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Marking a Textbook vs. Taking Chapter Notes

Skillful, purposeful marking in your textbook is much more useful than taking copious chapter notes. In fact, it is the most efficient aid for retention and review that you can devise. A well-marked chapter can be reviewed in less than half the time it would take to re-read it entirely, and your review will be far more effective.

The main points, supporting details, the relationships between ideas, all jump to the eye; you don't need to re-study unless you can't recall the meaning of a marked passage. In that case, you can quickly skim to refresh your memory.

It has been proven that the student who takes lengthy, detailed chapter notes is an inefficient student. He could spend less time and get more out of it by applying the SQ3R method to his textbook and then marking the important points and making brief notes right in his book.

Of course, to be an effective aid to review, the marking must be done in a methodical, purposeful way.

Many students read, pencil in hand, and simply underline anything that seems important or interesting at the time. This activity keeps them busy and may help them concentrate, but unfortunately, it is no help later on. Bear in mind, then, that your markings are your "guide to review".

Here are some hints on how to become a successful textbook marker:

1. WAIT to start marking until you have read and thoroughly understand the chapter or a significant portion of it. Then GO BACK and mark the MAIN POINTS in any fashion you choose, so long as it is consistent, underlining, Roman numerals in the margin, key words in the margin, etc. *The main points are almost always generalizations, which the author then develops through subordinate ideas and details.*
2. Be sure to indicate not only the main ideas but also the relationships between them. Doing this may require you to scrawl a word or two in a margin, use little arrows to connect points, use a series of numbers and letters, or circle key transitional words. *Identify cause and effect, steps in process, significant contrasts, etc, in this way.*
3. If you feel you also need to note subordinate points and key details, such as the proofs the author advances for a given generalization, note them economically, for instance with little circled numbers, combined with the barest minimum of underlining of key words.
4. Use a VARIETY of marks, and use them consistently. You may want to underline main ideas, circle important names and dates, or use brackets and marginal notes for an entire key paragraph.
5. Summary words or phrases in the margin, or at the top or bottom of the page, are helpful, but use them sparingly, and if possible abbreviate them.
6. Use the inside front or back covers to keep a running glossary of formulas, terminology, etc. and the page numbers on which they are defined.
7. Whatever system you use (you will work out your own system depending on the nature of the course and the textbook). DON'T OVERDO IT. Don't mark up the page just to convince yourself that you are studying. Make your marks simple and have a good reason for every mark you make.
8. It is a good idea, if you have time, to review your markings immediately after you finish the assignment, before you close your book. This retards the inevitable forgetting, and leaves you with main points in mind. In a well-organized text, you can, with practice, formally outline the chapters right in the margins with Roman numerals and letters and a word or two of comment. If you still feel the need to separate chapter notes, you can take your notes from your own textbook markings, and that way you will avoid writing down too much. But the well-thumbed, well-marked textbook is the best review text of all.

Skimming and scanning scientific material

- Skimming involves searching for the main ideas by reading the first and last paragraphs, noting topic headings, and noting other organizational cues such as summaries used by the author.

- Scanning involves running your eyes down the page looking for specific facts or key words and phrases.

Skimming and scanning are particularly valuable techniques for studying scientific textbooks. Science writers pack many facts and details closely together, and students react by shifting their reading speeds to the lowest gear and crawling through the material. Not withstanding the fact that science textbooks are usually well-organized, with main points and sub-topics clearly delineated, the typical student ignores these clues and plods along through the chapter word-by-word trying to cram it all in.

It is precisely these characteristics, organization and density of facts per page, that make it so vital that you employ skimming and scanning techniques. To successfully master science texts, you must understand thoroughly the major ideas and concepts presented. Without such a conceptual framework, you will find yourself faced with the impossible task of trying to cram hundreds of isolated facts into your memory. Thus, a preliminary skimming for the main ideas by using a vital preliminary step to more intensive reading and maximum retention will provide a logical framework in which to fit the details.

Similarly, scanning skills are valuable for several purposes in studying science. First, they are an aid to locating new terms, which are introduced in the chapter. Unless you understand the new terms, it is impossible to follow the author's reasoning without frequently interrupting your reading and your train of thought to look these words up in a dictionary or glossary. Thus, a preliminary scanning of the chapters will alert you to the new terms and concepts and their sequence. When you locate a new term, see if it is used again and defined in another section. If not, then look it up in the glossary or dictionary. (Note: usually new terms are defined as they are introduced in science texts. If your text does not have a glossary, it is a good idea to keep a glossary of your own in the front page of the book. Record the terms and their definitions or the page number where the definition is located. This is an excellent aid to refer to when you are reviewing for an examination, as it provides a convenient outline of the course.)

Secondly, scanning is useful in locating statements, definitions, formulate, etc. which you must remember completely and precisely. Scan to find exact and complete statements of chemical law, or the formula of a particular compound in chemistry or stages of cell division. Also scan the charts for figures, for they usually summarize in graphic form the major ideas and facts of the chapter.

If you practice skimming and scanning techniques prior to reading a science chapter, you will find that not only will your intensive reading take much less time, but that your retention of the important course details will greatly improve.

The symbolic processes may be highly explicit if one is dealing with a situation for the first time. Later, they receive less attention. In a thoroughly practiced skill the step from sensory information to action is taken immediately without symbolic interpretations. A specialized neutral program, below the level of conscious attention, is set up for performing the familiar act. (*from Crombach, Lee J., Educational Psychology, second edition, 1963, pp. 271-2)*

Sample section from a textbook, showing effective marking

Change from mediated to immediate response.

The change from conscious step-by-step direction to an automatic performance is in large part due to the dropping out of mediating responses (mediating = "in the middle"). When the beginner takes up a new piano selection, he must use a chain of stimulus-response associations like this:

- Sight of note produces thought: "That stands for B-flat."
- Thought of note produces image of position B-flat on keyboard.
- Sight of keyboard and hand produces thought: "B-flat is next to the little finger."
- Player directs self to move the little finger and to the right; stroke on B-flat key with the little finger follows up.

Each of the mediating responses at this early stage is a thought leading the performer one step along the way. In a chain such as this, a response is also a stimulus for the next step. The beginner's performance, broken into steps, is clumsy. With practice the separate mediating responses become unnecessary. For example, after the beginner practices for a while with his hand in the same base position, the thought "B-flat" leads without pause to movement of the proper finger. Later, the sight of the note becomes a sufficient stimulus for the movement. Stimulus substitution has occurred. Once the needed stimulus for the act was thought, "Strike the black key with the little finger", and now only the note is required.

Mediation translates the concrete into the abstract, i.e.; it changes sensed reality into symbols that refer to stored verbal knowledge. And, as the end product of thought, mediation provides a verbal order directing action (abstract to concrete). The engineer may know a great deal about the mathematical theory of positive feedback in oscillations.

Surveying the channel where he will build a bridge, he senses the peculiar winds and "recognizes them" i.e., translates his impression into a concept, "forces that start oscillations." This verbal label tells him what theory to call upon; if he fails to make this translation he will never think to use the theory. Likewise, if he knows the theory but cannot derive from it a concrete rule for action, he will never achieve an adequate design. By analogy with an electronic computer, we can speak of these processes as encoding, data processing, and decoding. In every verbally mediated action we can identify four stages:

1. Intake: stimuli set off nervous impulses
2. Encoding: stimulus information (cues) is turned into symbols meaningful to the individual. (Wind on cheek is labeled "force"; black key is labeled "B-flat.")
3. Data processing: associations and reasoning operations are used to derive from the information a symbolically state prescription for action ("strike with middle finger").
4. Decoding: the symbolic order is turned into nervous impulses directing muscles to act on the physical situation (finger movement at the piano; bracing a bridge at a certain point).