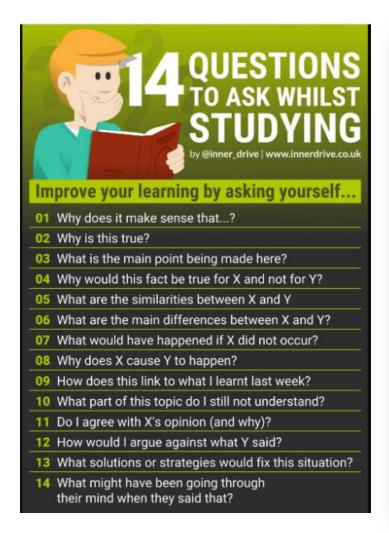


#### THE POMODORO TECHNIQUE



The **Pomodoro Technique** is a good technique if you struggle with focus. By chunking time up into manageable revision sessions, this technique can help you to establish more effective work patterns and help to give you a sense of accomplishment.

#### **EFFECTIVE STUDY CHECKLISTS**





#### **GROWTH MINDSET**

Having a growth mindset or a belief that you can get better and that your abilities can grow is key to the effectiveness of any revision strategy. If you learn from your mistakes and can deal with failure and setbacks, you are much more likely to learn better, remember more and achieve better marks in exams.



- > Success comes from talent.
- > I'm either smart or dumb.
- > I don't like challenges.
- > Failure means I can't do it.
- > Feedback is a personal attack.
- If you succeed, I feel threatened.
- If something's too hard I give up.

# GROWTH MINDSET

- > Success comes from effort.
- > I can grow my intelligence.
- > I embrace challenges as a chance to grow.
- > Failure means I'm learning.
- > Feedback helps me grow.
- > If you succeed, I'm inspired.
- > I keep trying even when I'm frustrated.







#### **5 TOP TIPS TO CREATE AN EFFECTIVE STUDY PLAN**



#### Make a list

What do you need to know? Break it down into topics and units. When you can retrieve it without effort, cross it off the list. It might help with motivation and organisation to have a 'to do' and 'have done' list.



# Timetable a spaced schedule

Look back at the notes about spacing and interleaving. Study each topic little and often and mix up subjects and topics so you are revising a mixture each day. Be sure to leave yourself enough time to cover everything.



# Use effective study strategies

That's what this booklet is all about. Keep re-reading and highlighting to a minimum. Highlight what you need to learn – but that won't make you learn it. Test yourself, using retrieval strategies. Think twice before loading up your favourite playlist!



# Identify the gaps in your knowledge

Having used the retrieval strategies, where are the gaps? What are you confident with? What do you need to go back to? What do you need to study more? Be honest with yourself – don't just focus on what you *do* know.



# Close the gaps

Repeat the third and fourth steps of the plan until you are confident with everything. Some parts will be difficult, but don't give up. The harder you have to think, the more likely you are to remember in the end. 'Memory is the residue of thought.' (Dan Willingham)

#### **WELLBEING**

Look after yourself. Being kind to yourself every day can have a big impact on your performance during revision and exams.



#### **SLEEP – A POWERFUL REVISION TECHNIQUE**



Students who sleep better have been found to get\_significantly higher grades than their sleepy peers, with the amount you sleep making up to half a grade's difference. The National Sleep Foundation recommends that a teenager should get on average 10 hours sleep each night.

Not getting enough sleep can impair attention and memory. When we sleep, new connections are made between our brain cells. A good night's sleep helps us not only understand new material better but research has also shown that it significantly improves our ability to apply knowledge to new problems.

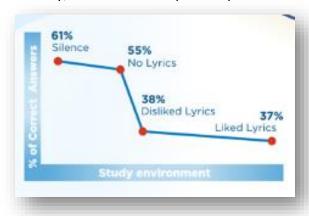
Excessive sleep loss can also result in recalling negative memories rather than positive ones, impacting on mental health and stress levels.

#### **REVISING TO MUSIC**



Many students do their homework and revision whilst listening to music. It is true that listening to music whilst performing certain tasks can be beneficial such as motivating you at the gym or cheering you up when you're having a bad day. However, research has shown that when trying to learn new material, listening to music is more of a hindrance than a help. In fact in one study, students who revised in a quiet environment performed over 60% better in an exam than their peers who revised listening to music that had lyrics. Students who revised whilst listening to music without lyrics did better than those who revised to music with lyrics. This is because music, especially

with lyrics, can take up processing space. This conflicts with the material you are trying to learn, effectively creating a bottleneck in your memory, as there is less space to process what you are revising.



#### **LIMIT YOUR SCREEN TIME**

This should be an obvious one, but it isn't for many. Mobile phones are links to fomo (fear of missing out, and evidence suggests that undergraduates who spend more time texting and using social media get lower grades. In another fascinating study, researchers found that the mere sight of a phone was enough to reduce a person's ability to focus. Having a mobile phone out whilst revising causes a decrease in concentration and a reduction of 20% in performance. The implication couldn't be clearer: out of sight really is out of mind!



#### LOOK AFTER YOURSELF

#### Eat your way to good grades

Certain foods increase your memory retention, energy levels and wellbeing. Unfortunately, your favourite fast food and energy drinks are not going to boost exam performance. Leafy greens such as broccoli and kale as well as protein-rich foods such as nuts, dried fruits, oatmeal, eggs and yoghurt are proven to improve brain functioning. Too much sugar can make you feel sluggish and impair cognitive skills. It is important to stay hydrated by drinking lots of water — this accelerates chemical reactions in our bodies and can quicken the rate at which our brains process information. Caffeine should be avoided — it can lead to alertness in the short term but then follows fatigue and potentially migraines.





Students should try not to skip breakfast. Researchers found that students showed a natural decline in cognitive performance throughout the morning. However, this decline was reduced by more than half when students had breakfast. Therefore, having breakfast not only helps students stay more alert, but also have improved memory throughout the day.

#### Tidy Desk, Tidy Mind

Working in a cluttered environment can affect our ability to focus and unconsciously takes up some of our brain's attention. Research shows that people with messier desks tend to procrastinate more. It has also shown that students with cluttered workspaces have higher stress levels.







#### Take a walk

Research shows that students who took a 12 minute walk reported a 20% increase in happiness, attentiveness and confidence compared to those who spent that time sitting down. Even taking a 5 minute walk resulted in similar benefits. Try to break up your study sessions with a quick stroll. If you enjoy exercise, even doing a little bit can help people to deal better with stressful situations: it reduces anxiety and increases self-esteem.

#### Relax and switch off

You cannot work all day, every day. Nor should you. Revision has to be about quality, as well as quantity. Taking planned breaks from your revision to do something you enjoy can help you feel refreshed and allow you to focus better afterwards.

