

**STEP UP  
TO  
CRITICAL  
THINKING**

**Joe Carnes Guinn**

This book is dedicated to Marion Orton, whose constant urging resulted in this book's being written, and to William Orton, whose computer expertise facilitated its completion. I would also like to thank Nathan O'Brien for providing a senior high schooler's reaction to this material.

*Reading maketh a full man, writing an exact man, and conference a ready man. Read not to believe nor to contradict but to weigh and consider.*

*- Sir Francis Bacon*

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## Foreword

The author holds a B.A. degree from Hendrix College and an M.A. from the University of Arkansas in addition to a significant number of hours beyond a Master's degree. She is certified in secondary English and K-12 in reading. Additionally, she has had published a text on vocabulary development for high school students and has developed three textbooks in English for the correspondence division of the University of Arkansas. This book is an outgrowth of working with students from upper elementary through adult level for the past fifty years with reading and critical thinking skills.

The book is divided into ten units to allow it to be incorporated into the nine week grading period used in most school systems since units nine and ten can be taught easily within the same week, but it can also be used independently by anyone wishing to improve reading and critical thinking skills. The exercises are designed to allow the student to put into practice the skills being taught in each lesson, but this does not preclude any teacher or student from modifying these or adding additional exercises based on the subject matter being taught in any academic setting. The units follow a logical progression, with the exception of unit nine which may, if desired, be completed before beginning on the rest of the material since this deals with increasing reading rate.

Today, perhaps more than at any time in our history, we are all faced with decisions that are critical to our survival, both as individuals and as members of our community, our state, and our country. It is our judgments that will ultimately affect how successfully we achieve our goals. This book seeks to provide some guidelines in dealing objectively and critically with factual material.

# JUST HOW AM I SUPPOSED TO KNOW WHAT THIS IS ALL ABOUT ANYWAY?

## *Previewing and finding main ideas.*

Not too long ago, a student, interested in researching some information on dinosaurs, found exactly what he thought he was looking for-- an article entitled "The Great Dinosaurs." However, when he accessed the article, he found that it was actually about business moguls from the early part of the 20th century. Unfortunately, it took him several paragraphs before he realized that this had nothing to do with his subject. "Just how am I supposed to know what this is all about anyway? What a stupid title!"

Had this student used the skill of previewing, he would have known quickly what the article was all about. And had he known how to use previewing, he would have quickly ascertained the main points without reading it carefully all the way through. If we are building a house, we do not start by building the roof and walls. We first lay a foundation and construct a frame, something to which we can successfully attach the rest of the building. This is the function of previewing--to provide a framework of the material before we actually begin reading. Any person interested in critical thinking knows that, before he or she can evaluate any idea, he must first gather information. Critical thinking cannot be done in a vacuum.

When a writer sets out to communicate ideas, he has a plan, an outline, a method of organization. In reading any non-fiction (textbooks, magazine articles, reference works, etc.), we are seeking information, and our comprehension depends in part on understanding the organization of the author. Further, reading speed depends on the difficulty of that material--the author's vocabulary, the complexity of his ideas, his stylistic devices, the length of his sentences and paragraphs, and our familiarity with the subject. Yet most readers plunge right in, wade through, and then often end up reading the material a second time. But it is possible to discern all of these things before doing that first thorough reading and to do it quickly and efficiently. This technique is called previewing.

There are six steps to this technique. Step one is to read the title. But the

title, as the student who wanted information on dinosaurs quickly discovered, does not necessarily give the exact topic. It does, however, point the way. Its purpose is to arouse interest and give some idea of contents. But we must go further. Obviously, we should take a look at the length of the material so we have some idea of how long it will take to go through the material, and as we are doing this, we should also notice the length of the paragraphs. Next we should check any footnotes. Taking time out to check a footnote while reading both slows down our reading speed and interrupts our train of thought. Pay attention to any footnote that might be helpful and ignore the rest. The third step is to examine the illustrations (photographs, drawings, diagrams, maps, graphs, etc.) and read quickly the captions that explain them. If the author has included an illustration, he certainly has a purpose--he did not include that illustration for the fun of it. Often we gain quite valuable and specific information about the topic in this way. Two or three minutes will often be enough time for these first three steps.

We are now ready to begin on the material itself. Most articles and book chapters are organized around an introduction (in which the author tells us what he plans to discuss), the body of the material (in which he presents his main points and supports or develops them), and the conclusion (in which the author either sums up the main points of his material or draws an opinion from the facts he has presented). The author may make it easy for us to know when the introduction is over by using headings (usually in boldface type or italics). The introduction will be those paragraphs between the title and the first heading. But even if there are no headings, the introduction will usually be no more than the first one to three paragraphs. The introduction is over when the author begins to give his main points. Step number four then is to read the introduction quickly to obtain the author's thesis.

As we have seen, the introduction states the author's thesis, so step five is to locate the main points that support that thesis. The vast majority of paragraphs in non-fiction writing will place the topic sentence at the very first of the paragraph. Therefore, the procedure now is to read the headings, which give titles of sections, and/or the first sentence of each paragraph. There are four times when the first sentence will not be the topic sentence.

Sometimes the first sentence will be transitional, providing a bridge between the present paragraph and the previous one. But these are easy to spot because the

author will often use clues such as: as we have seen, to repeat, as was previously stated. Or he may simply repeat what he has already put in a heading. In this case, the topic sentence will generally be in the second sentence.

Once in a while, the first sentence will be introductory. In this case, the author will give the topic (subject) of the paragraph but will not give the point he intends to make about that topic. (Remember that a topic sentence simply states the topic and then expands it into a complete sentence, thence topic sentence.) In this case, the topic sentence will usually be the second or third sentence although the author will sometimes place it in the last sentence.

An author may also begin a paragraph with a question. That question is seldom the topic sentence. Instead, look for the sentence that answers the question, usually the second or the last one. In other words, the author asks the question, answers it, and then provides details that support that answer; or he may give the details first and then sum up or answer the question in the last sentence.

A fourth time occurs when the first sentence is a detail. If this happens, the writer will give all of the details first, and the main idea (topic sentence) will be stated at the very end. Once in a while, the paragraph will give a series of details, but no one sentence gives the main idea. If both first and last sentences are supporting details, we know this has happened. (The topic sentence of a paragraph such as this is implied rather than stated.) In this case, skim quickly through the paragraph looking for repeating words or ideas. This will give us the topic. Then expand that topic using this formula: Who (or what)...Did what...How or why. This will give us a reasonably good topic sentence.

But what happens when we have a topic sentence at the beginning and at the end? When this happens, the two sentences will say basically the same thing, and the author is trying to emphasize a point. We would select the sentence which most clearly expresses the main idea. And once in a while, the author may include two topic sentences, but one will be at the beginning of the paragraph and the other will be in the middle. This may occur when the author is giving two contrasting ideas or is giving two separate but connected ideas, such as cause and effect, within the same paragraph.

The final step in previewing is to read the last paragraph or two to obtain the

author's conclusion. Sometimes a selection will have no conclusion if the material is technical or a simple presentation of facts. But if there is one, it is important because it often restates those facts the writer wants us to remember. And if the author's purpose is to persuade us to accept his point of view, we will be able to read much more critically if we know ahead of time what he wants to persuade us to believe. We will be able to tell more objectively if his points really support his contention. Some words which will provide a clue that the author is beginning his conclusion are: in short, in brief, in conclusion, to summarize, to recapitulate, thus. Sometimes, also, an author will signal where his conclusion begins by simply leaving a line of white space or by drawing a line between the material itself and the conclusion.

The second stage of previewing, then, means reading the first few paragraphs for the introduction, the headings and basically the first sentences of the paragraphs in the body of the material to locate the main points the author plans to present, and the last paragraph or so for the conclusion. The amount of reading is minimal as is the time involved. But the amount of information gained will enable us to read the selection faster (because we already know the main points), with better comprehension (for the same reason), with better retention (because we are re-enforcing those main points as we are doing our thorough reading), and more critically (because we will be able to evaluate the author's points against his purpose). Finally, there are times when all we need are the main points of the author's topic, in which case, previewing is all we need to do.

Previewing is not a substitute for thorough reading. But it is a most valuable tool in developing reading skill with non-fiction. Remember that this is not a tool for reading fiction (stories, novels, plays), for here our purpose is something entirely different from non-fiction in which our primary goal is the obtaining and retaining of information. Like any skill, previewing must be perfected. As any reader gains skill in using this technique, he or she will find it easier to adapt previewing to specific purposes.

## Exercises

- I. Choose a chapter from a non-fiction book or an article from a magazine. (If you use a magazine article that has a lot of headings and very short paragraphs, you may adapt your previewing by reading the headings and the first and last paragraphs in the section since each paragraph may consist of only one to three sentences.) Write down the author's thesis and purpose. Then write down the main ideas you gained from previewing.
  
- II. Go back through this chapter. How many paragraphs were in the introduction? How many paragraphs were in the conclusion? Now find a paragraph that begins with each of these: a question, an introductory sentence, a transitional sentence. Which sentence gives you the main idea for each of these paragraphs? Find a paragraph in which the topic sentence comes only at the end. Find a paragraph that has two topic sentences. List the six steps in previewing.
  
- III. Entire non-fiction books may also be previewed. Knowing something about a book before you actually begin reading it can prove quite helpful. Choose a book. Then answer the following questions.
  - A. What is the title? Does it give you a good topic for the book? Why or why not?
  
  - B. Look at the title page. Who is the author? Does the book give you any information about the author's qualifications? Have you read anything else by this author?
  
  - C. Turn to the back of the title page. What is the most recent copyright date? Considering the topic, is this book up to date or out of date? How do you know?
  
  - D. Go to the table of contents. Skim through it. What topics are discussed? Does the writer spend more time on one aspect than another? If so, what? What does this tell you about the emphasis of the book? How does the book seem to be organized?

- E. Is there a list of illustrations for the book? Since this can prove helpful in the over-all use of the book, it is helpful to know if there is one.
  - F. Is there a preface or a foreword? If so, skim through it quickly. What did you learn about his organization and his purpose? Is his approach strictly factual or is he trying to persuade you? If so, what does he want you to believe?
  - G. Turn to the end of the book. Is there an index? How extensive is it? Does it use cross references? (These are signaled by *see* or *see also*.) A good index can make a book much easier to use.
  - H. Is there a bibliography? If so, this may give you other sources of information. It also gives you some idea of what the author used for his information. Sometimes the footnotes or the acknowledgments will also give you some of this.
  - I. Is there an appendix? Page through it quickly. What kind of information is included? Some of this may prove very helpful as you are using the book.
  - J. Is there a glossary? How extensive does this seem to be?
- IV. Newspaper articles are organized completely differently. A news story is written in an inverted pyramid. In other words, the most important information is found at the beginning of the article and the farther you go, the less important the information becomes. The first paragraph generally answers four questions: who, what, when, where. The second paragraph gives you the most important why or how; the third paragraph gives you the next most important supporting detail, etc. Choose a news story in a newspaper. Read the first paragraph and see if you can find the what, who, when, and where for the article. Read the next few paragraphs quickly to see how the topic is supported. As soon as the material becomes repetitious or unimportant, you have your major supporting details and are ready to stop reading and go on to another article.

# HOW CAN I POSSIBLY KEEP MY MIND ON THIS STUFF AND GET THE INFORMATION?

## *Using questions.*

The student looking for information on dinosaurs finally found what he was looking for. He successfully previewed the material only to discover that, when he actually started reading, his mind began wandering all over the place. Shaking his head disgustedly, he thought, “How can I possibly keep my mind on this stuff and get the information?!” And that’s where asking questions comes in.

Once we have previewed a selection, we are ready for the next step--formulating questions. The purpose is to highlight the main ideas of the author so that the supporting details will fall into place. The process is simple. We ask questions. We ask them before we read and while we are reading. This provides us with a purpose in reading as well as providing us with a focus. Too often, even after we have previewed, we simply wander aimlessly through the pages. Our minds tend to wander, especially if the material is not especially interesting or is dull, and we do not gather the information we should have gathered.

There are good questions and there are poor questions. Generally, a poor question can be answered yes or no, or it can be answered by going back to the original statement. For example: Is it raining? The answer would simply be yes. This is a poor question. Good questions might be: How hard is it raining? or How long has it been raining? Basically, a good question makes us look for more information. Another example of this: George Washington was the first president of the United States. Poor questions might be: Who was the first president of the United States? or What country was Washington president of? In either case, the question can be answered by going back to the question itself.. Good questions might be: How did he become President? or When did he take office and how long did he serve? Questions such as these force us to search for additional information. Generally speaking, words that force a reader to look for further information include: how, what, where, when, why, which. Words that lead to poor questions are: is, are, was, were, do, did, does, may, can, shall, will, could, would, should.

There are three questions which we should consider, before we begin reading, that relate specifically to the author. The first question we need to ask

ourselves is: What is the author's main idea in this selection? Before we begin reading, we need to have clearly in mind what the author's subject is and what his central idea is. To answer this, we consider what we have learned in previewing, using specifically the headings and the topic sentences. Next, we must consider: What is the author's purpose? If the author's purpose is strictly to provide information, then all we have to be concerned with is gathering those facts. But if the author's purpose is persuasive (And here, the best clues will be in the introduction and the conclusion.), we must be on guard as we read. We must know exactly what the writer is trying to convince us of before we begin reading and then look to see if he presents us with both sides or only one side and if he supports his contention with valid information. But if the author's purpose is simply entertainment, we can sit back, relax, and enjoy. Then we need to consider one further question. What is the author's organization? This may include problem-solution, cause-effect, contrast-comparison, classification-division, explanation of a process, or chronological order. The type of organization the author uses helps us to know what information we should be looking for as we are reading.

The second three questions relate specifically to the reader. For step four, we ask ourselves: How difficult or easy will this reading material be for me? If we are driving a car, we adjust our speed to the type of road, the traffic, the time frame, and the weather conditions. And we are constantly speeding up or slowing down depending on these factors. The same thing is true of our speed in reading, which depends on the difficulty of the material, our familiarity with that material, and what our purpose is in reading.

After this, we must get clearly in mind: What is my purpose in reading? If the purpose is thorough comprehension and retention, then the procedure would be to preview, question, read, summarize.. If the purpose is general knowledge, if we are reviewing familiar material, or if we are short of time, then the procedure would be to preview, question, and skim. (In skimming, run your eyes quickly over the lines of print, noting key words--those words which carry the thought in the sentences. Notice generally how the ideas are supported. Remember that you will not pick up all of the material nor will you remember it all. You are seeking general information and familiarity rather than retention. It is often helpful to run your finger down the margin of the page, a process that will help you not only to go faster but to keep track of your place.)

If our purpose is to locate a specific piece of information, then our procedure is to scan. In scanning, look at your question. Get in mind two or three key words in the question. Let your eyes run very quickly over the lines, stopping once or twice on each line in a zigzag pattern as you look for those key words. Once you have found them, stop. Read the sentence to be sure you actually have the answer to the question. But if you are looking for a number, let your eyes make a diagonal sweep across the page. Numbers stand out from print and are easy to spot this way. Remember also that a form of the key word may be used [regulator rather than regulate]. The author may also use a synonym of any key word [aim or dream instead of ambition].

And if our purpose is main ideas only, we would probably preview and skip the rest. We might also have one other purpose--reading just for pleasure. Now we would read at whatever pace feels comfortable.

One last question remains: What are some things that I should know when I have finished reading? Now we consider what we learned in previewing. We need to formulate some specific questions we would like to have answered as we read--For instance, What steps have been taken to eliminate pollution from auto emissions? How is our city government organized? Why was the President assassinated? For what reasons should we (or should we not) go to war? Then as we read, we look for the answers to our questions. This technique will not only enable us to get more out of the material, but it will enable us to concentrate better and retain more, for it turns us from passive to active reading. It is this passive quality, as much as anything, that causes poor concentration. We must literally get into a conversation with the author. Asking questions provides the means. Furthermore, if the author is trying to persuade us, questioning allows us to be much more aware of how the author is trying to achieve his goal.

One additional step can be taken in asking questions, and that involves working directly with the sentences we read. Any sentence that is not a question can be turned into one simply by turning the parts of it around a little and by adding a good question word. For example: "The technique can be shortened".becomes "How can the technique be shortened?" Or "There is a second method of emphasis." becomes "What is the second method of emphasis?" In each case, we would then read to find the answer. If we get into a discussion, we are much more apt to pay attention and to note flaws in reasoning than if we are just

listening.

Simply put: Headings turned into questions give us main ideas. Main ideas turned into questions give us major supporting details. The supporting details turned into questions provide us with minor supporting details. This all sounds as though it would take a great deal of time. Actually, the time involved is small as we learn to read with a questioning attitude and to work more quickly. The rewards are great. We achieve better comprehension, improved concentration, and we develop a more critical and analytical view. As a result, we generally glean all we need from a selection the first time around without having to go back over the material a second or even a third time.

### **Exercises**

1. Choose three paragraphs in the chapter you just read. Find the topic sentence of each paragraph. Then turn that sentence into a good question. Next, find the answer to the question you have formulated.
2. Choose a piece of non-fiction writing, such as a book chapter or an article. Write down the title. Preview the selection. Then answer the six questions you should consider, using the six questions you learned in this lesson.
3. Choose a magazine article or other piece of non fiction. Skim through it quickly. What did you learn in your skimming?
4. Choose another piece of non-fiction. Preview it. Decide on a question you would like to have answered. Scan, looking for the answer. How successful were you?

# OK - HOW CAN I BE SURE I'M GETTING EVERYTHING I NEED TO KNOW OUT OF ALL OF THIS STUFF?

## *Understanding paragraphs.*

The student who found exactly what he wanted on dinosaurs previewed and asked questions. But now he was faced with the next problem--"How can I be sure I'm not leaving out something really important?" he thought. And this brings up meaning relationships, which means the way in which the author connects his ideas. The better we can understand what these relationships are, the better we will comprehend the material. And the better we understand the material, the better we will be able to perceive how these points relate and the more likely we will remember the material. Basically there are twelve meaning relationships. Sometimes these are found separately but frequently they operate in close conjunction.

The first two of these are narration and description. Basically, narration is telling a story or recording an event. The newscaster relating the latest events in the Middle East, the sportscaster giving a play by play description of a ball game, a friend telling us what transpired at the party we missed, and a history book chronicling the details of a battle all are using narration. Generally, narration is making use of chronological (time) order or sequence (events that happen in a set order). Often the author will make use of many action words.

Often working hand in hand with narration is description, which tells what someone or something looks like or acts like. Description makes heavy use of adjectives and adverbs, and nothing is actually occurring. Things are static rather than moving forward; the author is painting a picture in words. Description can be found alone or it may be used to enhance narration. Telling what a man is doing as he sits quietly in a boat holding a fishing rod (what someone acts like), explaining what transpires when yeast and water are mixed (what something acts like), and picturing a vivid sunset against a stormy sky or telling what a girl is wearing (what something or someone looks like) all are description.

Another pair that may appear either together or separately are cause and effect. Cause gives the reason why something is happening while effect records

what comes afterward, or the result. To help the reader better understand what he is doing, the author often uses sign words so it is imperative that we are thoroughly familiar with these words and what they signify. The most common signal words for cause are: *because, since, for, and reason*. Words that warn us that effect is coming up include: *result, so, thus, therefore, consequently, and hence*. For example, suppose a dam breaks. The reasons might include excessive rainfall which placed too much pressure on a weak place in the dam or faulty materials used in construction or failure to open locks, or even all of these. Effects might include flooding of the town below, loss of life, destruction of property. In working with cause and effect, it is important to understand that an effect can become the cause of a new effect, a kind of chain reaction.

Sometimes cause and effect are used together in one sentence. When this happens, the sentence splits into two parts with one part of the sentence stating the cause and the other giving the effect. Sometimes the cause is listed first and sometimes the effect comes first. For this reason, we must depend on sign words to help us. For example: The little boy consumed a huge meal because he was so hungry. Here, the effect (or what came afterward) is given first, and the cause (what came first in time) is given last. It is the sign word *because* that tips us off. The statement could just as easily read: Because he was so hungry, the little boy consumed a huge meal. Now the cause comes first and the effect is second; however, the meaning is the same. But notice that in the second sentence the comma separates the two parts of the sentence and enables us to know exactly where the cause ends and the effect begins.

A third pair of meaning relationships would be contrast and comparison. Contrast means giving differences while comparison is stating likenesses. If we are taking two or more persons, places, ideas, objects, and telling ways in which they are similar and ways in which they differ, we are using contrast-comparison. Again, sign words are one of our best helps. The most frequently used sign words for contrast are: *but, however, nevertheless, on the other hand, differ from, although, while, yet, instead of, conversely, unlike, versus, on the contrary, and in contrast*. Common sign words for comparison include: *like, as, similar, alike, same, in comparison, and both*.

Just as with cause and effect, if the author is using both contrast and comparison in the same paragraph or sentence, we look for a sign word somewhere

in the middle that will indicate the change. For example: The Senate agreed with the President in theory, but they disagreed with him in how to implement the idea. However, the author could just as easily start the sentence with a contrast word. Although the Senate agreed with the President in theory, they disagreed with him in how to implement the idea. Notice again that the first word tells us that the sentence is giving differences, and the comma shows us where the change takes place.

If the author is discussing two opposing views in the same paragraph, he may give one side in the first part of the paragraph, then use a contrast word followed by the opposite view in the second part of the paragraph. There are two ways of presenting contrast. In subject by subject, the author presents all of the information on one side, and then he presents all of the information on the other side. In point by point, the author takes one point, gives both sides to the issue, goes to the next point, again giving both sides to the issue, and so on until he has completed his discussion. Needless to say, point by point means much less work for the reader while subject by subject requires the reader to locate specific points of contrast by going back and forth between the two views.

The next group involves three relationships which, again, may work independently or together. These are listing, classification, and division. Listing means exactly what it says. It simply names items, either with or without order. If an author is using listing, he will frequently use a plural noun in the first sentence. For example: The discussion revolved around several significant points. Aluminum has many important uses. In the effort to find a new route to India, explorers discovered new lands. The listing may be in random order, in which case, the author puts his ideas down as they occur to him. However, the listing may follow some order of the author's choosing--alphabetical, most to least important, longest to shortest, east to west, earliest to latest. As with other meaning relationships, listing makes use of sign words which include: *also*, *another*, *others*, *and*, *additionally*, *in addition*, *finally*, and *last*.

Classification means taking a long list of some sort and placing the items into groups according to their likenesses. By organizing items into groups, the writer makes them more easily managed and discussed. Science makes particular use of classification, but the use of this is scarcely restricted to science. If we organize a grocery list by placing items into food groups, we are using

classification. Government offices placed into groups is also classifying. Look for sign words such as: *classes, groups, categories, types, kinds, and branches*.

Division takes one group and breaks it down into smaller units. For instance, a group of history books might be divided into books relating to specific countries or to specific wars or to major political leaders. Also, one item may be broken down into its parts to see what it contains or of what it is composed. For example, a pair of glasses could be divided into lenses, temples, screws. Sign words here would include: *broken up, parts, pieces, segments, sections, and divisions*.

Another meaning relationship is sequence, which deals with the order in which things happen or must be done. Events given in time order involve sequence. The events in a day involve time as do events in history. Steps in a process also involves sequence, as with steps in a science experiment or a math problem. However, when we are dealing with steps, we are not usually dealing with time. But in time order, sequence is dictated by time--minutes, hours, weeks, months, years. Again, the author may make use of sign words to help the reader keep track of this sequence. The most obvious of these, of course, are words that involve numbers--*first, second, third*, etc. However, there are also numbering words that do exactly the same thing without using the numbers themselves. These include : *next, then, after that, finally, and last*. People often fail to follow all items in a set of directions because these words are used instead of numbers.

The next meaning relationship is example. This is used to clarify a situation or make an idea more understandable. Examples frequently take the form of narration since they will often provide a story to illustrate a point. For instance, in explaining friction, the author might explain that, if you rub your hands together briskly, you create heat and the more rapidly and forcefully you rub your hands back and forth, the more heat you create. It is important, however, to remember that it is the point itself that we need to remember and not the example per se. But an example may also be a sample of something. For example, the author may clarify deciduous trees by giving a sample, such as oak or maple. Sign words for this meaning relationship include: *for example, for instance, such as, and illustrate*.

The last type of meaning relationship is definition, which tells what something means. An author may give a simple definition with a word or phrase,

or he may choose to give an extended definition by explaining in more detail how the word is used. It is essential that we understand the meanings of the words the author is using, especially if these involve more abstract or complex ideas, such as freedom, democracy, osmosis. Not understanding precisely what an author means is like cutting holes in the page where these words are, and the more “holes” there are, the less we comprehend.

When an author is giving an exact definition, he will sometimes set the definition off with one of three punctuation marks--commas, parentheses, and dashes. Besides punctuation, an author may also make use of sign words. These include *means, is called, can be defined as, is, are, was, and were*. Sometimes the author will put the definition first and set the actual word off in punctuation marks, or he may reverse the process by giving the word and then the definition, again usually set off in punctuation marks. At other times, instead of giving the actual definition, he may use context to enable us to figure out what the word means. Context means all the words, phrases, and sentences surrounding a word that help us understand. For example, “In order to lighten the ship’s load in the fierce storm, the sailors threw much of the cargo overboard and then jettisoned Jonah.” From the clues we have in the sentence, we can figure out that jettison means to throw away.

Reading is a very active process. The passive reader gains little information and retains just as little of the information. Reading actively means that the reader’s mind must constantly be engaged. We must keep the author’s main ideas in mind; we must use questions as we read; we must understand how the author is developing and organizing his material; we must use sign words to help us identify what the author is doing. Being a critical thinking reader involves knowing not only exactly what the author’s ideas are and how he is developing those ideas, but also we must ask ourselves if these ideas are cogent, adequately developed, clear, and to the point. Practice will enable us to become increasingly active and responsible readers, and we will find ourselves doing these things automatically. In addition, reading also becomes a much more interesting and exciting process.

## Exercises

- I. Make a list of all of the sign words and what they mean. Then choose a chapter from a book of non-fiction or a magazine article. Go through several pages jotting down all of the sign words you find and what they mean.
- II. Go through the same article. See how many of the twelve meaning relationships you can find with the paragraphs in the article or chapter.
- III. Read the following sentences. Decide which meaning relationship is used in each sentence. Each of the twelve meaning relationships will be used once.
  1. Waving his arms wildly, Ray ran clumsily down the steep stairs.
  2. Ray is skinny, has greasy black hair, and a pimply face.
  3. Ray is a dipwad, or thoroughly disgusting person.
  4. For example, Ray likes to smoke.
  5. He smokes several things: cigars, cigarettes, pipes.
  6. First he strikes a match; then he lights up; next he inhales; finally he coughs and blows smoke.
  7. He smokes because he thinks it's cool.
  8. Therefore, he will probably die of cancer.
  9. However, he might change.
  10. Many boys like to be the same as others.
  11. There are two groups of boys--dumb smokers and smart non-smokers.
  12. A dumb smoker may be broken up into three bad parts--bad breath, bad lungs, badly stained teeth and fingers.
- IV. Choose a book chapter or an article. Preview it. Ask questions. Then read actively, paying attention to main ideas, how those ideas are supported, and use sign words and meaning relationships to help you. Then test yourself. What did you learn, specifically, from your reading?

## WELL, I UNDERSTOOD ALL OF IT BUT HOW AM I SUPPOSED TO REMEMBER ALL THIS STUFF?

### *Taking notes.*

The student looking for information on dinosaurs found himself faced with another problem--remembering what he had just read. "Wow," he said, "wouldn't it be cool if I just had all of this on a computer! Then I'd have it all right there and I wouldn't have to worry about remembering it!" But unless the student saved the information on the computer, he just might lose it. And even if he understood all that he read, he would still need to do something to "save" his new information. This is why note taking enters in--to save the important information in his mind. Furthermore, there are at least seven different ways these notes can be taken.

Perhaps the system that comes first to mind is outlining, which follows a rather strict format, but that format is designed to allow the person taking notes to systematize the information. Look at the following form.

- I. Roman numerals are used to indicate major topics.
  - A. Capital letters indicate main ideas for the topics.
    - 1. Numbers indicate major supporting points.
      - a. Small letters indicate minor supporting points.

In outlining, all Roman numerals are placed directly under each other. The same is true of capital letters, numbers, and lower case letters. This allows one to see quickly what the topics are, how many main ideas support each one, what details support each main idea, and if there are minor supporting points. Thus, the indenting used serves a very functional purpose.

Any outline will not have the same number of items with each topic. Furthermore, more than one paragraph may be included under a topic if these paragraphs are discussing the same point. Look at the following outline for the beginning of chapter 3. Notice how the numbers and letters line up. Notice also that, while narration and description have only main ideas under the topics, cause has main ideas, major supporting points, and minor supporting points, while effect has main ideas, major supporting points, but no minor points.

## Meaning Relationships

### I. Narration

- A. Tells a story
- B. Records an event
- C. Uses sequence or chronological order
- D. Makes extensive use of action words

### II. Description

- A. Tells what someone or something looks like
- B. Tells what someone or something acts like
- C. Makes heavy use of adjectives and adverbs

### III. Cause

- A. Gives the reason why something happens
- B. Sign words that help in identification
  - 1. because
  - 2. since
  - 3. for
  - 4. reason
- C. Cause and effect together in one sentence
  - 1. half of sentence is cause; other half is effect
  - 2. sentence broken in half in two ways
    - a. sign word in middle of sentence
    - b. sign word at beginning of sentence with a comma to show where the sentence breaks

### IV. Effect

- A. Tells what comes afterward, the result
- B. Sign words used to identify
  - 1. as a result
  - 2. therefore
  - 3. thus
  - 4. consequently
  - 5. so

Outlining can be used with any type of material. There is, however, another type of note taking that can also be used with any type of material, and this is writing summary sentences. Basically, a summary statement includes the main idea and the most important supporting points from each paragraph. However, although each paragraph may have its own summary statement, paragraphs on the same topic may be combined to develop a more comprehensive summary statement. Notice in the following statement, for part of chapter three, that two paragraphs have been combined and examples have been omitted. Only the most basic information is included.

### **Summary statement for contrast-comparison**

Contrast means giving differences while comparison tells how things or people are alike. Sign words for contrast include: but, however, on the other hand, nevertheless, differ from or different, although, while, yet, instead of, conversely, unlike, versus, on the contrary, in contrast. Sign words for comparison include: like, same, as, similar, in comparison, both. If both contrast and comparison are used in one sentence, the sentence will break in half, either by placing a sign word in the middle or by placing the contrast word at the beginning and using a comma in the middle. Contrast may be subject by subject or point by point.

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A third type of note taking involves constructing a chart. This type of note taking is most effective with classification of information--in other words, when we are dealing with a mass of information that can be categorized or otherwise broken into groups. With this type of note taking, we consider characteristics that are similar, and these are placed into groups with items bearing the same characteristics. Each of these groups, then, can be broken into divisions, to show how variations may occur within each group. A classification chart can be helpful in dealing with a large variety of subjects--varieties of plants and animals, countries and the physical geography (mountain ranges, rivers, etc.) of the countries or major information about the countries such as capital, major crops, major industries, and religion. Even things such as writers and artists and their

works could be broken into groups by characteristics.

In constructing a chart, decide first what the major categories are. Then decide what information should be included about each category. Consider whether there are divisions within any of those categories, and be sure to include any description or definition that might be needed. Next, construct a rectangle. Draw horizontal lines across the rectangle to accommodate the major groups. After that, draw vertical lines to divide the rectangle into as many sections as there are divisions of information. Above each section on the chart, label that section for the kind of information that will be included. Let's suppose you are constructing a chart on meaning relationships. Your chart might look like this, beginning with listing, classification, and division. ( Notice that not every group has all of the same information. What you fill in on your chart depends on the information you have or want to include.)

| Relationship   | Definition                                            | Identification | Examples                                             | Order              | Definition                                                     |
|----------------|-------------------------------------------------------|----------------|------------------------------------------------------|--------------------|----------------------------------------------------------------|
| Listing        | names or lists items                                  | plural nouns   | first sentence uses plural noun                      | random order       | things listed as they come to mind                             |
|                |                                                       | sign words     | also, and, another, other, additional, last, finally | set order          | author uses some order-alphabetical, order of importance, etc. |
| Classification | places things into groups by likenesses               | sign words     | classes, groups, types, categories, branches         |                    |                                                                |
| Division       | takes one group or item and breaks into smaller parts | sign words     | parts, pieces, segments, divisions, sections         | dividing a class   | breaks a larger group into smaller groups                      |
|                |                                                       |                |                                                      | dividing one thing | breaks one thing into smaller parts                            |

An additional method of note taking is to construct a table, which is often one of the most graphic ways to show relationships with contrast-comparison. We deal constantly with differences--differing views, different countries, opposing candidates for office, The thing to remember with contrast is that we must deal with items that are essentially alike. We cannot, for example, contrast size with color or cost with size or use. Color is contrasted with color, cost with cost. In contrasting people, for instance, we might consider such things as age, places lived, education, social and economic background, positions held, honors or awards received, attitudes and beliefs, family background, interests, philosophies of life. In evaluating information, this is one of our most valuable tools as it allows us to see specifically how two people or viewpoints differ and to make a decision based on facts rather than opinion. It is also quite useful in considering such things as which product to purchase, which route to follow, which job to consider.

A comparison-contrast table has two parts, one part dealing with likenesses and the second part dealing with differences. The first part will have only one column since here items, people, places, or ideas are the same. The second part requires two sections since this is dealing with two different concepts of the same topic. In contrasting, it is important to have numbers directly opposite each other in the two columns so that we can easily contrast each item. A contrast-comparison table of Abraham Lincoln and Jefferson Davis might look like this. (And remember--we do not have to have the same number of likenesses and differences.)

# Lincoln and Davis

## Likenesses

1. born one year apart
2. born in Kentucky
3. each President of his own country
4. served in the U.S. House of Representatives
5. opposed succession
- 6.
- 7.
- 8.
- 9.
- 10.

## Differences

### Lincoln

1. opposed slavery
2. wanted to preserve the Union and keep country together at all cost
3. self educated
4. grew up in frontier country
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

### Davis

1. supported slavery
2. advocated states rights, even to the point of separating to establish a new nation
3. educated in schools; graduated from West Point
4. grew up on plantation
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Two more types of note taking are involved with sequence. Steps in a process basically involves a series of lists--list of items needed, steps in the actual process, and any observations or conclusions that can be made. Math problems, science experiments, recipes, routing on a map, tying a pair of shoes, the working of a machine, all of these are basically steps in a process. And in any process, failure to have all the items needed, omitting a step, adding an unnecessary step, and failure to do steps in an exact order can all lead to disaster. Either the process does not work correctly or the observations made can be flawed once the process is completed.

Let's suppose we are learning how an automobile works. The first thing we need to do is note all of the items, or parts, needed. Second, we would list the steps as they occur. Remember that steps form a chain reaction, each step leading to the next. Each action is a step so be careful not to list more than one action at a time. A set of notes on steps might look like this.

### **How an Automobile Works**

#### Items needed

1. ignition switch
2. motor
3. gasoline
4. battery
- 5.
- 6.
- 7.

#### Steps

1. Turn on ignition switch to create chemical energy in battery.
2. Chemical energy here creates electricity.
3. Electricity causes motor to turn.
4. Motor turning forces gasoline into carburetor.
- 5.
- 6.
- 7.
- 8.

## Conclusions

1. Chemical energy creates electricity.
- 2.
- 3.

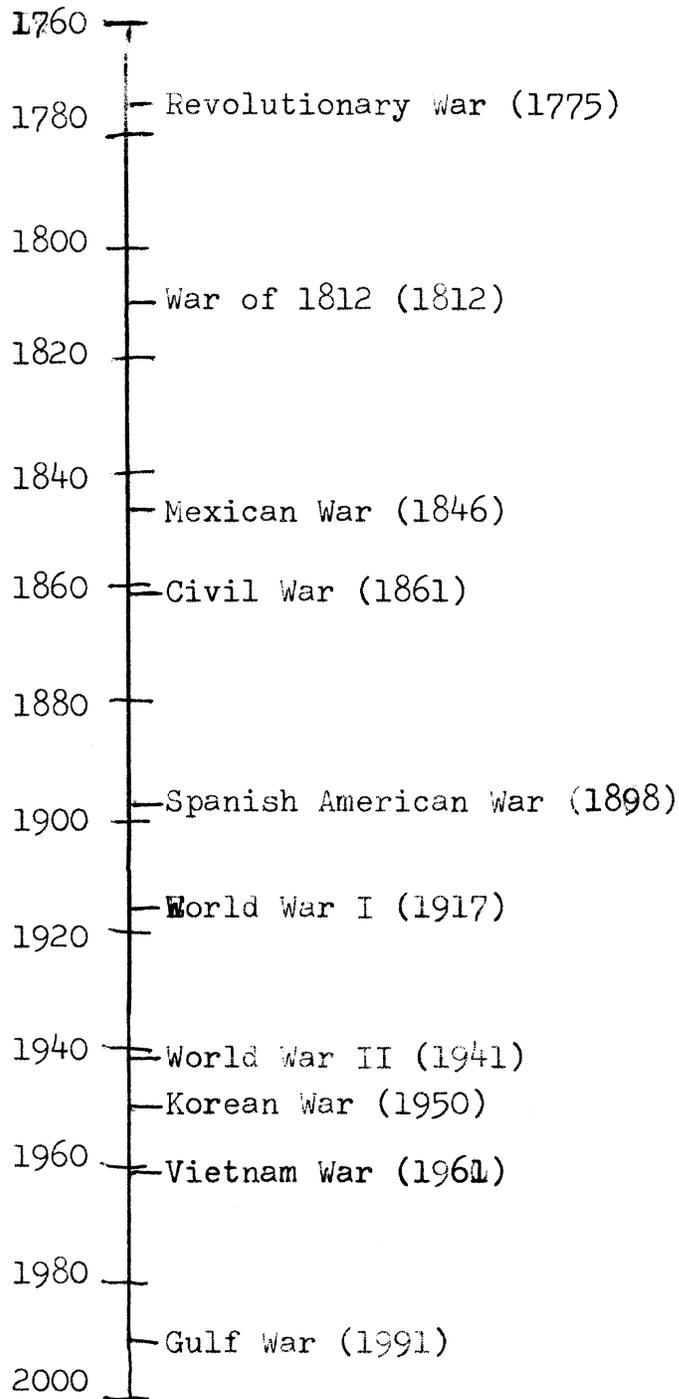
A sequence involving chronological order often is best served by constructing a time line. If we are dealing with inventions of the industrial revolution, with the geological periods of the earth, with the occurrence of wars, with manned space flights starting with balloons and proceeding to rockets, a time line will often show clearly how events fall in time and will enable us to see if events cluster or are spaced out, and this often helps us to remember the dates.

In constructing a time line, first ascertain how many dates you have to deal with. Then note how wide a time period you have--years, centuries, etc. Next, decide how wide your time intervals should be--each year, twenty year intervals, hundred year intervals, etc. This depends on the total number of years you have from your first year to your last year. Round your numbers out. If your first date is 1847 and you plan to use twenty-five year intervals, adding twenty-five to 1847 and so on is quite awkward. But if you start your first date with 1825, it will be quite easy to use twenty-five year intervals.

Now you are ready to construct your actual time line. First, draw a vertical or a horizontal line on your paper. Next, enter the dates you have established for yourself at regular intervals on your line by drawing a small cross bar where you plan to enter each date. If your time line is vertical, enter the dates on the left of the line, but if your line is horizontal, enter the dates on the bottom. (It is important that you keep these intervals even. If some gaps are wide and some are narrow, you will not have a true perspective of how these dates fall.) Again, be sure that your first date on your line is earlier than the first time you plan to enter. Also, be certain that your last date on your line is later than the final date you plan to include.

A time line to show when the United States entered each of the wars in which it has been involved since it became a country might look like this--and notice what you can observe about the frequency of wars in which the United States has first become involved. Think what would happen to this line if the end dates of these wars were also included.

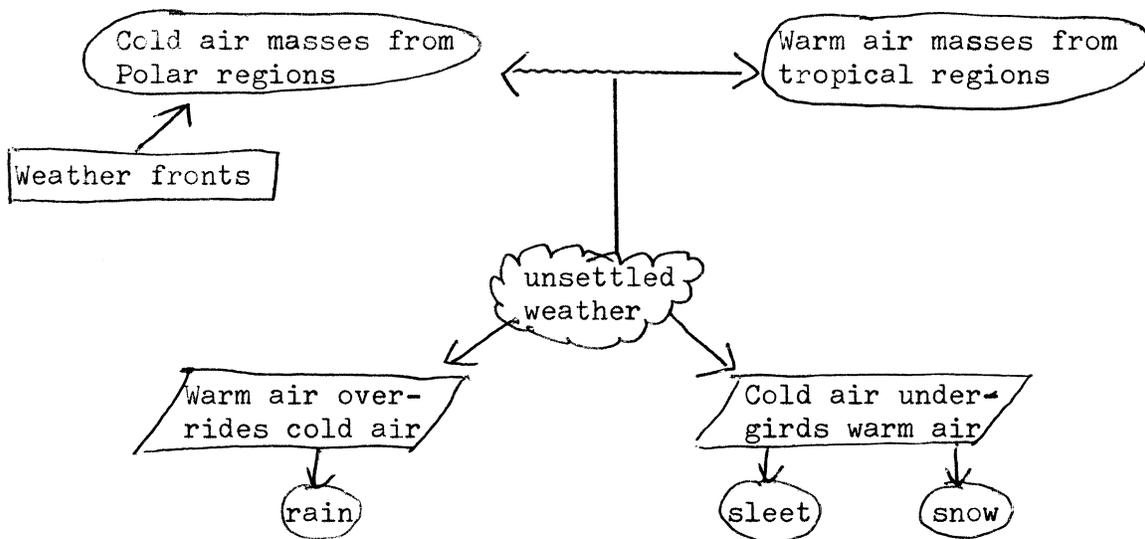
BEGINNING DATES OF WARS OF THE UNITED STATES



There is one final type of note taking that some people like to use, and this is called mapping. Those who like to design often like to use this because it involves creating a picture or design of the information. There is no set rule about how someone creates patterns except that the design or pattern must show the relationship of the author's ideas. For instance, in a cause-effect relationship, one way to map would be to list first the situation. Then above this the notes might show the cause, and the effect might be placed below. Further, a form of boxing could be used to show these relationships. The introduction and conclusion are generally omitted.

Suppose an author has been talking about weather. Causes and effects could be shown in the following mapping notes.

#### MAPPING NOTES ON WEATHER



## Exercises

1. Go back to chapter one. Construct a good outline for this chapter.
2. Go back to chapter two. Write a good set of summary statements for this chapter.
3. Go back to chapter three. Look at the chart that was begun using three of the twelve meaning relationships. Complete this chart using the other nine meaning relationships.
4. Find something that gives steps in a process. Write a set of notes for this process. Or find a piece of non-fiction on which you can use mapping. Construct notes to explain the information.
5. Select a controversial issue. Or choose two people who are running for office. Make a contrast-comparison table listing first the likenesses between the two issues or points of view or candidates. Then list the differences side by side. Use the sample table on Lincoln and Davis as your model. Which side seems more sound to you on the basis of this contrast-comparison?
6. Using the time line given you on beginning wars in which the United States has been involved, complete this time line by including the end dates of these wars. It may be necessary to make another time line so that you have sufficient space. Examine this time line carefully. What conclusions can you draw about the wars in which this country has participated?
7. Now construct a time line using major events in your life. Or choose a selection for which a chart would be appropriate. Explain what categories would need to be included and how you would label each column.

WELL, I'M PRETTY SURE I GOT JUST THE FACTS,  
MA'AM, BUT HOW DO I KNOW I DON'T HAVE  
SOME OPINIONS IN HERE?

*Recognizing opinions.*

Like Sergeant Friday, the student of dinosaurs was faced with another problem. If he planned to evaluate all the information he had on dinosaurs, he had to be sure he did not have any opinions mixed up with facts. And mixing up facts and opinions is sometimes easy to do. "Some of the statements sure look like opinions," he thought. "But I'm not quite sure." A fact is something we can verify, or prove, by checking information against a reliable source. An opinion is something we feel, or believe, often without being able to support our attitudes.

We all hold opinions on a wide variety of subjects. And there is nothing wrong with opinions, unless we allow those opinions to cloud our thinking. Some opinions do not need to be supported--for instance, I think blue is the prettiest color of all...That little girl is so cute. However, if an opinion is to be used to influence thinking, that opinion needs to be supported with specific facts. For example, James Luther is a better candidate for senator...The social security system is in trouble...The space program should be halted...We should (or should not) go to war. All of these opinions have two sides, and someone else's opinion might be just the opposite. To say, "Well, that's the way it seems to me." may be true. But if we are going to be critical thinking persons, it is necessary to have some reasons for those opinions. If someone starts off with an opinion, then we must look carefully at his reasoning to see if he has actually supported his contention. And he must have a number of facts, not just one or two, if we are to take his argument seriously.

There are several clues that we can use to help us identify opinions. These are not hard and fast rules but are good indicators that a writer or speaker is using opinion rather than fact.

## **Clues to opinions.**

1. Attitude verbs: verbs that express feelings, such as believe , think, feel.
2. Future tense verbs: shall, will. If it hasn't happened yet, it is most likely an opinion, a speculation as to what might occur based on past experience or on what seems most likely.
3. Potential verbs: could, would, should, ought, might. These imply that, if one thing occurs, than another will automatically follow, which may or may not be true.
4. Descriptive adjectives: pretty, ugly, disgusting, delightful, ideal, perfect, disastrous, horrible. Words such as these express how something or someone looks or feels. But another person might feel just the opposite.
5. Degree adjectives: more, most, less, least, better, worse. Again, someone else may feel just the opposite.
6. Condition clauses: If, unless. A statement prefaced with these words generally implies a condition contrary to fact.
7. Generalizing words: all, always, nothing, everybody, everything--words that lump everything or everybody together without exception. This is related to stereotyping. Football players implies all football players. Politicians implies all politicians.
8. Negative words: not, never. Words such as these often state the opposite of what someone else might think. (Notice that never is actually a generalizing word.)
9. Assumptions. These are opinions stated as facts without proof. Question whether someone else might hold an opposing view.

## Exercises

- I. Read each of the following statements. Decide whether you think each is a fact or an opinion. Write O if it is an opinion. Write F if it is a fact. Be prepared to tell how you were able to recognize any opinions, using the clues you have just read.
1. In an ideal form of government, the President and the Senate are the servants of the people.
  2. The capital of the United States is Washington, D.C.
  3. Our largest states in the United States are Alaska, Hawaii, and Texas.
  4. The older a person becomes, the less efficient he or she will be.
  5. The problems of unemployment and homelessness must be the concern of the entire citizenry, not just the government and certain organizations.
  6. Water is composed of one oxygen molecule and two hydrogen molecules.
  7. Democracy is certainly a better system of government than communism.
  8. In recent years, the number of children per family has declined.
  9. All men are created equal.
  10. Unless taxes are lowered, businesses will be unable to show a profit.
  11. The city will certainly have polluted air with the resultant increase of lung disease if the city builds an incinerator to dispose of city waste.
  12. People should demand that any public official accused of graft be immediately removed from office.
  13. A depression such as that of the 1930s can never happen again.
  14. Studies have shown that there is a strong correlation between the amount of education a person receives and the amount of money he or she can expect to earn.
  15. You can't change human nature.
  16. All pit bulls are dangerous and ought to be destroyed.
  17. Mathematics deals with numbers and their relationships.
  18. The best way to deal with poverty is to provide more and better paying jobs.
  19. If the national debt is not reduced, our economy will collapse.
  20. Since poverty can never be eradicated, there will always be poor people.
  21. We can assume that any country which has supported terrorism in the past is probably guilty of doing so in the present.
  22. Because we are a strong nation, we have a moral obligation to protect weaker nations from aggression.
  23. Girls just wanna have fun.
  24. The Vietnam War was fought without an actual declaration of war between the two countries.
  25. Since a large portion of the world's population lacks clean drinking water, it is more important to find solutions for this problem than it is to continue with a program of space exploration.

*Go to the next page for answers.*

- II. List three opinions you have recently heard or read that were not supported. Then list two opinions that were supported. Was enough data given to support the opinion? Were you persuaded to agree? Why or why not?
- III. Take a sheet of paper and divide it into two columns. Label one column fact and the other opinion. Listen to at least three different news shows on radio or television. As you are listening, place a check in the appropriate column for each fact and each opinion you hear. When you are through, count the number of facts and the number of opinions you heard on each station. What percentage of the information was fact and what percentage was opinion? Was there a difference among the stations? What does this tell you about the reliability of the news you hear? If the issue was controversial, were both sides given or only one? What does this tell you about any bias (prejudice) on the part of that station?
- IV. Now take a newspaper. Select two news articles. Do the same thing as you did in the assignment for news stories. How do your results compare with what you hear on radio or television?
- V. Turn to the editorial page of your paper. Find the editorial (the editor's comments on some issue).. This will be on the left hand side of the editorial (opinion) page, is usually in larger print, and is generally a wider column than the news stories. Read the editorial, jotting down all of the words the author uses to persuade you. Again, use the clues you were given in recognizing opinions. Did the editor persuade you? Why or why not?

Answers to the fact-opinion sentences.

1. o 2. f 3. f 4. o 5. o 6. f 7. o 8. f 9. o 10. o 11. o 12. o 13. o  
14. f 15. o 16. o 17. f 18. o 19. o 20. o 21. o 22. o 23. o 24. f 25. o

SEEMS TO ME THIS AUTHOR IS TRYING TO  
PERSUADE ME--HOW CAN I RECOGNIZE WHEN  
HE'S TRYING TO GET ME TO BELIEVE WHAT HE'S  
SAYING IS RIGHT AND OTHERS WRONG?

*Recognizing persuasion.*

The student of dinosaurs found himself faced with one more problem. One of his authors stated that dinosaurs lived long before man came along, but another writer insisted there was proof that these lizards were contemporary with an early form of man. He made a contrast table, but he was still in a quandary because each sounded so persuasive. "This sure can get confusing," he said to himself. And this is why understanding persuasive reasoning is helpful.

We are constantly confronted with efforts to influence our thinking. We are urged to vote for this person, oppose that piece of legislation, support an idea, work for a movement, accept a certain belief, campaign for the passage of a bill, use a certain product. We listen to the person speaking or read what someone writes, and we react. The problem is that anyone who has a persuasive purpose will pull out all the stops to influence our thinking, either for or against someone or something. Most of the time we are persuaded to believe on the basis of hearing one side, especially if that side sounds good.

We make a decision in much the same way as three blind men who were taken to the zoo for the first time. The first stop was a visit to the elephants. One felt the elephant's trunk and observed, "Oh, it's like a great hollow tube." The second man felt its tail and commented, "You're incorrect. It's a small wiggly thing." The third man, feeling the elephant's side, said, "You're both wrong! It's like a great curved wall!" All three were right and all three were wrong because each one had only part of all the necessary information.

A critical thinking person must do two things. First, he must attempt to get all of the information on both sides of an issue and then compare and contrast that information. He does not allow himself to be influenced by the first thing he hears, nor does he make up his mind on the basis of the information on one side only. Second, he must be aware of the devices a writer or speaker can use to influence his thinking. Our beliefs and attitudes are often shaped by the way in which

something is presented rather than by the actual facts of the situation. A good writer or speaker can be quite adept at manipulating our feelings so the more we know about these devices, the less likely we will be influenced by them.

Study carefully the following list of persuasive devices used to prejudice (slant or bias) how we feel.

1. Connotative (loaded) words. These are words that influence, or color, our feelings. Words have a denotation, or dictionary definition, which does not affect how we feel. But most words also have a connotation, or emotional impact--the feeling surrounding a word which makes us feel positive or negative about a person, place, or idea. If someone gives us a gift, the word gift has a good connotation, or feeling. But if someone refers to that same gift as a bribe, we immediately attach a negative feeling to what is given. If we describe a person as slender, we have a positive reaction, but if we describe that same person as scrawny, we have a negative feeling. Thus, when we want to have someone react favorably, we use words that produce positive feelings, and when we want that same person to react negatively, we use words that will cause someone to react with dislike. The person, place, or idea is not changed. The reaction to that person, place, or idea is changed. We tend to react without examining why we feel as we do, and the writer or speaker has influenced us without our even knowing it.

2. Partial facts. Here, the writer or speaker gives us only part of the facts; in other words, he includes only that information that will sway, or influence, our feelings, and he conveniently omits that material that does not support his side. For example, a politician will not tell us any information about his voting record that does not make him sound good. On the other hand, his opponent will present all of the negative information. Each puts his best foot forward and ignores the rest. If a leader is pressing for war, he gives all the reasons why war should be addressed, and he leaves out any reasons why war should be avoided. But the opponent will give all the reasons why war should be avoided while ignoring any reasons that would make war seem logical.

3. Red herring. This is information that does not relate specifically to the issue but is included to influence us positively or negatively. For instance, a politician might tell you that he was selected by Esquire Magazine as an outstanding young American. But this does not qualify him to be a better or a

more qualified candidate. Conversely, if he has a family member convicted of drug dealing, this makes him neither a worse nor a less qualified candidate. A promoter for a real estate development might show you a handsome, happy family while an opponent to the same development might use a picture of a sad, disgruntled family. We are influenced by information that is irrelevant to the actual facts.

4. Play on attitudes. These appeal to our likes and dislikes without regard to the facts. For instance, a politician will often promise to lower taxes because most people have negative feelings about taxes. But we do not stop to think whether lowering taxes is practicable or even possible because of the many services those same taxes fund. Or we may take umbrage at everything a candidate says because he has long hair and wears an earring. There is nothing wrong with having strong likes and dislikes unless we allow those likes and dislikes to influence our thinking, to judge others by our standards, or make decisions based on those attitudes rather than an examination of the facts.

5. Bandwagon. This says that, if a lot of people are doing something or adhering to a particular belief, it must be all right. This is a safety in numbers attitude. An ad might show a large number of people using a particular product so we feel we should try this too. Or an official might say that 77% of the public believes a certain way or supports a particular policy so we feel that we ought to go along with the majority.

6. Tradition. This is based on the idea that something has always been done in a certain way so it must be all right and certainly the best way. For example, let's not change the way income tax is handled because a new way might not work as well as the way it's always been done. Or let's not change the way our school systems are financed because it's never been done a different way before. This says, "Let's not rock the boat." But how do we know something different might not work if we haven't tried it? There is nothing wrong with tradition per se, and there is much value in tradition. But if this keeps us from trying something else that might improve a situation, create a better system, or increase efficiency, then tradition can be detrimental because it provides us with an excuse to do nothing.

7. Appeal to specialists. This uses a reference to an authority to support or prove a point, the idea being that, if an expert in a field says something, it must be true because that expert should certainly know. For example, More hospital (or

doctors) recommend...., A leading economist (or government head) has predicted....We need to consider who the specialist is, what his qualifications are, and if there is more than one specialist, just how many there are.

8. Proof by platitude. This involves using an old saying because these are often accepted without proof or support. For example, 'A woman's place is in the home,' or 'Handling frogs causes warts,' or 'A penny saved is a penny earned.' There are dozens of these old sayings, and arguments often stem from these platitudes. Again, there is nothing wrong with a platitude--it simply does not of itself prove a point.

9. Guilt by association. This assumes that, if two things or people or ideas have one characteristic in common, they are alike in all other ways as well. For example, several people in a school or organization are snobs so if a new person attends that school or organization, that person must be a snob too....or if four members of a family are good in sports, then a fifth member must also be good in sports. The adage, "We are known by the company we keep," applies here. And although any such assumption may be true, it can just as easily be false. Thus, we may automatically condemn or support something or someone without justification.

10. Generalization. Here everything or everybody is lumped together without exception. For example, Everybody there smokes. All those students are rude. You never let me do anything. That teacher (or boss) is always picking on me. Generalizations involve generalizing words, actual or implied, and can be used as a basis for condemning an entire race, religion, country, or group. Things are seldom one hundred percent one way or the other.

11. Stereotype. This is a type of generalizing in which one assumes, or takes for granted, that everyone within a particular group will look like, believe, or act in a particular way. For instance, when we think of a model, we think automatically of a tall, slender, beautiful girl. Or when many people think of someone from Arab countries, the first thought is of terrorism. These same people might categorize those from Arkansas as barefoot, illiterate hillbillies. And the thought of a lawyer may call to mind dishonesty. We cannot make blanket statements about any group. There are exceptions to rules. There are wide varieties of people within any group, race, or religion. To judge everyone in a

group by the same yardstick is to eliminate any individuality.

12. Name calling. This uses terms or names of ridicule in an effort to denigrate someone. Labeling someone as terrorist, communist, jerk, fool, moron immediately prejudices the listener or reader in a negative way. The effect is to reduce any credence we might otherwise give to that person. We often accept these labels without any validation, and the person is discredited or viewed with suspicion.

13. Confused comparison. With this, two things or ideas or people are said to be similar when the two are not alike in enough ways actually to be compared. For instance, a boy might feel he should be allowed to stay out until late at night because his brother does, but his brother might be twenty-one and he might be only thirteen. Or a school with a thousand students might be compared to a school that has only two hundred. In either case, there are more differences than likenesses to make a comparison. It is quite easy to slip into these comparisons, but we have to ask ourselves, in any comparison, whether there are enough similarities for the statements to be valid.

14. Circular reasoning. This is reasoning in a circle, the cause leading to an effect which in turn becomes the cause that goes back to the original statement. Conclusions are restated in a slightly different way and no new information is ever presented. For example, That man lives on welfare; he wouldn't work even if given the chance. And since he won't work if given the chance, there's no point in offering him a job. Or, that employer treats his employees unfairly because he demands they work overtime without extra pay. And since he doesn't want to pay for overtime, he deals with his employees in a dishonest and unfair way. This kind of reasoning goes nowhere. Question any conclusion, and if nothing new is added and the original statement is reiterated, the reasoning is invalid. It may sound good, but it really says nothing.

15. Abstract words. Here, words that do not have easily defined meanings and which mean different things to different people are used. These words may sound good but are often used to cloud the issue. For example, freedom, justice, honor, loyalty, democratic principles we all agree are good things. The problem is that we may not know exactly what a speaker or writer means. During the Civil War, freedom to the Southern landowner meant the right to own slaves. But to the

slaves, freedom meant the right not to be owned--the exact opposite. Asked to define honor, individuals in any group will each have a somewhat different definition. Therefore, when this term is used, it means different things to different people. We need to be careful when someone starts tossing these words into a speech or piece of writing.

16. Golden image. This presents a way of life that is appealing. A truck is shown driving over rugged terrain by an equally rugged and handsome man. A perfume used by a young woman is automatically drawing every man she passes to her. The idea being promoted is that, if we want to be like this or have a certain fabulous life or be surrounded by beautiful things, doing or wearing or buying or participating in something will help us to achieve that goal. We react to this usually without thinking because it is attractive and pleasant. We need to question whether this will actually work for us.

17. Testimonial. With this, someone famous explains that he or she is using a particular product, supporting a particular candidate in an election, or working for the goals of a particular organization. We often see a famous actor, singer, or athlete endorsing something or someone. We note that this person is wearing, eating, using, or practicing something and, although we may not pay attention completely, we are often influenced in making our decision. We need to examine carefully the product, person, or issue being considered to see if it is actually the one we need to buy, vote for, or endorse. Having someone famous endorsing or using it does not necessarily mean it is best for us.

18. Statistics. Numbers are being used to prove a point. An old saying says that figures don't lie but liars can figure, which means that numbers can be twisted to prove almost anything. For example, Three out of four dentists (or doctors) recommend....(We need to consider how many were used in the survey and how many responded to that survey.) Or, Assaults have increased 100%....(100% just means double--how many assaults were there to begin with?) And then there is the popular average. Is the average being used the median (in which case, all the numbers have been lined up from the greatest to the least, and the middle one has been used)? Or is the average being used the mean (in which case, all the numbers have been added up and the total divided by the number of items)? These two answers can be quite different and often misleading. Let's say a report is made on the average salary of school employees, and the mean is being used. We need to

consider whether employees include everyone (administrators, teachers, janitors, cooks, bus drivers, aides) or just teachers and administrators, whether the employees in the group are full or part time, or if both are included. If a larger proportion of high paying jobs is included, the average will be higher. But if a lot of lower paying jobs are included, the average will be lower. Basically, if an author or speaker is using statistics, be careful about accepting these numbers as proof until you have more information.

19. Arranged assumption. In using this, the author or speaker misleads the reader or audience by presenting a statement that causes him or her to infer something that is not true. For example, With this chair, you sit on pure leather. The rest of the chair may be plastic, but we make the assumption that the rest of the chair is leather too. Or we have a bar graph. The author wants the difference between two bars to appear greater than it actually is. He does not change the numbers; he simply truncates (or cuts off) the bottom portion of the graph, in which case, the difference looks much more significant. Don't jump to a conclusion without enough evidence to back up that conclusion.

20. Guilt or greed. This one plays on human emotions. For instance, a fund raiser wants us to contribute money to a person, a campaign, a cause. He portrays the worst possible scenario. He may picture dirty, sad looking children and implies that, for the cost of a cup of coffee a day, we can change all of this into children that are happy, healthy, clean. We experience a guilt trip; we feel sorry, and we contribute. But we need to know more about the organization. How much of what we contribute is actually going to help the children? What exactly are these funds being used for? What are the qualifications of the people involved in the project? The flip side of guilt is greed, the something for nothing concept. Someone promises us a lot of money if we invest a few dollars in a project or scheme. It sounds really good. We are told of others who have made substantial gains in much the same way, so we contribute or invest. Often we make no return on the investment whatsoever. Again, we need to question. Who is running this? What are their qualifications? Will they provide a list of references? Are they a legally licensed group? If it sounds too good to be true, it probably is. It usually pays to apply a healthy dose of skepticism.

## Exercises

I. Now read these two reports of the same incident.

A. **THIEF APPREHENDED.** (AP) An indigent thug calling himself William Smith disrupted business, unnerved customers, and upset clerks at the local Dummerville Safeway store about 10:30 Wednesday evening when he entered the store and attempted to steal a package of bologna, some bread, and a container of milk.

Store manager Henry Jacobs quickly notified police as Smith shouldered his way out of the store. Smith was captured moments later as he ran from the parking lot with the groceries and was taken to the local jail.

Jacobs told reporters that he was afraid such an incident would hurt late night business and make it more difficult to get people to work at night. Police Chief Edgar Higgenbottom has reported that small crimes have increased more than 100% over the past six months, but the courts have generally released the offenders who then have the opportunity to commit other, perhaps larger, crimes. Certainly, thieves cannot be trusted.

Unless something is done, our clean, picturesque small town will become as crime ridden as the main metropolitan cities are now. These crooks must learn, as famous detective Sherlock Holmes has said, that crime doesn't pay.

B. **HOMELESS MAN JAILED.** (UPI) Hungry, without a job or money, in desperation William Smith walked into the local Dummerville Safeway Store about 10:30 Wednesday evening and took a package of bologna, a loaf of bread, and a container of milk, a total value of about \$3.50.

When he left the store without paying, the clerk called manager Henry Jacobs who signaled to a policeman who happened to be nearby. Smith was seized as he exited the parking lot. The groceries were returned to the store, but Smith, whose wife is six months pregnant, was thrown in jail.

We all know the high rate of unemployment in our town. A large number of civic organizations believe the city should begin a public works project to assist

those who are unemployed. But thus far the city has maintained that this has never been done before and that these people wouldn't work even if given the chance so such projects would be pointless.

Has justice been served in a democratic society when we punish those in need? The best way to help these unfortunate people is to provide more jobs. We need to invest our time and money to help them improve their lot in life.

1. First, make a list of all the facts that appear in both reports but omit any slanting information. For instance, the place is Dummerville. Now continue this list. You should have about eleven more items.
2. Which report is sympathetic to Smith? Which is unsympathetic? How do the headlines help you to know? (Headlines are often the vehicle for propaganda.) Look at these two headlines and notice the slant.

**Coalition quickly forges ahead despite pockets of resistance.**

**Coalition forces slowed and hampered by stiff resistance.**

3. Look at the first paragraph in report A. How are we led to believe that Smith has lied about his name? (This is an arranged assumption.)
4. In report B, why is the cost of the items given when it is omitted in report A. (This is use of partial facts.)
5. Notice the effect of words used to describe actions. In report A, the word steal is used. What word is used in report B to describe the same action? Which word is stronger? (This is use of connotative words.)
6. In report A, how does Smith go into the store? What word in report B is used to describe the same action? Which is the milder word?
7. In report A, how does he go out of the store? In report B, how does he go out? What is the difference in how these words make you feel?

8. In report A, how does Smith leave the parking lot? What word in report B is used to describe this same action? What is the difference in the feeling you get from these words?
  9. In report A, how is Smith arrested? What word is used in report B? What is the difference between these two words?
  10. In report A, what word is used to describe how he is put into jail? What word tells you the same thing in report B? How do you react to these words?
- II. From reading these two reports, we find that the facts that are the same in both stories are basically in paragraphs one and two. Everything else is put in to influence your feelings. You have already seen from the previous exercise that both facts and words can be used to bias you. All of the twenty slanting devices that were given you are used in one or the other of these two reports. See if you can find ten of them. Write down the slanting device used. Then write down the example that you found. (Do not use the examples from the previous exercise.)
- III. Give an example of five of these slanting devices that you have encountered, either in reading or listening to someone speak. List the slanting device. Then list the example you found.
- IV. Do the following exercise, listing positive and negative words. You may use nouns or adjectives.
1. Give a positive word for describing an overweight person.
  2. Now give a negative word for describing that same person.
  3. Give a negative word to describe a large group of people.
  4. Give a positive word to describe a baby.
  5. Give a negative word to describe a small room.
  6. Give a positive word to describe that same room.
  7. Give a negative word to describe a dog.
  8. Give a positive word to describe an old chair.
  9. Give a positive word to describe a stubborn person.
  10. Give a negative word to describe that same person.

V. The reaction we have to anything or anyone is often dictated by the words used in speaking of that person, place, item, or idea. The person, for example, does not change. What changes is our perception of that person, and this is effected by the way that person is described. The same is true with the way we view ideas, beliefs, places, things. Try your hand at persuasive writing. Choose something or someone. Write a paragraph picturing what you have selected in positive terms so the reader will respond favorably. Now write a paragraph picturing that same person or thing or idea in negative terms so the reader will respond with dislike.

## OK, SO HOW CAN I FIND MORE INFORMATION ON THIS TOPIC IF I WANT TO?

### *Using source material.*

The student of dinosaurs was now faced with another problem--he had gotten quite interested in the different viewpoints regarding the extinction of these lizards, but he wondered where was the best place to go for additional information. "Where all can I go to get more stuff on this?" he asked himself.

Perhaps the most profitable place for any student is the internet, which is a compendium of information from many sources--books, periodicals, encyclopedias, government publications, leaflets, bulletins, much of which is reprinted in its entirety. There are many search engines that a student can use to access information, such as [www.Yahoo.com](http://www.Yahoo.com)., [www.Google.com](http://www.Google.com), [www.Lycos.com](http://www.Lycos.com). , and [www.MSM.com](http://www.MSM.com). Not only can we locate a vast array of information, but information about and qualifications of authors as well as dates of publication can be accessed to determine reliability and current status of material.

Although use of the internet is both convenient and quick, there are other reference sources which can also prove helpful.

The encyclopedia is a compilation of a wide range of subjects and provides a broad spectrum of information on those subjects. In a search for specific information, it is a good idea to consult the index of the encyclopedia as this will list both topics and cross references and can greatly simplify location of material. It is a good idea, nevertheless, to check the date of publication, as we should do with any source material, since this affects not only how current the information is but also provides clues to what information might not be included. Also, although much information may be the same, there will often be variations from encyclopedia to encyclopedia as to information included or omitted as well as how thorough the coverage is.

An atlas is basically a book of maps, tables, and charts. Remember, however, that a good atlas will not only contain maps of countries but will frequently contain specialized maps, such as climate, oceanic, prehistoric, historic, political, and physical, as well as information related to those maps. Again, the

publication date is of extreme importance for the most current information.

An almanac is simply a book of records, lists, and current information and which is published yearly. Anyone interested in locating any type of record or recent event or statistic will find this one of the most complete sources.

**The Reader's Guide to Periodical Literature** is one of the most helpful sources available. There are literally hundreds of magazines that are published each year, both of general interest and specialized interest, as well as numerous trade journals. As a result, it would be a hopeless task to locate any information in any periodical if it were not for the **Reader's Guide**. This publication lists by topic every article that comes out each year. Anyone interested in a particular topic can look under that topic (all topics are listed alphabetically); here will be listed every article that has been published and which deals with that subject, together with the name of the magazine in which the article appeared, the month, the volume if there is one, and the exact date of the article. Further, major topics are broken down into sub-topics, which makes it even easier to locate information.

A thesaurus is a book of synonyms and antonyms. Anyone searching for a different word than one already used or anyone wanting to add variety to a piece of writing will find a thesaurus an extremely valuable tool. The writer just needs to be sure the synonym is the most appropriate one, as there are many shades of meaning among synonyms.

A good dictionary, however, is still one of the most valuable tools. It contains a vast store of information on words, and it behooves us to be adept in using a dictionary. Each entry can contain up to ten pieces of information about that entry. This includes the following information.

1. Entry word (broken into syllables)
2. Pronunciation (in parentheses after the entry word)
3. Part of speech (abbreviated)
4. Other forms of the word (the word plus endings--e.g., plurals of nouns, comparative and superlative forms of adjectives and adverbs, principle parts of verbs)
5. Etymology of entry word (origin and history of word, in brackets [ ] )
6. Definitions (meanings of the word)
  - a. All meanings for the first part of speech will be numbered.

- b. If there is only one definition, no numbers are used.
  - c. Clarifying phrases may be used.
  - d. If word is used as another part of speech, this is in boldface type.
  - e. Definition numbers begin again.
  - f. Jargon words (words with special meanings in jobs, sports, subjects) will have definition prefaced by the specific area in italics.
  - g. Colloquial, obsolete, dialect, and slang words will be noted with appropriate abbreviations.
7. Idioms (phrases used figuratively rather than with literal meaning)
  8. Derivatives (related forms of word used as different part of speech)
  9. Synonyms (words that have similar meanings to entry word)
  10. Antonyms (words that have opposite meanings to entry word)

A library has a vast number of reference books. It is a good idea, in researching any topic, to check out that list of sources of information. Some libraries still use the card catalog system, but most libraries are now completely computerized to help the researcher locate all relevant material. In any event, if we would be knowledgeable, we need to understand that one source is seldom enough, whether the search is for factual information or whether the search is to ascertain opposing views.

### **Exercises**

1. A bibliography is a list of sources of information. Choose a topic in which you are interested. Research that topic and locate at least six sources of information for your topic.
2. Go through your dictionary. What information is in the front of your dictionary? Skim through your entries. Find examples of all ten pieces of information that can be found for an entry word.

# ALL RIGHT, I'VE GOTTEN MY INFORMATION. WHAT SHOULD I CONSIDER BEFORE I ACTUALLY MAKE MY CONCLUSION?

## *Drawing conclusions.*

A skill which confronts every student, including the student of dinosaurs, is drawing conclusions after gleaning as much information as possible. "I can't believe all the stuff I've done," he thought. "But at least I finally know what I really believe, and why I believe it." This is basically a form of inductive reasoning, often called the scientific method. In this type of reasoning, we must keep an open mind. We gather all of the information we possibly can on our topic and then see where those facts lead. In other words, we draw a conclusion on the basis of the facts that have been gathered.

This certainly appears on the surface to be the most accurate type of reasoning. There is, however, inherent in this, one problem--having enough facts to warrant the conclusion we draw. Drawing a conclusion on the basis of too little information is known as jumping to a conclusion. If we see at a distance two boys pushing and shoving each other and we decide they are fighting, we are jumping to a conclusion. At this point, we do not have enough evidence to justify this decision. Reasoning based on insufficient evidence is quite easy to do.

For instance, nearly two thousand years ago there lived a man named Ptolemy who was especially interested in astronomy. For a long time he studied the heavenly bodies, and finally he came to a conclusion. "The earth," he said, "is the center of the universe, and the sun and the other planets revolve around the earth." This view was held until about six hundred years ago when another man, Copernicus, came along. He, too, was interested in astronomy, and he, too, spent much time in studying the heavenly bodies. Then he, too, came to a conclusion. "Ptolemy was wrong. The sun," he said, "is the center of our universe, and the earth and the other planets revolve around the sun." People at the time were furious at this conclusion, but Copernicus was right and Ptolemy was wrong. The difference was that Copernicus was able to gather much more information. For this reason, conclusions are constantly being changed on the basis of new data.

We make conclusions or draw inferences (educated guesses) constantly.

Someone comes into the room wearing a heavy coat. We infer that it is cold outside. A child falls down and begins to cry. We infer that the child has been hurt. But if the same thing happens, and the child starts to laugh, we infer that nothing is wrong. A meal is served, and a friend makes a face. We infer that the friend does not like what is being served. We make inferences about when something happened, about where something happened, and about why something happened. We make inferences about people's motives and about their characters. But our biggest caution must be: Do we have enough evidence to make the conclusion we are making?

A second type of reasoning with which a reader is continually faced is based on deductive reasoning. Here, the writer or speaker begins with an assumption, something which he takes for granted to be true. He then proceeds to find information that will support that assumption. Finally, on the basis of this evidence, he draws a final conclusion.

The problem is that the initial assumption is usually an opinion. And furthermore, that assumption may be completely correct, completely incorrect, or partially true and partially false. It follows the pattern of a syllogism.

Pattern:     Major premise (assumption)  
              Minor premise (supporting fact or facts)  
              Conclusion (final comment)

If the major premise is true, then the reasoning will probably be accurate. But the facts given in the minor premise must also be correct. If both of these are true, then the conclusion should be reasonably accurate. However, if either the major premise or the minor premise is inaccurate, then the reasoning will be flawed.

**Examples:**

Correct: All students enrolled at the Addison School are high school students.

Correct: Polly Peterson is enrolled at the Addison School.

Correct: Therefore, Polly is a high school student. (Valid conclusion)

Correct: Fish cannot live on land but require water.

Incorrect: The whale is a fish.

Correct: Therefore, the whale is not a land creature but requires water to live.  
(True, but not based on the fact given here.)

Incorrect: An apple a day keeps the doctor away.

Correct: Andy Atkins always eats an apple every day.

Incorrect: Therefore, Andy Atkins will never need a doctor.

Partly true, partly false: The Democratic party is composed of ordinary working people.

Correct: The Kennedys are Democrats.

Incorrect: Therefore, the Kennedys are ordinary working people. (If the major premise is partly true and partly false, then the reasoning and the conclusion may or may not be valid. In any case, the reasoning is generally poor. The problem here begins with the major premise. The Democratic party is composed of both ordinary working people and very wealthy people, such as the Kennedy family.)

### **Exercises**

1. Go back to the story of Ptolemy who reached an erroneous conclusion because he lacked sufficient facts. Does this mean he was a bad scientist? Why not?
2. The story continues by saying Copernicus lived some six hundred years ago. When an exact date or number is not given, we can use clues to determine the approximate date. When we express that date or number, the abbreviation c. or ca., which stands for circa (Latin for around or about), is placed before the numbers to indicate that this is an approximation rather than an exact number. What is a circa date for Copernicus (place c. or ca. in front of your answer)? When an approximate number is given, these are generally rounded out.
3. Read each of the following paragraphs. Then draw a conclusion.
  - a. In the late 1800s, there lived on the East coast of the United States a man who was an avid student of Shakespeare. At one point, he decided that every bird mentioned in Shakespeare's plays should be in this country. Toward that end, he introduced several pairs of starlings. The climate

for the birds was ideal. Food was plentiful. There were no diseases to plague them, nor were there any enemies.

What was the result? (This is a conclusion--hint, do not simply say there were a lot of birds or that this was a good place for birds.)

- b. In Biblical times, Gideon, with a small army of 300, surrounded an invading Midianite army at night. The Midianite army numbered several thousand. But the Israelites, at a given signal, began to blow trumpets, threw down clay pitchers containing lights, and began to shout loudly. The Midianites, thinking they were surrounded by a vast army, fled in mass confusion; and the Israelites, though vastly outnumbered, won without a fight. During the American Revolution, George Rogers Clark, with a ragged army of 125 men, determined to capture the British fort at Vincennes, Indiana. This meant that he first had to capture the town. Clark sent a message to the town that all who supported the British should take refuge in the fort immediately and all others should stay in their houses. Clark then had his men march in and out of the surrounding hills from noon until dark. Some of the men also carried banners. The people in the fort, thinking they were surrounded by a huge army, surrendered without a shot being fired.

What conclusion can you reach about what is necessary to win a military engagement?

- c. Take a glass of water. Dissolve red vegetable dye in that water. Place the stem of a white carnation in the mixture. Notice that the carnation will gradually change color as the liquid moves up through the stem. The roots of a plant hold it in place in the soil. The soil contains minerals. When it rains, the minerals dissolve in the water.

What conclusion can you make about how a plant is nourished? (Keep in mind what happened in the experiment.)

4. Consider a trial and what you have learned about inductive and deductive reasoning. Think about the principal members of the court - the attorney for the defense, the attorney for the prosecution, the judge, the jury. Which of

these would approach the case with inductive reasoning? Which would approach the case with deductive reasoning? Why?

5. Think of what is going on in the news. Give two examples of the use of inductive reasoning. Include who approached the situation using inductive reasoning and what the conclusion was. Was the conclusion valid? Why or why not?
6. Again, think of what is going on in the world. Give two examples of the use of deductive reasoning. Include who approached the situation using deductive reasoning and what the situation was. Was the conclusion valid? Why or why not?
7. Think of a conclusion you have made recently. What was the situation? What conclusion did you make? Were you basically using inductive or deductive reasoning? Was your conclusion valid or did you jump to a conclusion?

## IT SURE HAS TAKEN A LONG TIME TO READ ALL THIS MATERIAL. ISN'T THERE SOME WAY I CAN SPEED UP AND GET THROUGH FASTER?

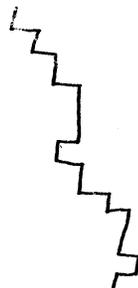
### *Reading faster.*

Our student of dinosaurs shook his head disgustedly. “I’ve learned a lot and I understand how to get more out of what I read. Only trouble is, it takes absolutely forever!” And this is the plight of most people--reading too slowly. “But,” our student protested, “if I read faster, I’m not going to understand what I’m reading!” Actually, if done correctly, increased speed and increased comprehension go hand in hand. Furthermore, we tend to keep our minds more focused on what we are reading, and the whole process becomes easier and more fun.

The farther we go through school, and often beyond, the heavier the reading load becomes. Between the fourth and eighth grades, the amount has usually doubled. And it doubles again as we progress through high school. Yet most people continue to read at the same speed they were reading in the upper elementary grades--somewhere between 100 and 300 words per minute. Fortunately, however, faster reading is a skill that we can all learn.

There is an eye movement camera that makes a film strip of a person’s eyes as he or she reads. This camera shows that most people are stopping once on each word, frequently re-reading (regressing) along the same line of print, making long pauses on some words, and sometimes missing the jump from the end of one line to the start of the next line. All of these things tend to slow down reading speed.

Let’s take the phrase, the little white house standing on the corner. The poor reader’s film strip would look something like this:



But a good reader's film strip would look like this for the same line:



If this student can read the same line in two stops instead of ten stops, his reading speed would more than double! In reading a line of print, most readers are stopping (or making a fixation) once on each word or at best, throwing a little word in with a longer word. The more stops along the line, the longer it takes to read that line.

To begin with, we have to eliminate four bad habits that many people have developed and which most do not even notice. First, we have to eliminate all physical movement--moving lips, tongue, vocal chords. Do you sometimes find yourself mouthing the words, especially if you're having trouble keeping your mind on the material or if you're having trouble understanding? Place your finger against your lips as you read. If you notice any movement, try reading for a while with a pencil between your lips or with your finger against your lips. Next, place your finger on your throat as you read. Do you notice any vibration as you mentally pronounce the words? Try reading with your fingers resting against your throat. Force yourself to keep from physically forming any words as you are reading. The more you physically form the words, the longer it takes to read. You are reading silently the same way you read orally except you are making no sound, and you can read no faster than you can form the words.

Second, we have to stop any head movement as we read. Do you tend to lose your place along the line as you are reading? Do you sometimes jump from the end of one line to the beginning of the next and land on the wrong line? These are good indications that you are moving your head as you read. Prop your chin in your hand. Look all around while keeping your head still. Notice that you can see things quite clearly without moving your head. As you read, let your eyes do the walking, not your head! You "read" only when your eyes are still; and if your head is moving, your eyes have to focus while they are moving along the line and while your head is moving, which makes their problem doubly difficult. Try reading for a while with your head resting against your hand.

Third, we need to avoid pointing with a pencil or finger along the lines as we

read. Do you find yourself losing your place as you read? This is a good indication that you're probably moving your head. Do you lose track of what the author is saying? One reason is reading that is too slow. We think in ideas, not words, so if our speed is very slow, our minds often tend to wander, and then we start pointing along the line to keep track. This pointing slows reading down. If you feel you must point, try tracking in the margin.

A fourth bad habit we have to eliminate is sub-vocalizing, or mentally pronouncing every word as we read. Do you feel that you have to pronounce every word to understand what you are reading? Yet it is not necessary, when you are reading silently, to say every little word as you must when you are reading orally. This does not mean that you are skipping words. Rather, you are deriving meaning from the appearance rather than from the sound. If you see a stop sign, you do not have to say the word to understand what it means. You react from its appearance because you have seen it so often. There are hundreds of words that you have seen so often that you know automatically what they are and what they mean without pronouncing them. Try this exercise. Practice counting from one to ten out loud as you are reading a paragraph. Try to get the meaning from the appearance of the words while you are blocking saying the words by counting. Also, try to concentrate on the important words. Remember that it is not necessary to say every a, an, or the in order to understand. Again, this is not skipping words. Our speed picks up considerably as we learn to read silently without mentally mumbling all of the words.

Eliminating these four bad habits alone will increase reading speed. However, there are four additional good habits that will enable us to speed up even more. The initial step is to reduce the number of stops our eyes make along a line of print, in other words, to begin reading phrase by phrase rather than word by word. We can see a whole page or a line of print at a time, but not clearly enough for it to make sense, just as we can see a entire group of people at a time but not clearly enough for us to recognize all of them. But we can see an individual clearly enough to identify that person. When we do, however, we do not look just at the mouth or the nose, the hair or the shoulders. We look at that person as a whole, adding all of these things together simultaneously to make an identification.. Our eyes can learn to do the same thing with a line of print, to look at an entire phrase rather than each individual word and to derive an idea from that entire phrase. Taken another way, if we have two jigsaw puzzles that are of exactly

the same picture, but one is broken into ten big pieces and the other is broken into fifty little pieces, which one would we complete first? The one with the big pieces, of course! This is the difference between the word reader and the phrase reader. Nothing is being lost; nothing is left out. One simply takes more time to complete.

But how do we go about reading by phrase? If you look directly at a word, all you will see is that word. But if you let your eyes focus toward the top of each line, about where the tall letters are, you will find that you can actually see several words at one time. Yet how can you understand if you do not look at each word? Recognizing phrases is like recognizing people. You can spot a friend a block away by his size and shape and your familiarity with him without looking carefully at his features. More letters extend above the line than below the line so looking slightly above the line, about where the tall letters come, will enable you to see not only more words at a time but will enable you to make use of the general configuration (shape) of those words to identify them quickly. Words without tall or long letters can often be identified easily by size and general appearance and our familiarity with them--for example, in, see, come, a.

In addition to configuration and familiarity, a third factor aids in identification, and this is context. Have you ever seen someone on the street that you were sure you knew, but you just couldn't place that person? Taken out of context, or the place you usually see him or her, makes it difficult to remember who that person is. The same thing is true of words. Context keeps us from making a lot of errors. For example, though, thought, thorough, through are so similar in appearance that we could easily confuse them if it were not for context. Take the sentence, "I was strolling -----the park." We would know automatically which word would be correct without having to look carefully. This is why proofreading is often difficult because we automatically read the correct word. Phrase reading, then, means allowing our eyes to see more than one word at a glance by looking slightly above the line and allowing those words to clump together into meaningful units. We literally space read.

Note the phrasing in the following sentences: (A line has been drawn between each phrase. Pay attention to key (important) words. Let your eyes stop quickly toward the center of each phrase and slightly above the phrase.) Do you/ read slowly/ word by word/ or can you read/ phrase by phrase?/ Reading word/ by word/ can cause you/ to read slowly/ even though/ comprehension ability/ may be

good./ This is/ a carry-over habit/ from oral reading/ to silent reading./ Notice that, if you stop on each word in these sentences, your eyes would have to stop a total of forty-three times, and your mind would have to correlate each of these words into a unit with other words before they would make any sense. But if you can read phrase by phrase, you would make only fourteen stops, or only about a third as many, so your speed would increase sharply; your comprehension would also be better because you are adding idea to idea, not word to word to make an idea and then adding idea to idea.

A final help in reading faster is visualizing, or picturing what you are reading in your mind. Take the phrase, “the little white house standing on the corner.” Can you see this in your mind” The more you can “see” what you are reading, the sharper the images will be for you and the easier you will find it to remember.

Therefore, to improve reading rate, as well as comprehension, you have four things to do: Let your eyes pick out phrases instead of just words; look slightly above the line so that you can see several words at a time; pay attention to key words and less attention to unimportant words; and visualize what you are reading. And push your speed as you are reading instead of dawdling over each word. Practice should enable you to double or even triple your reading speed in a short amount of time.

### **Exercises**

1. You need to know how fast you are reading now if you are to work toward improving your reading speed. Choose a novel you would like to read. Count the number of words in ten lines on an average page. Multiply that times the number of ten line groups on the page. This will give you the approximate number of words per page. Now time yourself reading in your book for five minutes. Multiply the number of pages you read times the words per page. This will give you your approximate words per minute for easier reading.
2. Now choose a book of non-fiction, such as a text book. Figure out your words per page as you did in the above exercise. Again, read for five minutes. Figure out your words per minute. You have the speed at which you are reading non-fiction. Did you read this slower than you did on your novel? Remember that the good reader does not read everything the same speed. You slow down for

more difficult material and speed up on easier material.

3. To help yourself read faster, push yourself slightly on everything you read, remembering the four don'ts and the four do's for better reading. But never read faster than you can comprehend what you are reading. This is a skill, and like any skill, you improve with practice. Try reading something again, but pushing your speed. Figure out your words per minute. How fast did you read this time?
4. One practice you can do is this: Take a clock or a watch with a sweep second hand. Try to read one page in one minute. If you didn't complete the page, finish it as quickly as possible and go on to the next page. Continue this for five minutes. When you can read a page a minute, cut your time down to fifty seconds and again try to read a page in fifty seconds. When you have achieved this, cut your time down to forty seconds, and so on. Practice this way for five minutes each day and then continue reading without timing yourself but pushing your speed.
5. Another exercise you can do is this: Take a newspaper or a magazine that has narrow columns. Let your eyes run straight down the middle of the column, trying to see as much of the line at one glance as possible. This will help you widen out your eye span, or how many words you can take in at a glance.
6. Take something with a wide column that you can mark up. Quickly let your eyes jump ahead to pick out phrases and mark them with slash marks. Remember that a phrase in reading is simply a group of words that make sense together.

# YOU MEAN NOW I'VE GOT TO TAKE AN EXAM OVER THIS? YOU MUST BE KIDDING ME! ?

## *Improving test taking.*

Our student of dinosaurs is obviously shocked. "I don't do well on tests," he grumbled. "Now what do I do?" Study for an exam involves a special type of reading which often becomes sheer drudgery that brings out the worst in us. We try to re-read; we bog down in details; we become tired and confuse facts; we lose sight of what our purposes are.

### PREPARING FOR THE TEST

The initial step, of course, is taken as we first cover the material--previewing to ascertain main ideas, asking questions before actually reading so we know what we need to get from the material, reading actively by making use of such things as paragraph organization and sign words, taking notes to organize the information and remember it, and finally critically analyzing what we have read. Thus, the major portion of the work has already been done. We know the material quite well already. When we master material as we go along, a little at a time, we tend to master it more thoroughly. That final study session, then, is not a cram session to learn the material but a quick refresher of material already learned.

There are three things to be considered: Purpose (what type of exam will this be?), Selection (this involves the choosing of specific material to be reviewed), and Thorough Review (this means making use of notes and information to be covered on the exam). Now we concentrate on anything for which we are unsure. There is no point in spending time on material on which we feel confident.

We need to relate ideas as much as possible. For example, in studying history, we need to relate important dates, people, events, and trends of development for each period. Our material can then be organized around these major points. To attempt to memorize facts in isolation will only lead to confusion, and we seldom remember the information past exam time, if that long. Previewing, again, is a valuable tool, for it allows us to pinpoint what we need to concentrate on and what we can skip in reviewing.

## PREVIEWING THE TEST

What about the test itself? We can learn to read exams more efficiently in order to score better. First, look over the exam to see (a) what it covers, (b) how long it is, (c) what type of questions are being asked--multiple choice, short answer, true-false, matching, essay. Next, note how much time you have to complete the test. Decide how much time you will spend on each section, and stay with that time limit. Do not allow yourself to be stalled on a difficult question--either make an educated guess or skip it. The more questions you are able to complete, the better your chance of making a good score because questions you do not get to will be counted wrong, and you may have known many of the ones you have omitted. You can always come back to any you left out if you have time. Then read the directions carefully. Note specifically what you are to do (watch for numbering words such as next and then which give additional instructions). It is a good idea to underline or note key words that tell you what to do. Many students lose points simply by not paying careful attention to all instructions and either omitting something or doing something incorrectly.

## TYPES OF EXAMS

Basically, there are two types of exams--objective and essay. Each must be approached differently, and there are things you can do to improve your performance on each type.

### MULTIPLE CHOICE.

This is probably the most common type of exam constructed, both by teachers and by testing companies. Generally there are four choices, although there may also be three or five. First, look over the questions quickly so you know what to look for if there is reading involved. Then read the passage very quickly noting where the answers might be. Tackle your questions one at a time by going back to the section in your reading where the answer most probably will be found. (The first sentence of each paragraph will help you to identify the topic of the paragraph.) Do not waste time reading the entire passage for each question. Again, remember to stay within the time limit you have established. If there is no passage to read and you simply have to answer questions, as is most likely in a teacher constructed test, treat each question separately.

Work through the questions quickly, but pay careful attention to what the question asks. Many people miss answers because they do not look carefully enough at the question itself. Know what is required! The ones you are sure of can be answered easily enough. However, if you are not sure what the correct answer is, try first to identify the wrong answers. It is usually easier to find incorrect answers than it is to keep reading to locate the correct response. If you have four choices and can eliminate two, you have a 50-50 chance now of getting the right answer. If you feel one answer is better than the other, go with your instincts rather than trying to analyze too much when you are not sure. But don't jump to a conclusion on reading just part of the question!

There are some clues you can use to help you identify wrong answers.

1. Watch out for look-alike words--for example, translucent and transparent, reflection and refraction. These can often confuse you, and frequently the answer is one of these look-alikes.
2. Double check negative words--not, no, never. This can completely change what is required by the question, and many people miss the answer because they do not pay attention to a negative word.
3. Be careful to check words in a series. One of the items may be incorrect. And an answer that involves sequence may have an item that is out of order.
4. Beware of generalizing words such as all, always, everyone, everything, nothing, nobody. These words provide for no exceptions and are often clues to incorrect answers.
5. Look for words that have exact opposites--internal instead of external, east instead of west. Unless you look carefully, you can easily make a mistake.
6. Watch out for qualitative or quantitative words--words that have to do with size, shape, number, amount, degree. The wrong one may be used.
7. Be careful of statements that are half truths--The Republican party favors big business and receives much of its funding from major companies. The Democratic party also receives large contributions from major companies.
8. Note any questions that involve time periods. A person or an event may not be in the time period referred to in your question.
9. Remember that the answer to one question, or a clue to the answer for a question, may be in another question
10. Use context clues. For instance, if your question uses a plural verb, look for a plural verb in the answer. Use what you know about other events, style, accomplishments, inconsistencies in grammar.

## TRUE-FALSE

In taking a true-false exam, look for a specific word or phrase that will make the statement wrong. Do not try to read the complete sentence and make a decision on the whole. If part of a statement is wrong, the entire statement will be false. Only if everything is completely correct will the statement be true. There will usually be more true than false answers.

## MATCHING

Go through the first column quickly, identifying the ones you know definitely. This reduces your number of choices. Once you have done these, go back and work on the rest. But if one column has fewer items, start with that column. This is generally less confusing. Check to see if all of the items in the longer column will be used, in which case, some of the items in the shorter column will be used more than once. If the answers total only the number of items in the shorter column, some items in the longer column will not be used. As you are working through, check off the ones you feel will not be applicable, as this reduces your choices and makes it easier to reach a decision. If the two parts to be matched will form a complete sentence, the first part is usually the subject part and the second half is normally the predicate part. Use what you know about subject-verb agreement in this case. If the simple subject is singular, look for a verb that is also singular; then do the same for the plural subjects. Again, any time you can reduce the number of choices, you can more easily and quickly make a decision. Just make sure that the two halves you are putting together make sense!

## FILL IN THE BLANK

These short answer questions are usually the hardest of all, for these really depend on your thorough knowledge of the material. However, there are a few clues that you can use. Pay attention to context; in other words, be sure that your answer makes sense in the sentence you are completing. Your knowledge of grammar will again sometimes come in handy. Watch for subject-verb agreement. Watch for use of *a/an* before a blank. Most blanks will use the *a/an* combination, but sometimes this is not done. Remember that the letter *a* is used before a word that begins with a consonant and *an* is used before a word that begins with a vowel. If poetry is being used, sometimes what you know about rhyme and rhythm will help. Format will also sometimes help. If you have a double line, your answer

may be a double word such as United States. Finally, pay attention to your question. For example, if your question calls for two crops to be listed, don't list just one.

## ESSAY

If you are writing an essay exam, first decide how much time you want to spend in writing each answer. Notice the requirements in terms of length. Is there enough space for only a few sentences, or is there half a page or more allotted for your answer? More space means you need to write a longer answer. Next, look carefully at the question and note precisely what you are to include in your answer. After this, before you actually begin writing, especially if your answer is to be more lengthy, jot down quickly those major points you plan to make in answering each question. Otherwise, you may find yourself writing too much on one or two points and then not covering the material adequately or even not getting to all of the questions. Finally, proofread. Check to be sure you do not have unnecessary repetitions; check your sentence structure, making sure that you have used a variety of sentences and not just simple sentences, and making sure you have used no incomplete sentences, no run-on sentences, and no garbled sentences. Check your spelling, capitalization, and punctuation.

Becoming a good test taker is like being in a competitive game. You play to win, but you are not only dependent on your knowledge; you are also dependent on how well you know what to do, how to achieve your ends, and how effectively you can apply your reading and critical thinking skills. As with all types of reading, this is an active, not a passive, process.

### Exercises

- I. Evaluate an exam that you have taken recently. Go through the test and look at the questions you missed. What type of questions gave you the most difficulty? What could you do to eliminate this problem?
- II. How could you have improved your preparation for the test? How could you have improved on your actual taking of the test?
- III. How can evaluating what you did on a test help you in doing better on future exams? Be specific.

## Back Cover

The ability to read and evaluate the flood of information and ideas available today is a skill that daily becomes increasingly essential.

*Step Up to Critical Thinking*, which grew out of fifty years of teaching evaluative reading and critical thinking, presents a concise and insightful program to develop and enhance reading skills and explains how to differentiate fact from opinion as well as how to detect bias.

Author Joe Carnes Guinn invites you to *Step Up to Critical Thinking* and discover for yourself that goals are best reached through an objective and critical approach to factual material.



Joe Carnes Guinn, a native of Arkansas, earned her B.A. in English at Hendrix College and her master's degree in English at the University of Arkansas. She is the author of *Expanding Your Horizons through Words*, *Dynamics of Study Skills*, and *Language Arts I and II*. In addition to fifty years of teaching, she has also written for several newspapers, including the *Arkansas Gazette*, and her travels have taken her to over seventy-five countries. She currently also acts as a living history presenter for the Washington County Historical Society. Ms. Guinn has two children and two grandchildren and lives with two dogs, a twenty-two-year-old cat, and a determined cricket in a house built in the early 1890s on five acres of land.