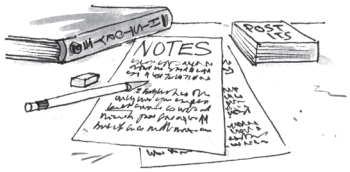
NOTE-TAKING

UNDERSTANDING THE NEED TO TAKE NOTES



NOTE-TAKING

Sonja's story:
"There are two things which I find difficult about making notes. Firstly, I am not very confident about using my own words – the book always seems to say things better. It is very tempting to use nearly the same words as the book. I imagine that I will rewrite them in my own words later – but then I don't have the time, or I forget which bits are taken from the book, and end up with the words of the book in my essay without even realising."

OVER TO YOU

I feel the same way as Sonja – I find it difficult to take notes as the book says it better.

Strongly Agree	*Agree*	*Disagree*	*Strongly Disagree*
4	**3**	**2**	**1**

"The second thing I find difficult is working out what to take notes about, especially keeping to essentials. I worry in case I miss out information I will need in the future. I can end up with 10 sides of notes from reading only a few pages. It takes ages and there is too much to even look at a second time. When I came to revise for my first exams, I had too many notes to revise – there were simply too many to read, never mind learn."

OVER TO YOU

I feel the same way as Sonja – I don't know what to leave out: my notes are too long.

Strongly Agree	*Agree*	*Disagree*	*Strongly Disagree*
4	**3**	**2**	**1**

"Now I spend more time thinking and planning before I even touch a book. I try to work out what information I want. I draw a mind-map with everything I already know, and what I need to find out. If I have an essay title I do a rough plan really early, even before I start reading – just to get the shape in my head."

OVER TO YOU

I rarely plan what I want to get out of notes or design a mind-map first.

Strongly Agree	*Agree*	*Disagree*	*Strongly Disagree*
4	**3**	**2**	**1**

"I always start with the easiest book – just to get a picture of what it is all about. With other books, I use the contents page and headings to work out where information is. At this stage I don't write much except something like 'gold – producer countries: p.248 and pp. 265-9'."

OVER TO YOU

I don't have a range of books – easier, harder.

Strongly Agree	*Agree*	*Disagree*	*Strongly Disagree*
4	**3**	**2**	**1**

"When I have more idea of what I am looking for, and where that information is, I take more detailed notes. Sometimes, I do this by writing a question and putting the information as an answer. When I am not sure if I want some information, I just write a few lines onto an index card, saying where I can find that information later if I really need it."

OVER TO YOU

I don't build up notes from 'big picture' information to more detailed information.

Strongly Agree	*Agree*	*Disagree*	*Strongly Disagree*
4	**3**	**2**	**1**

ADD UP ALL FIVE SCORES _____

YOUR SCORE	WHAT YOUR SCORE MIGHT MEAN
15-20	You need to treat note-taking seriously and start learning strategies to select important points and avoid re-writing hand-outs or textbooks. There are lots of places to go to with information. Stella Cottrell's book 'The study skills Handbook' is excellent but costs around £20. Free, but less detailed, sources can be found by searching 'study skills' on university sites: University of Bradford, Anglia Ruskin, Manchester and Reading are some of the best.
11-14	You are more confident in some areas than in others, which is a good start - the advice above is still relevant but you will need to spend time targeting specific issues as you already have developed some skill.
5-10	Well done. You feel more confident in note-taking. You might try and find out how others take notes to see if there are ways of fine-tuning your skills. There will always be someone who takes 'better' notes.

Source: Sonja's story taken from Stella Cottrell (2013) The Study Skills Handbook, 4th edn, Basingstoke: Palgrave Macmillan, p. 175

A QUICK NOTE:

The Study Skills Handbook by Stella Cottrell is an excellent book and many undergraduates use this book to help them with advice about completing their degree successfully – it is equally useful at the sixth form level.

NOTE-TAKING

Rank the following reasons for taking notes in terms of importance for you.

RANK	REASON
	Increases understanding if key points are selected – the selection process takes thought.
	Helps recall when it comes to examinations – just scan over your notes.
	Helps organise ideas ready for an essay or piece of coursework as ideas can be re-arranged.
	Helps to transfer information to long-term memory through the act of noting information.

The way we make notes doesn't need to be the same for everyone - we all have preferences. The 'right' way of making notes is whatever works for you in terms of delivering on the four reasons outlined above.

USING SYMBOLS AND ABBREVIATIONS ~ ADVICE

& or +	and / in addition to
>	greater / more / better than
<	less / fewer / smaller than
=	equal to / the same as
≠	not the same as
δ	small change
Δ	large change
∴	therefore
∵	because
♂	male / man
♀	female / woman
→	leads to / produces / causes
↓	decreasing / reducing etc.
↑	increasing / upwards trend
w/	with
e.g.	for example

c.	approximately, around
i.e.	that is, that means
etc.	and so on
p.	page, pp. = pages
para.	paragraph
info.	Information
X	trans... e.g. transfer = Xfer; translate = Xlate
xxxn	xxxtion e.g. education = educn
cd	could
wd	would
xxxt	xxxment or xxxant , so government = govt important = impt
C	century i.e. 19C = 19th century

Web source: www.bradford.ac.uk/academic-skills 'Note-taking Skills Symbols & Abbreviations'.

TOP TIP!

VISIT THE SIXTH FORM STUDY ROOM
HTTPS://SITES.GOOGLE.COM/SITE/SIXTHFORMSTUDYROOM/

THERE ARE LINKS TO LOTS OF ACADEMIC STUDY SKILLS PROVIDED BY THE UNIVERSITIES - ADVICE THAT YOU CAN ACCESS FOR FREE.

USING SYMBOLS AND ABBREVIATIONS ~ EXERCISE

YOUR TASK

Using the source below, substitute the words in the article with the symbols and abbreviations provided (as well as any of your own). Use as many of the symbols as you can. Cross out each word that you can replace with a symbol; then write the symbol below the word in the space provided.

A LADY BUYS A NEW TELEVISION

A lady decided buy a new television and set off to visit Sevenoaks 'Sound and Vision' electrical store. Over the phone, she had explained to the man in the shop that her television had stopped working because of the government campaign to switch from analogue to digital broadcasting which led to the signal being switched off. Maybe it was time to buy a new one, anyway, as her grandson had asked if her old television was from the 18th century! They weren't even invented then! However, the latest televisions have large screens, so that would be better than her old one. She knew that most people had large screens: it was the latest upward trend. Unfortunately, the price of electrical goods had increased since she had bought her last television. The brochure on televisions that she had downloaded was so complicated she hoped the man in the shop would translate it for her: she now regretted not having had a good education. The most important feature for the lady was price, as she had around £300 to spend.

THE DIFFERENCE BETWEEN TAKING NOTES AND TRANSFORMING NOTES

STEP 1 TAKING NOTES	STEP 2 TRANSFORMING NOTES
Taking notes often involves simply writing down what has been said in class or re-writing in a summarised form what you read e.g. a page in textbook. Helps as a record of sources ☑ Doesn't help you understand ☑ Doesn't help with recall for an exam ☑ Doesn't help connect other information	Transforms what has been said or written into another format – a more condensed format that: • strips away words that you do not understand / chooses simpler language; • leaves out redundant words such as 'and', 'of', 'which','the', 'it'; • presents KEY information in a way that is more memorable (e.g. diagrams) and might show connections with other concepts and information. A much more creative set of notes that transforms information. ☑ Helps to understand material ☑ Helps with recalling material ☑ Helps connect other information

NOTE-TAKING STRATEGIES 1:
LINEAR NOTES ADVICE

LINEAR NOTES:

- are written notes that record what has been said or written in another source, such as a book or hand-out;
- are notes which write information in sentences or half sentences;
- might use a series of abbreviations;
- might use a series of bullet points.

Linear notes are not diagrams or mind maps – they are more logical and organised lists of points.

CONTINUED OVER

EXAMPLES OF LINEAR NOTES

1. ACTIVE HAND-OUTS

If you are given a hand-out or read a textbook, you might highlight key words (facts and figures, evidence, concepts, definitions, names and dates).

The notes will leave out a lot of 'redundant words' which do not convey any important information e.g. 'and', 'of', 'which', 'that', 'is'.

BETTER LINEAR NOTES

ADD COMMENTS OF YOUR OWN OR QUESTIONS THAT SHOW YOU ARE THINKING.

I need to practise writing comments when I read, such as 'Key point' or '5 causes of World War 2'.

I need to ask questions, such as: 'What evidence shows that writing questions improves learning?"

REVISION CARDS / NOTE CARDS

- SOME STUDENTS PREFER TO PRODUCE CARDS
- KEY POINTS ONLY LISTED BECAUSE SPACE IS DELIBERATELY RESTRICTED
- RESTRICTED SPACE MEANS GREATER SELECTION OF KEY POINTS
- REDUNDANT INFORMATION AND WORDS ARE EXCLUDED
- "LESS IS MORE".

NOTE-TAKING STRATEGIES 2A:
THE CORNELL SYSTEM ADVICE

Follow the instructions and take notes in the numbered order 1-4. This system is often referred to as the Cornell System.

If you would like to know more about the Cornell System including a video explaining it visit the study skills web site set up especially for post-16 students called SIXTH FORM STUDY ROOM at **https://sites.google.com/site/sixthformstudyroom/.**

1 WHAT IS THE TEXT ABOUT? i.e 'THE BIG PICTURE"

Then read the source and make notes in section 2

3 KEY WORDS

Write only **Key words** from your notes section.

Then cover up section 2 NOTES and use only your key words to help you recall the information.

Then write a summary by using Section 4.

2 NOTES

Record – use this section for your notes written in short sentences with no unnecessary words; record relevant key facts, dates, names, concepts, evidence.
Eg. Three pigs each in own house, one wolf after the pigs, wolf blows down sticks & straw houses but not brick house.

Avoid 'which', 'there', 'of', 'is', 'whether' etc – words that convey no content.

Questions – any interesting questions relating to the topic, write them in your notes section e.g. 'What evidence is there that shows people prefer the colour green to red?'.

Key words – as you make your notes record the key words in column 3.

Recite – when your notes are complete, cover up your notes and only look at the key words to check how much detail from your notes you recall.

Review – ideally, try the recite process again in a week and again a month later to embed it in your memory.

4 SUMMARY

Write a brief summary in 100 words.

If you can summarise the key points in your own words then you have probably understood it.

CORNELL NOTE-TAKING SYSTEM

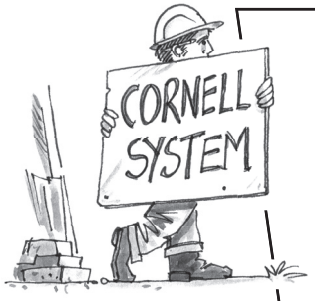
1 "THE BIG PICTURE"

3 KEY WORDS

2 NOTES

4 SUMMARY

NOTE-TAKING STRATEGIES 2B:
APPLYING THE CORNELL SYSTEM OF NOTE-TAKING



LEARNING TASK

1. *Read through the following article.*
2. *Underline key words and phrases or, better still, write notes in the margin as you go e.g. "I dis/agree", "So does this mean that…", "Is this enough evidence?"*
3. *Use the article to practise the Cornell System of note-taking.*

"Students who are self-motivated practise in a different way from those who are forced to learn."
Michael Senior

KEY WORDS:

PURPOSEFUL PRACTICE – practising with greater attention to detail and improving skill levels through tackling more challenging tasks.

Etched into the frosted glass wall of the executive meeting room at Chelsea's training ground in Surrey is the quote, 'Hard work beats talent when talent doesn't work hard enough.' Even in centres of sporting excellence, the talented are expected to commit themselves to extremely hard work. Indeed, hard work develops talent. But what does hard work actually mean? Daniel Coyle's 'The Talent Code' discusses the role of myelin, a coating round each nerve cell that causes messages to travel faster by insulating the nerve. Coyle claims that people who train with more attention to detail, build up more myelin. Myelin seems key to learning. Indeed the reason why older people find it harder to learn new information is that myelin does not build up as quickly as we get older.

Two researchers from George Mason University, USA, Zimmerman and Kitsantas researched whether one can accurately predict a person's ability by looking at how they practise. They studied three groups of volleyball players – expert, club and novice – and asked them one question about how they practised a serve in volleyball. The answers the players gave about how they practised were enough to tell the researchers who was in each group. Thus attention to detail in the way we practise is key to our success: it takes effort, and a lot of it, to reach the top.

CASE STUDY

Music psychologists, Gary McPherson and James Renwick, in their study of children learning to play a musical instrument, filmed a child we shall call Clarissa, who, in just six minutes of clarinet practice, made exceptional progress. The two Australian researchers found that she was highly error-focused and was constantly trying to correct herself when she hit the wrong note. She practised in a way that was similar to a professional concert performer: with exceptional attention to detail. So what made children like Clarissa different, and can students apply this principle to help them learn as effectively?

KEY RESEARCH

With a colleague, McPherson tracked 157 randomly selected children aged 7-8 years old from a few weeks before choosing their musical instruments through to high school graduation. Through the use of interviews, tests and filmed sessions of them learning their chosen instrument, McPherson found that after 9 months there was a spread of progress: but what was the cause? IQ and musical 'ears' were not found to correlate. Neither was the amount of time practising - which was a surprise. What appeared to link with progress was the answer given by the child to a question about for how long they expected to play the instrument. The options were:

- **Through this year only = short-term**
- **Through primary school = medium-term**
- **Through secondary school = long-term**

Those with a long-term goal were found to make most progress, no matter how long they practised each week. They practised in a way that was focused on detail: paying attention to errors and attempting to correct them. In fact, even with the same amount of time practising, the children with a long-term goal out-performed the children with short-term goal by 400% according to a standardised musical performance scale called the Watkins Farnhum scale for band instruments (ie it was measured in a fairly robust manner so we can be confident of the findings). Motivation to learn appears key to learning most effectively.

Source: G. McPherson & J. Renwick, 'Interest and Choice: Student selected repertoire and its effect on practising behaviour'. British Journal of Music Education 19 (2002) and in 'The Talent Code' Coyle D. (2009).

SO WHAT DOES THIS MEAN FOR YOU?

Simply putting in the hours is not enough: students need a long-term goal which inspires them and drives them on. It is not just how many hours a student needs to spend studying but what is done in those hours. High calibre people study with greater attention to detail. Students who need to retake an exam often claim, for the first exam, to have studied no more than just the main headlines – not a great deal of detail: ‘‘My understanding was sound but I couldn’t recall the detail needed for a grade A.’’ Research also shows that engaging in more difficult tasks also helps one to make progress e.g. playing more difficult pieces when practising a musical instrument, tackling harder exam questions, seeking out exam papers from different exam boards to see if there are more challenging or unfamiliar questions to try.

THE CORNELL-SENIOR SYSTEM OF NOTE-TAKING

EXAMPLE

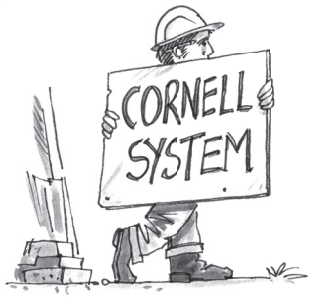
KEY WORDS

EXTRA DETAIL

NOTES

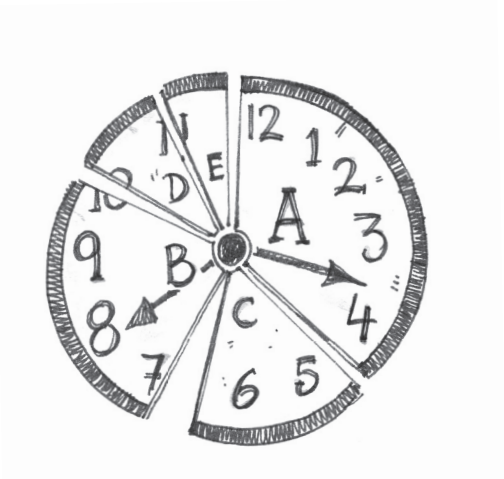
SUMMARY

NOTE-TAKING STRATEGIES 3:
APPLYING THE CORNELL SYSTEM OF NOTE-TAKING



Apply the Cornell note-taking system or its variation to the Conwing article about how much time should you spend timdying.

How Much Time Should You Spend Studying?
Michael Senior



How much time should you spend studying? According to Ronald C. Blue, 'How to Study' (1995), it takes university students about a year to learn effective study skills. The same amount of time is likely to apply to Post-16 students embarking on their new courses. In fact, Hilary Jones, Lecturer in Biological Science at University of East Anglia, identified a host of skills that even students with top grades at A-level lack when they enter university: this includes the ability to take notes from books and lectures and to organise their time to keep up with their workload. A top five UK university in London recently established a working group to look into why A-Level students with grades AAA struggle when they start a degree. One of their findings was the inability of Post-16 students to tackle difficult textbooks – the students simply gave up reading them. So, developing the skills to study during sixth form is key. However, these skills take dedication and hours of practice, and this is one key reason why not everyone achieves top grades.

By the time Year 13 begins (Upper Sixth) students are beginning to use more effective study skills – but by this time predicted grades for university have already been decided, based on your performance in Year 12! That means you need to work hard at learning effective study skills quickly in Year 12 so that your grades are as good as they can be by the end of Year 12: your predicted grades should then reflect your true potential.

Advice from various sources seems to recommend the following study time for A-Levels or other Post-16 studies:

22 hours per week for a grade A
16 hours per week for a grade B
14 hours per week for a grade C
10 hours per week for grade D
0 hours per week for a grade U

An hour of study is defined as studying for 45 minutes with close attention to detail where challenging (not easy tasks) are tackled, and a break of 15 minutes.

Ronald C. Blue also claimed that "research suggests that the slowest 10 percent of students might need 5 to 6 times as much time to learn the same material as the fastest 10 percent. Each person is highly likely to have strengths and weaknesses. Overcoming your weakness increases your strength." **Source: web source - R.C. Blue 'How to Study' http://tep.uoregon.edu/resources/faqs/outsidehelp/study.html**

Malcolm Gladwell in his book 'Outliers' researched the most talented musicians, sports stars, academics and business people and found that what they had in common was 10,000 hours of hard graft, coaching and support. At sixteen, Bill Joy spent many hours in a newly opened computer centre at the University of Michigan and got a job helping a computer science professor so he could access the centre over the summer months. He then enrolled for a degree in computer science and competed a PhD. He wrote much of the code on which the internet functions as well as code such as UNIX and Java and was co-founder of Sun Microsystems in Silicon Valley. His 'talent' and success came after hours and hours of computing code practice. Bill Gates and Steve Jobs spent many hours working

on computers before they became successful. Psychologist Ericson studied musicians at the elite Academy of Music in Berlin and compared the hours that three groups clocked up practising:

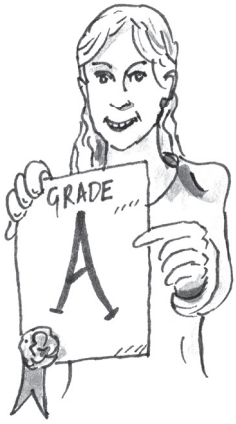
Group 1. Soloists – clearly the cream of musicians.
Group 2. Orchestra musicians – still incredibly talented to be in the Berlin Academy of Music.
Group 3. Music teachers – very good but not good enough to be in the orchestra.

Ericsson and his two colleagues found that all three groups started playing their instruments at roughly the same age, 5 years-old, and initially everyone practised the same amount, 2-3 hours a week. By the age of nine, some children began to put more hours in – 6 hours a week at nine, 8 hours a week by twelve, 16 hours by fourteen and the hours spent practising increased even further with age. By the age of twenty, the elite soloists had clocked up no less than 10,000 hours each, the orchestra players 8,000 hours and the music teachers 4,000 hours. Eriksson found no-one was regarded as a 'natural' who did not need to practise as hard as the rest. They found that as long as someone had 'enough' ability, the rest was hard work, really hard work.

Hours of study in the sixth form relates to the notion of 10,000 hours. Imagine you study 20 hours in lesson time plus 20 hours outside lesson time. That is 40 hours a week. Over a 30 week academic year, as examinations usually cut-short the year, 30 weeks x 40 hours = 1200 hours. Double the hours for a two-year course and that is 2400 hours. Top students will be putting in this amount and possibly more – studying over holiday periods, especially if conducting research for an Extended Project, doing extra reading to broaden understanding and expand vocabulary, watching tv programmes that enhance learning, listening to podcasts etc.

Talented people made themselves even more talented through hard work. Top musicians practised harder pieces. Sports stars paid close attention to detail. Businessmen valued experience and had failed a great deal before they became successful, with hours of business experience clocked up over years. As a Head of Sixth Form for over 15 years, I found that every student who has achieved top grades has done so through hours and hours of study. And what is interesting is that students who didn't work as hard nearly always claimed that top grades came from bright students: they never reflected on how hard work had contributed to those great grades!

How do you achieve top grades?

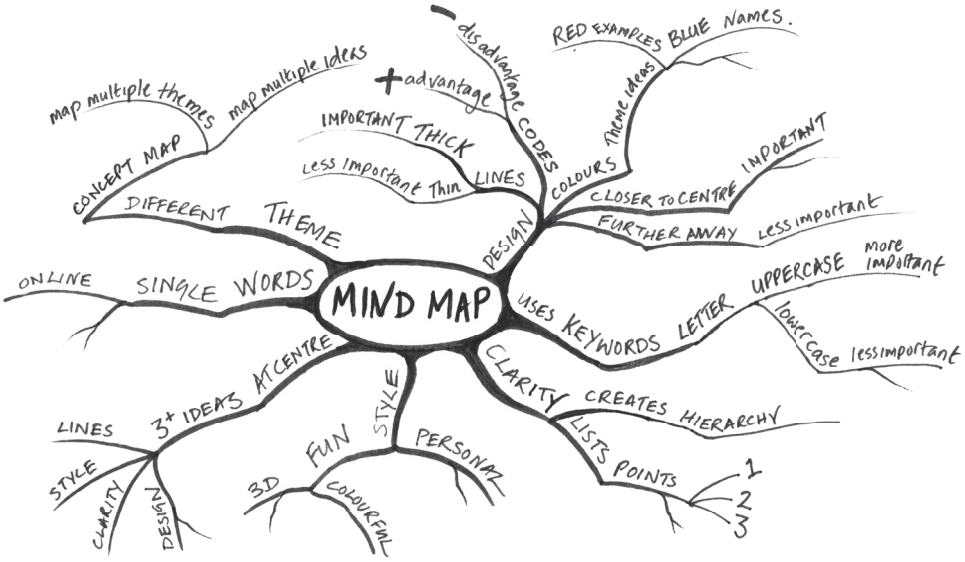


Believe you can succeed and be willing to pay the price. The price is always what you don't want to pay – time given over to study. If you have a goal then paying the price is not a problem. You might have a specific goal e.g. a specificcourseorcar eer, so it becomes easier to give up the time to achieve this goal e.g. less tv, no computer games, less time socialising on social media or face-to-face, better use of study time at school. Alternatively, you might have a general goal e.g. "I need grades ABB to stand a chance of going to a university that I like." If you do not have a goal it will be very hard to motivate yourself to 'pay the price', so try getting a goal. I finishwiththewor ds of wisdom of a student determined to study at the University of Oxford, who, in Year 13, was asked to talk to Year 12s who aspired to achieve top A-Level grades. The Year 12s asked her when she started preparing for the end of year exams. The answer was, "At the start of the course in September, of course!" The Year 12s were in shock! It's up to you whether you believe the research and all the messages about hard work. Relying on natural talent and hope is easier, but it doesn't work. If you want to use the route that successful people use, work out your study schedule so you clock up 22 hours a week of extra study and make sure it's hard and challenging with plenty of attention to detail.

About the author - Michael Senior has been a Head of Sixth Form for over 15 years. He has written over twenty guides to support sixth form students through his publishing company Senior Press.

NOTE-TAKING STRATEGIES 4A:
VISUAL AND PATTERN NOTES – MIND MAPPING

MIND MAPPING



Mind Mapping is a technique for drawing information in diagrams, instead of writing it in sentences. It is a technique trademarked by Tony Buzan.

The diagrams always take the format of a tree, with a single starting point in the middle that branches out, and divides again and again.

The tree is made up of words or short sentences connected by lines. The lines that connect the words show how ideas relate to each other ie the logical connections between ideas.

FOUR ONLINE SOURCES ABOUT MIND MAPPING:

SOURCE 1. Mindomo www.mindomo.com
Offers free examples of Mind Maps and you can have a free go – a charge is made for further attempts, but do at least have a go online for free.

SOURCE 2. YouTube www.youtube.com/watch?v=wLWV0XN7K1g
Will show you a step-by-step guide to designing a Mind Map.

SOURCE 3. YouTube www.youtube.com/watch?v=nMZCghZ1hB4
Tony Buzan, popularised and trademarked the use of Mind Maps and here he delivers a Tedx Talk about information overload and how to use Mind Maps to increase understanding and get rid of 'clutter'.

SOURCE 4. Think Buzan
Tony Buzan's company take you through easy steps for Mind Mapping – visually and simply. http://thinkbuzan.com/how-to-mind-map/

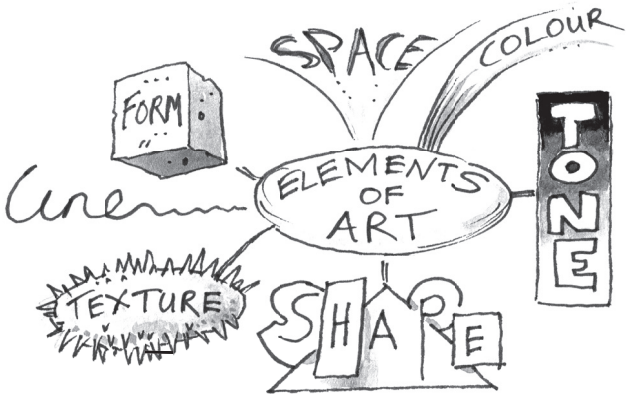
CONTINUED OVER

TEN STEPS TO CREATING A MIND MAP:

1. START IN THE CENTRE WITH AN IMAGE OF THE TOPIC.
2. USE IMAGES, SYMBOLS, CODES.
3. USE DIMENSIONS – LARGER IMAGES AND THICKER LINES CONVEYING IMPORTANCE.
4. SELECT KEY WORDS AND PRINT USING UPPER OR LOWER CASE LETTERS.
5. ONLY ONE WORD/IMAGE SHOULD FEATURE ON ITS OWN LINE.
6. THE LINES SHOULD BE CONNECTED, STARTING FROM THE CENTRAL IMAGE AND BRANCHING OUTWARD.
7. THE LINES SHOULD BE SAME LENGTH AS THE WORD/IMAGE THEY FEATURE.
8. USE MULTIPLE COLOURS THROUGHOUT THE MIND MAP, FOR VISUAL EFFECT AND TO CONNECT IDEAS.
9. DEVELOP YOUR OWN PERSONAL STYLE OF MIND MAPPING E.G. CODES, LINES AND IMAGERY.
10. KEEP THE MIND MAP CLEAR BY USING A LOGICAL RADIAL (MEANS BRANCHING IN AN ORDERED PATTERN) HIERARCHY WITH IMPORTANT IDEAS BEING CLOSER TO THE CENTRE; EXAMPLES AND CONNECTED IDEAS THEN BRANCH FURTHER AWAY.

Source: adapted from web source dated 28-04-2014 http://en.wikipedia.org/wiki/Mind_map.

However, Mind Mapping will not suit everyone or work for every topic. Give it a go to see if it can work for you though.



LEARNING TASK

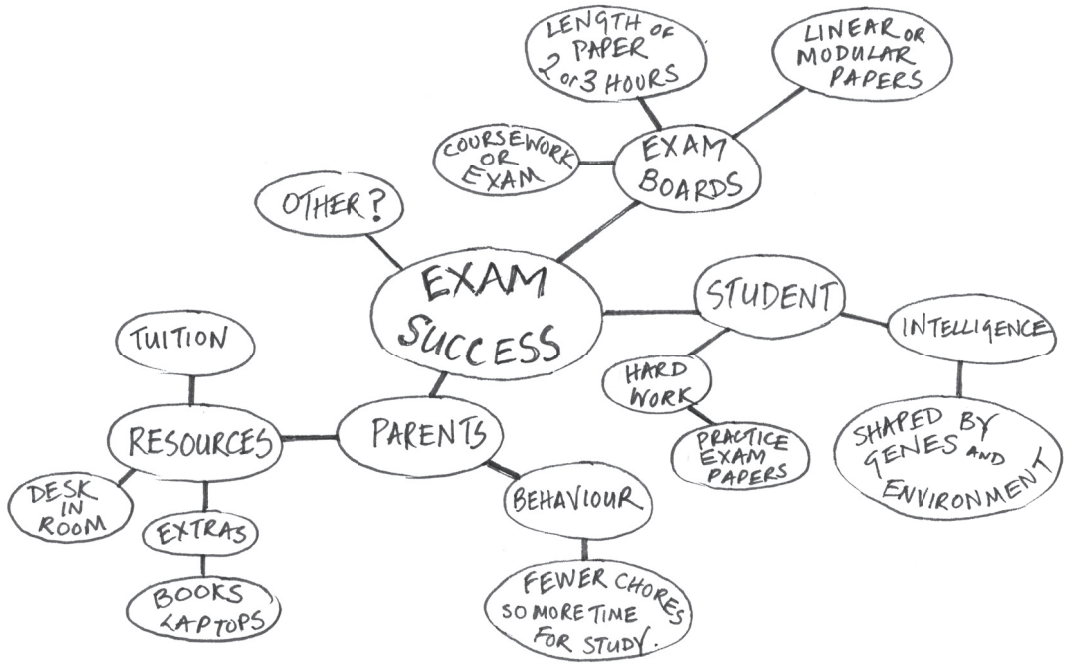
Create a Mind Map using the article: 'How Much Time Should You Spend Studying?' on page 77

NOTE-TAKING STRATEGIES 4B:
VISUAL AND PATTERN NOTES – CONCEPT MAPPING

CONCEPT MAPPING

Mind Mapping works with ONE KEY CENTRAL IDEA (the branch of the tree), with all other concepts stemming from this central idea.

On the other hand, Concept Mapping attempts to connect lots of different concepts. It is a useful way of summarising a topic so that you can identify the links between ideas; this is why Concept Maps are sometimes called Topic Maps.



CONCEPT MAPPING HELPS STUDENTS:

1. Brainstorm ideas
2. Create logical links between ideas
3. Integrate new concepts with older concepts
4. Summarise a topic easily

TRY CONCEPT MAPPING:
You can try Concept Mapping online by downloading free software at:
http://cmap.ihmc.us/download/

CONTINUED OVER

LEARNING TASK

Imagine you wanted to brainstorm the topic of: 'Success in examinations – what makes a student successful?'
Think of the categories which might contribute to academic success and then some ideas/examples within each category. Three categories are provided with two ideas per category. Think of two more categories and some more examples in each category.

SCHOOL	STUDENT	EXAM BOARDS		
Quality of teachers Resources offered to students	Ability of the student Hard work by student	Design of the exam papers e.g. difficulty of the questions Structure of the exam e.g. modular or linear		

NOTE-TAKING STRATEGIES 4B:
VISUAL AND PATTERN NOTES - FISHBONE DIAGRAMS

FISHBONE DIAGRAMS:

Fishbone Diagrams are useful for identifying and illustrating cause and effect relationships. They can be useful in subjects such as history, economics, psychology – indeed, in any subject where one factor might lead to another. The Fishbone Diagram shows the causal chain of events.

The head of the fish identifies the 'effect' (ie the problem to be explained). 'Side bones' are added, with relevant detail, to build up a chain of events (causes) viewed as contributing to the 'effect'.

Here is an example applied to obesity. Obesity is the effect and the side bones are the possible causes. On each side bone there are small bones with examples.