



Learning Centre

USING MNEMONIC DEVICES

Biology

Q: What is a Mnemonic (ne-mon-ik) Device?

A: A **Mnemonic Device** is a type of memory aide that helps you to remember sets of information by linking what you need to remember to things that you already know or that are more easily remembered. There are several types of mnemonic devices, including making rhymes, songs, and pictures to create a powerful relationship between things that are easy to remember and the information that you need to know (Ellis,2000).

One of the most useful ways to study sets of information (especially those that have a particular order, such as the levels of Taxonomic organization in Biology) is to produce creative and easily memorable **acrostics** and **acronyms**.

Acrostic Mnemonics

An **acrostic** takes the first letter of each term in a set of information and replaces the term with a new word that starts with the same letter (Ellis, 2000). By choosing words that you can make into an interesting sentence, it is easy to remember the set of information you need to learn. For example, the following set of information regarding levels of education can be turned into an acrostic quite easily:

<u>Information Set</u>	<u>First Letter of Each Term</u>	<u>Create an Memorable Sentence By Finding Words to Replace Each Term</u>
1. Pre-school	P	People
2. Elementary School	E	Eat
3. Secondary School	S	Soggy
4. Post-Secondary School	P	Potatoes

By creating a funny, easy-to-remember sentence that represents the terms in a set of information, as well as the order they come in, it is much easier to remember dauntingly large amounts of data.

TIP: The more funny and outrageous an acrostic sentence is, the easier it will be to remember! Rhyming also makes an acrostic easier to remember.

Exercise 1: Creating Acrostics

Read the set of information given and list the first letter from each word in the same order as the information is given in. From these letters, create an acrostic sentence.

A) Levels of Protein Structure:

1) Primary 2) Secondary 3) Tertiary 4) Quaternary

P _____ **S** _____ **T** _____ **Q** _____

Acrostic Sentence: _____

B) Periods of the Paleozoic Era (from oldest to most recent):

1) Cambrian 2) Ordovician 3) Silurian 4) Devonian 5) Carboniferous 6) Permian

C _____ **O** _____ **S** _____ **D** _____ **C** _____ **P** _____

Acrostic Sentence: _____

Acronym Mnemonics

Acronyms take the first letter of each term, and then use only these letters to create one or several words (Ellis, 2009). **Acronyms** are quite commonly used to abbreviate the names of concepts, companies, and even countries (for example, the United States of America is commonly called the USA.) However, there are some limitations to using acronyms: if a set of information needs to stay in a particular order, the first letters do not necessarily create an easy-to-remember word. Also, if the first letters of the terms do not contain a vowel, it can be hard to

remember a string of letters that do not add up to an identifiable word. However, when conditions are right, **acronyms** can be extremely helpful.

For example, the order in which a math question should be approached (in terms of which operations should be fulfilled first) demonstrates the creation of an **acronym**:

<u>Information Set</u>	<u>First Letter Of Each</u>	<u>Easy-to-Remember</u>
<ol style="list-style-type: none"> 1. Brackets 2. Exponents 3. Division 4. Multiplication 5. Addition 6. Subtraction 	<u>Term</u> B E D M A S	<u>Word</u> BEDMAS

TIP: The acronym you create does not necessarily have to represent a real word- it may be a word that is spelled similarly to another word, or it may be an entirely made up word. As long as it is easy to remember, feel free to think creatively when making up your acronym!

Exercise 2: Creating Acronyms

Read the set of information given and rearrange the first letters of the words to create an acronym.

1) Lobes of the Brain: Frontal Parietal Occipital Temporal

Acronym: _____

2) Major Classes of Phylum Cnidaria:

Hydrozoa, Scyphozoa, Cubozoa, Anthozoa

Acronym: _____

Tips for Studying

Once you have created an acronym or acrostic to help you remember a set of information, the hard part is remembering what each word or letter stands for. There are a number of ways to study your mnemonic device so that you are able to use it effectively during an examination:

- Divide a piece of paper into two columns, and put the words or letter from the mnemonic in one column vertically, and then in the other column write the information each word stands for, like this:

Iguanas	Interphase
Play	Prophase
Martial	Metaphase
Arts	Anaphase
Today	Telophase

By covering up one side of the column, you can quiz yourself on what each word stands for. Try this for both sides of the column.

- Practice reciting your mnemonic device, especially if it is a sentence or has a rhyme or rhythm to it. Say it out loud, and then say out loud what each word or letter stands for.
- If you are worried you will forget your mnemonic while you are writing your test, quickly review it before writing your exam, and then as soon as you receive your exam, write your mnemonics down on the top of your exam sheet. You will then be able to look back on your mnemonic throughout the course of the exam.
- Start a collection of mnemonic devices that you can look back on throughout your semesters as a student. By writing mnemonics on index cards and storing them in a file, you can reuse past mnemonics, as well as provide inspiration for new mnemonics in the future.

CAUTION: Don't overuse mnemonic devices. If you have a lot of information to study, putting all of it into mnemonic devices can end up being more work than studying just the information in the first place! It can also get confusing remembering multiple mnemonics and what they stand for if there are too many.

Mnemonics for Biology Students

Here are a few easy to use and remember mnemonics for common concepts in Biology. These represent just a few of the concepts that can be represented by acrostics and acronyms. Try making up a few of your own!

Order of Taxonomic Classification

Acrostic: "Kids Prefer Cheese Over Fried Green Spinach"

(Kingdom, Phylum, Class, Order, Family, Genus, Species).

Mnemonic obtained from: <http://www.fun-with-words.com/mnem_example.html>.Retrieved: December 2009.

Stages of Mitosis

Acrostic: "Iguanas Play Martial Arts Today"

Mnemonic by Peer Tutor Rebecca Innis

OR

Acronym: "IPMAT"

(Interphase, Prophase, Metaphase, Anaphase, Telophase).

Valves of the Heart

Acrostic: Try Pulling My Aorta

Mnemonic obtained from: <<http://smabiology.blogspot.com/2009/03/mnemonic-study-list-for-ap-bio-review.html>>.Retrieved: January 2010

OR

Acronym: "TAMP"

(Tricuspid, Pulmonary, Mitral, Aortic)

For further practice, try these websites for ready-made mnemonics for a number of different topics:

- www.fun-with-words.com/mnemonics.html
- www.eudesign.com/mnems/_mnframe.htm
- <http://www.mnemonic-device.eu/mnemonics/>
- <http://smabiology.blogspot.com/2009/03/mnemonic-study-list-for-ap-bio-review.html>

References

Ellis, Dave. *Becoming a Master Student*. 3rd ed. Boston: Houghton Mifflin Company, 2000. Print.

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