Skills to Critical Thinking

A Self-Help Book for Parents and Teachers

By

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Contents

Chapter 1: Parents and Teachers Together  1
Chapter 2: Learning Basic Comprehension  11
Chapter 3: Learning Deeper Comprehension  28
Chapter 4: Learning Concrete Concepts  43
Chapter 5 Learning Abstract and Process Concepts  55
Chapter 6: Learning Facts  67
Chapter 7: Learning to Think About Thinking  80
Chapter 8: Learning to Problem-Solve  93
Chapter 9: Learning to Cope  108
Chapter 10: Learning Self-Management 121
Chapter 11 Learning Self-Management Rules 131
Chapter 12: Learning to Think Critically  144
Chapter 13: Learning About Obstacles to Critical Thinking  157
Chapter 14: Learning Rules to Think Critically  167
Chapter 15: Learning to be Open-Minded  177
Chapter 16 Learning to Think Critically and to Reason  189
Chapter 17: Learning to Monitor Thinking and Reason with Different Scenarios  202
Chapter 1
Parents and Teachers Together

Haven’t you heard it said, “He’s just like his dad?” You know why, don’t you? It’s because dad is a teacher . . . like it or not . . . and for better or worse. And mom and dad also become the teachers of knowledge. They do it by teaching words to reason and think with. They teach concepts like big and small and up and down. They teach their children facts, like their names, their addresses, their phone numbers, and birthdays. And before their children are off to school, parents teach their youngsters the skills that build the ability to think critically. Then it’s time for the teachers to take the lead in teaching critical thinking. Chapter 1 introduces some of the skills that are required for critical thinking and gives you an idea of how together parents and teachers can teach critical thinking.

Although teachers are the primary teachers of critical thinking, parents might be surprised to know that they could be most effective. Yes, if parents start early, they could be more effective than some teachers or college professors. By the time your youngsters team up with college professors, it may be a little too late. Parents can and do teach critical thinking, although it may be only some of the components, and they do it right after their children start to walk—like teaching their children such concepts as “bye” and “thank you.” These concepts will be added to their knowledge to help them do critical thinking at a later date. (Yes, knowledge is an important factor in critical thinking.) You don’t teach critical thinking all at one time; you teach it year after year as your children advance with age, and it is taught with the help of parents, teachers, media, books, and other resources.

Stop for a moment to think of all the decisions that your children will face in the future. If your children are ruled by habits and act without considering all the factors, they will behave like robots being controlled by peers, television, videos, and what they read—without ever considering the implications. That is dangerous, because they will be faced with such important decisions as using drugs, choosing friends, eating healthy, choosing occupations, deciding to have a designer baby (genetically altering hair or eye color, height, skeleton) or not, to get the very most out of their educations or to just pass, to taking care of their planet earth . . . and even life-threatening events that you cannot imagine now.

In her book The Witches (about the Salem witch trials), Stacy Schiff describes the dilemma you and your children currently face: “We all prescribe to preposterous beliefs; we just don’t know yet which ones they are. We often have been known to prefer plot to truth; to deny the evidence before us in favor of the ideas behind us; to do insane things in the name of reason . . .” Critical thinking will allow your youngsters to evaluate and question ideas instead of accepting them at face value. Most of all: they will need to evaluate their own ideas, knowledge, and beliefs. They certainly will need some critical-thinking skills in order to manage the future.

Don’t Wait until Their Brains are Fully Developed

Don’t think you need to wait until your children’s brains are fully developed to start teaching critical thinking. Sure, the part of the brain (prefrontal cortex) that is most often thought to be responsible for critical thinking is not completely developed until children pass through adolescence, but if you wait that long, you’re going to have some big trouble teaching your
children to become effective critical thinkers. Critical thinking is not some big, wrapped-up skill that you teach in a formal course in high school; instead it has skills or parts that fit together to make your children effective thinkers.

Brian Christian and Tom Griffiths, authors of Algorithms to Live By ask, “Why are four-year-olds, for instance, still better than million-dollar supercomputers at a host of cognitive tasks, including vision, language, and causal reasoning?” If your children can outthink a million-dollar supercomputer, you can certainly teach some thinking skills.

The skills presented in this book start early in the life of your youngsters and are taught by family. As the children become older and start school, teachers join with parents to impart these skills. There is no skipping a skill; because all skills are important . . . each is essential but not sufficient by itself to cause your youngsters to become critical thinkers.

But teachers already teach the skills to critical thinking

Teachers get a great deal of flack when they are accused of not teaching critical thinking. Certainly, they may not teach each and every single component required for thinking critically at one time, but you can rest assured that they teach many of the skills for critical thinking and have been teaching these for years and years as your children advance through the grades.

But if anything is missing in what they teach, it would be the teaching of an objective attitude regardless of past learning, beliefs, and biases. And children must be taught to recognize that their thinking habits must be scrutinized. It is as important for them to question their own thinking as it is to question the thinking of others. That requires learning to be open to new information, seeking the best answers while knowing that these best answers can change. Parents are also remiss in teaching this step.

Then there’s another component: your children should be able to reason effectively with the information they have, to put information in order to clarify the problem, the evidence, the arrival at a thoughtful conclusion while resisting the kneejerk tendency to jump to a conclusion. They must identify exactly what the problem is and what is implied if it is not stated. They need to note the evidence for the problem, scrutinize it for accuracy, and seek additional information if necessary to see if it is valid. In other words, they must identify the evidence before arriving at a conclusion. If there is no explicit evidence they must use implicit information to make an inference about the validity of the premise. That’s sometimes called “connecting the dots.” Parents, how often do you use these skills with your children? Some parents do and some don’t. All should.

Baby skills

Parents, you actually teach some components of critical thinking before your babies get a year old. You’re getting your children ready for school from the time they are born to the time they pass through the schoolhouse doors . . . and you should keep it up until their brains reach full maturity. When your babies are born they have 100 billion neurons. As a result of environmental stimulation, these neurons make trillions of connections. If connections are not used, their brains are “pruned” of those not used. So parents should take advantage of the critical period for developing some cognitive skills. Keep in mind the children have excitable brain activity like no other they will experience when they get older. This excitable brain makes learning come faster and last longer. Suzanne Bouffard, in her book Most Important Years, says
that children’s brains develop at a much faster rate during pre-K years than at any time in their lives. Parents, don’t miss a chance to help your children to grow the foundation for a lifetime of higher learning.

*The first step toward critical thinking with your children is baby skills*

Yes, you use baby skills when you start teaching the first instructional skills of critical thinking. Children learn concepts right away. They learn all kinds of *concrete* concepts, like chair, table, car, dish, wagon, and fork. They also learn a number of *abstract* concepts like what’s big and little, yes and no, fast and slow, and up and down. Since they like to be picked “up” and will let you know it, it follows that they then learn concept rules (how concepts are arranged) like “up,” “me,” and “pick.” This later comes to be “Pick me up” and is a grammar arrangement of verb, pronoun, and preposition. You can see they are learning grammar before they are three years old.

*There’s no reasoning without words—at least for most humans.*

Parents are also responsible for teaching words, and most of us use words to reason. Just try reasoning without using words. The more words your youngsters know, the better they will be able to learn to read. With more words, they can more clearly express their thinking. The more words they know, the better they will know what you are saying and be able to understand their teachers when they start to school.

*It’s never too late to start teaching critical thinking*

Critical thinking in college students can be improved by their taking a single course in college that focuses on a few skills of critical thinking. So it’s never too late, but children could be more effective thinkers if the teaching had started earlier. Parents should join hand in hand with teachers in showing their children not to jump to conclusions and not to see all things as black or white with no shades of gray. By working jointly, both demonstrating critical thinking and both providing evidence for their views, then all skills can be effectively taught to older children. (Spouses, don’t give up on your mates; it’s never too late.)

**Many Skills to Critical Thinking**

There are *two main types of skills* that are used in critical thinking. One is the *learning of basic skills* and the second is *using what you have learned* in an effective manner. The first one is called *knowledge* and the second is called *metacognitive skills* or simply “using your head.” These latter skills are used for monitoring and evaluating your thinking as you use the knowledge you have acquired.

**Skills to knowledge**

Knowledge is all that information and experience you have stored in your memory banks. This includes information you may have learned in school like parts of the nervous system, the structure of the human cell, or how to add and subtract, but it also includes experiences—like how to please your sister or get the dog to bark. You use this knowledge in problem solving and critical thinking.

Your children learn this information by learning the basic skills of concepts, facts, comprehension, practice, and how to make corrections. These are similar to study skills, only many of these skills can be applied directly to critical thinking and reasoning. These skills will help fill your children’s heads with all kind of information that can be used to think critically.
Your children just can’t reason unless they have some information to reason with. You can’t determine the reasons for WWI without knowing something about WWI.

**Skills to using your head**

Think of knowledge and using your head to be like a computer. You put information (knowledge) like names, addresses, ages, experience, or education into the computer. Once the information is entered, you are able to use the information to answer questions like, “What is the average age and education of the people whose information has been entered?” You could even ask how many people are named “Bob” or “Betty.” Your brain is just like that; you need information in your head so you can now use it to solve problems and think critically.

**Skills to reasoning**

There are many kinds of reasoning (cause-and-effect, deductive, inductive, classification, and so on) and these can be taught in early elementary school and by parents. Try this example with a preschool child. Show them a coin and tell them you want them to figure out which hand the coin is in. Emphasize it will be in one hand or the other. Put your hands behind your back and let the child guess which hand the coin is in. If the child guesses the wrong hand, they will obviously pick the other hand. It “stands to reason” that if the statement is true that the coin is in one hand or the other, then if it is not in the left hand, it therefore must be in the right hand. This is called *reasoning by elimination*. Children learn from experience to do this kind of reasoning early in life. When children make mistakes, they can reason by comparing their answer to a correct example. This called *reasoning by example* and can be taught to children in elementary school.

**Skills Based on How Your Brains Work**

This book provides parents and teachers with some methods for teaching children the skills to critical thinking, and with the learning of these skills, they can make better decisions about learning life skills. These skills are based on how your children’s brains work when they learn and retrieve information, when they are upset, when they problem-solve, and when they dream, to mention a few... and the rules given to you in this book are based on contemporary brain science. Yes, that’s right! You can learn how to change your children’s brains. We know a stimulating environment can alter your youngster’s brains, that teaching certain skills can change their brains, and that even prompting them to change their moods can change their brains and their mood. We’ve come a long way in learning the connection between learning and brain anatomy.

**So You Don’t Have Time to Teach Critical Thinking**

So you don’t have time to teach critical thinking to your children—even though it is one of the most important cognitive skills you could ever teach them; it could even be a life or death skill. Your children will be faced with a world tittering on a nuclear disaster, extreme weather
events never seen before, and our democracy threatened by social media. Robots already control our thinking on your smartphone so they can increase the time you use these electronic devices.

If you ever want to leave a legacy to your descendents, teach your children critical thinking so they can pass the skills and abilities on to their children and their children will pass it on to their children and thus this will be passed on for generation to generation. If you want to leave a legacy that could last decades, you will find that the teaching of critical thinking will be appreciated through the generations. What a legacy!

Alright, parents you have family responsibilities and perhaps a job and have difficulty just getting everyone off to work or school each day. Okay teachers, you have all those objectives to meet and tests to measure them that you are overwhelmed. If you don’t meet the standards, your salary might be in jeopardy, maybe even your job.

But parents and teacher can still teach critical thinking when doing the house or yard work, or going to church, or the movies, or the lake for a swim or even while teaching algebra or social studies. All you need to do is model (demonstrate) how to think critically with the tasks you already do. Then have your children demonstrate that they have learned from your demonstration and make corrections if necessary. That’s all there is to it . . . except you must first know and be able to demonstrate the skills to critical thinking.

This is a self-help book

Consider that you want to teach your children how to become critical thinkers and to reason logically. Just how are you going to teach them unless you know the skills yourself? Assume you are going to teach your child how to tie her shoes. How could you do this is you don’t know how to tie your own shoes. You couldn’t. Consequently, this book is for parents and teachers as well as for their youngsters. In order for you to become competent in critical thinking, you must do everything yourself that you will ask your students to do. You will not passively read this book, but like your children, you will answer questions, capture the essence of what has been presented, organize your thinking for better comprehension, and practice for improving long-term memory. That means that you, as parents and teachers, must also be active learners as you move through the skills to critical thinking. Have a note pad or some way of taking notes because you will need it starting with the next chapter.

Summary/ Essence

A summary should contain the important concepts and the supporting concepts of a passage. The summary should also contain the essence—the most important or basic parts of a reading or lecture. They are different. A summary may list all that was covered while the essence is something you believe is the heart and soul of the reading. It’s important to you! An example will be given in the next chapter including how to make notes.

Be Precise and Concise

Make certain your notes are precise and concise. Children should select the most important parts of the chapter and make notes. I have found an inverse relationship between the length of students’ notes in my classes and how they do on an exam. When they write too much they have more to review, the more likely they are to make mistakes, and the longer it takes for them to study. You will see another example of precise and concise notes in the next chapter.
**Reward Yourself**

There are parts of your brain that are sometimes called the pleasure centers. When you stimulate these areas, you are likely to repeat what you did to stimulate them in the first place. When rats who were trained to press levers to get food or water found that they could press a third lever to get an electrical stimulation of their brain’s pleasure centers, it was so stimulating that they would ignore the food and water until they collapsed from pressing the level that stimulated their brains.

Now, intelligent machines have used the same method of stimulating your brains to get you and your children “hooked” on using their machines. Take for instance the smart phone apps. If technicians want to increase the time you use your smart phone, all they need to do is catch you using the phone and give you something that stimulates your pleasure centers. Does it work? Yes, indeed. The average number of times you or your children check your phones every day is 47, and the average number of hours spent on your smart phones is five. (It is also known that excessive use of electronic devises decreases learning in school. Does your child average five hours studying each day?)

What they give you and your children to keep you looking is *either positive feedback, social approval, or a sense of progress*. What if this same technology is used in this book to keep you studying in the most effect way so you can become a super teacher of critical thinking to your youngsters? Wouldn’t that be more beneficial than heavy use of your cell phones?

In the next five chapters, you will record your progress and will receive some positive feedback for how you are *performing against a standard*. You can try this technique with your children too.

(The words *children* and *students* are used interchangeably in this book.)
Chapter 2
Learning Basic Comprehension

Have you understood everything that has been presented in this book so far? If the answer is “yes,” you were probably using your comprehension skills. These are the same skills you will need to teach your children. However, if you did not understand everything you have read so far, you will need to learn a few comprehension skills—like trying to understand every sentence; if you still do not understand every sentence, then reread (and think about the sentence.) If you still don’t get it, you should go back and look at the context or heading; and if you still don’t understand, look for examples. If your mind is still blank, you should then go to the internet, use a dictionary, encyclopedia, and books, or consult someone who might be able to explain the text. Doing that would be good start on comprehension, but there’s more. Don’t forget: comprehension is a skill that is essential for thinking critically. You’re going to read about basic reading comprehension in this chapter and deeper comprehension in the next chapter. Please have a notebook handy for taking notes as you read this chapter and start using the steps mentioned above.

Key Words:
Schemata
Instructional level
Meaningful
Key words

(Key words are words you should know before or learn as you read this chapter. Look for them as you read what follows.)

Q: What are the most important first steps for critical thinking?
Q: What are the rules for teaching the first steps in comprehending?

This is Important! It’s Going to be on Your Test

Your teachers may have told you time and time again, “This is important; it’s going to be on your test!” That’s why you have questions at the beginning of each chapter in this book. The questions tell you what look for as you read each chapter because they are important. They’re going to be on the test. When you finish reading each chapter, you should be able to answer the questions. This works—you’ll learn more—so please do it.

Comprehension is necessary to think critically
Assume you are given a legal document charging your client with destroying a person’s property. His attorney has sent you a copy of this legal document. You need to use the rule for critical thinking as you read it like identifying exactly what the problem is, what is the evidence, is the evidence base on objective data, and what are the qualifications of the personal making the
Parents often are faced with this situation: Mr. Smith: But my child’s problem is that he reads something and can’t answer the questions about what he has just read. How can I correct this? It’s not like correcting a math problem where I just show him how to do it.

Parents are befuddled by this situation all the time. How in the world do you teach children to comprehend what they just read or what you have just told them? Many parents think that children just need to be smart or mature enough to do this. However, reading comprehension can be taught by a few simple steps that will be discussed in this chapter and the next.

Comprehension is a concept that is difficult to define because it’s an abstract concept. Here a definition of comprehension that will be used in this chapter: To comprehend means to understand or to construct meaning with what has been presented and to connect the presentation with one’s prior knowledge. It means finding the essence of what has been read or said and being able to make an inference from information that is not explicit. Wow! That’s a lot of big words. What exactly do these words mean? You may tell youngsters you want them to comprehend, construct meaning, or find the essence, but they may not understand what these words mean. These are abstract concepts. So you need to also teach these concepts and provide examples that they can understand. Look for examples of comprehension as you read this chapter.

A First Step for Comprehending

Here are some simple rules to follow to improve reading comprehension; some of these steps would also apply to hearing a presentation. They may sound simple, and they are, but they can have a profound influence on your children’s learning if they will use them. Attempt to get your students motivated to follow the steps for comprehending. Can you do it? You tell them how important it is and that they learn a great deal more. Persuade them, prompt them, and even beg them if you must. Will this work? Let’s see if it works on you as you, too, should follow these steps if you are going to be a good model for your children.

- Try to understand every sentence in a reading assignment. (When you come to words you do not know, use your laptop or other electric device to look up the meaning of the word.) Sometimes you will need to concentrate on several lines or even a paragraph in order to understand a concept.
- Reread the sentence when you do not understand it.
- Look for examples to help to understand the concept or the context of what has been said.
- Look for captions and titles as a clue for what is being said.
- If the sentence or paragraph is a long one, break it into parts and try to understand one part at a time.
  Look up every word you do not know in the sentence or paragraph.
• If these steps do not work, ask for help. This is important. You learn by asking questions, so ask.

If you are now asking yourself, “Is that all there is to it?” Well, the answer is “not by a long shot,” because your kids can follow these rules until they are blue in the face and still not have success they need. What follows are some of the reasons why they may have difficulty and how to make the reading material so your children will succeed.

**Before You Start**

Before you start demonstrating (demonstrating is the same as modeling) to your children how to comprehend, there are several steps you should take to make certain that your students have the prerequisites to comprehend the “material” you intend to teach them. Your children’s background, vocabulary, and reading ability all have an impact on comprehension.

**Figure 1**

Types of Skills that influence reading comprehension

Before Starting Check:

- Background
- Vocabulary
- Reading
- Instructional level

Before you start trying to teach comprehension, make certain your students have the background, vocabulary, can read, and the material is at an instructional level.

**Background**

Background is having experiences similar to what is being studied. An auto mechanic may have a background with several Hondas, but when a new model comes out, the manual may allude to new concepts he has never seen before. Because of his past experience with similar cars, he is able to figure out what the new parts do. A person with a background in ancient literature might not do as well. One way to help your children understand their reading material is by selecting the *key words* in the material and reviewing them with your students so they will better comprehend the lesson.

**Vocabulary**

We already know there is a strong relationship between children’s reading comprehension and their vocabulary. As their vocabulary goes up, so does reading comprehension and vice-versa. Hart and Risley, in their book entitled *Meaningful Differences,*
report that, by age 3, children from homes of professional parents have heard 30 million words compared to children of working-class parents who have heard only 10 million words. Children of upper class families spend 60 percent less time watching television than lower class families and have more quality verbal interactions with their parents. All this results in a larger vocabulary for upper-class students and more success in school over the working-class children. So you must make certain there is a match between your students’ vocabulary and “the material” that you are using for instruction. In general, the larger the children’s vocabularies, the better their comprehension.

**Example of fit between the student’s vocabulary and the reading assignment**

Assume a high-school teacher plans to use a short story by Vincent Sheean about Winston Churchill for an English Literature class. After determining the reading rate is average for her students, the teacher then needs to check to see if students have a sufficient vocabulary to comprehend the story.

First, the teacher should peruse the story looking for words that might be too difficult. Some words are more important than others, like “valediction,” which is in the title. If the teacher had already read the story, the most critical words (key words) for comprehending could be identified. If any students have difficulty with 10 to 15 percent of the words, the teacher should teach the meaning of the words before having the students read the selection. Here’s an example of how a parent might do this:

**Parent:** When you read from your book, you read at a rate of 92 words per minute with only a couple of errors. Nice going! Now we need to see if you know the meaning of several words in the story.

**Parent:** Tell me the meaning of arduous? (Reads word in a sentence.)

**Student:** I think that means something outrageous.

**Parent:** Alright, what is the meaning of the word aesthetic? (Reads word in a sentence.)

**Student:** To be a good athlete.

This illustration shows that although reading rate and error rate are acceptable, students can still have difficulty understanding a reading assignment simply because they do not understand many of the words in the assignment.

**Example of vocabulary for preschool children**

Parents and preschool teachers should help children develop vocabulary skills. Children love to be read to at an early age. Such classic stories as Snow White and the Seven Dwarfs, Cinderella, and Beauty and the Beast are all-time favorites of children. But take a look at a Little Golden Book vocabulary in the first paragraph of the first page of Beauty and the Beast. Such words as prince and castle are used in the first sentence and are not known by most three-year olds who none-the-less love this story. (These are key words that your children should know or you should teach them early in the story.) In the second paragraph the words of shelter and repulsed were used, and this story goes on and on with advanced words. These are important words, but your children might be overwhelmed if you try to teach each and every word as you read the story. Substitute words that mean the same that the children might know, and after reading the story several times, start to explain some of the words while not slowing down the story too much.
**Reading**

A child’s reading skill level is another issue that may present difficulty during comprehension exercises. It is obvious that if your children cannot read the material, they will not be able to understand what is presented. Before starting to teach how to comprehend, check your pupils to determine if the material you are using is too difficult for them to read at an instructional level. You can do this by photocopying a page of their reading book. Use the photocopy to record their reading accuracy. Don’t count the small stuff like omitting the past tense or plurals or inserts (you can do this later). Have them read for two minutes while noting their errors. Ideally, they should miss no more than 10 percent of the words in order to maintain a high level of motivation, although a lower level of errors would be desirable.

**Questions within a Lesson**

It may surprise you to know that answering questions within a section can increase your comprehension. That’s why I include questions in every chapter of this book. Answering questions within a lesson doubles your learning compared to answering no questions or answering questions at the end of a lesson. Why? Ask yourself if you can remember everything in this book so far—well enough to answer questions correctly right now. Compare this with describing how you might read about a single concept within a lesson (like Questions with a Lesson) and immediately answer a question about that concept. When you answer questions immediately, you forget less while increasing the chances of answering correctly. Thus, learning improves.

Now, you are going to get a within-lesson question. This experience will be worth more than “big money” to you if you can learn to answer these questions within the lesson because, not only will you learn, but you can also use these same techniques to help your children learn. Please answer the following question. It’s important. Don’t answer by thinking of the answer, but by either writing the answer in a notebook that you will later use for making summaries or by at least moving your lips to whisper the answer to yourself. Later, you will be shown research that proves how moving your lips when answering increases learning.

Let’s start with a very easy question. You can answer this with a single sentence.

Q: Why do questions within a lesson produce more learning than questions at the end of a lesson? (You can look back to find the answer.)

**Schemata in Your Brain**

Key Feature:

- Schemata is like a mental map that hangs together by association.
- Preexisting schema guides our attention to selective or ignores information.

Schemata have categories. (The category of professional athletics has subcategories of basketball, baseball, and football, and there are still more relations between schemata like skills, younger than 40, and older than 50.) If you are given key features of a concept before reading about the concept, you will comprehend the paragraph more effectively than if you have not read the key features. This programming is often called “advanced organizers.”

Schemata are like a mental map that hangs together by association. When watching a tennis match, different parts of the match go to different parts of your brain, like the speed of the
ball to one area, noise of the crowd to a different area, and the color of the ball to yet another. Scientists tell us that we store information into schemata in our brains. Schemata have categories and subcategories. There may be a category of birds with a subcategory of birds of prey or those that swim or fly and so on. The categories are also connected so that information in one category may be linked to a different category, like birds being linked to living things. By using brain imagery, scientists have discovered that when you are faced with a problem, they can see your brain move into various sections of the brain that contain information that would help find the solution.

When trying to remember, associate, or understand newly presented information, your brain might look for information in a category such as “hot” and recall “hot potato” or “hot stuff” or even “hot dogs.” On the other hand, your brain might move to another category such as “cold” which is the category of opposites, such as “up and down,” “big and little.” The category of cold also has several instances that could be recalled, like “cold feet,” “cold hands,” and “cold-hearted.” Note that these are all body parts, so the brain even has information organized in those subcategories. The brain more or less starts looking for association, moving (connecting) from one category to another as well as looking for information in a category when trying to make associations. (Dreaming is thought to enhance the distribution of memories in different parts of your brain.) Youngsters with limited experiences in life are certainly at a disadvantage for comprehension due to lack of schemata.

Q: How do schemata work?

*Parents Can Use the Same Techniques that Effective Teachers Use*

Just how are you going to teach critical thinking to your children? Well, since we know what effective teachers do to produce learning in their students, based on achievement tests, compared to ineffective teachers, why shouldn’t you use what effective teachers use? You should. Later, you will be told how to utilize a problem-solving coping model of teaching where you show how to problem-solve and correct your errors as you go, but let’s start with a more basic approach that is sometimes called explicit direct instruction (hereafter called direct instruction) and is based on some simple steps for teaching your students everything from facts to comprehension, as well as problem-solving and critical thinking. Before you use the problem-solving coping method of instruction, you need to get some basic information into your students’ heads by using direct instruction. You do this by:

- Showing and telling them how to solve the problem.
- Have them show and tell how to solve the problem. (Having them tell is very important as they will then be able to process and remember the information more effectively.)
- Give immediate feedback and make corrections.

Q: The three basic steps for teaching are very important so you should try to connect these with a schema (something in your brain.) Simply start by writing the steps. If you do not remember the three direct instruction steps, look above for them, try to remember them, and write, say, or whisper (moving lips) the steps if necessary. You be surprised how well you remember them by doing so.
First, get their attention

Before you can effectively use the basic rules for teaching, you need to get your students’ attention . . . and hold it for the entire session. Some people use attention signals to get their pupils’ attention. To do this, some teachers say, “Mary, please pay attention,” or “John, listen to me,” or “Teresa, look at this!” or “This is going to be on the test,” or even, “I’m going to show and tell you how I want you to think about this.” Some use silence . . . just stopping until the class gets attentive. And a few shout. All of these may work, but it may drive you crazy if you have to do them time and time again during a teaching session. Success is one of the most effective ways to keep your youngsters engaged and attentive. Contingencies, if used correctly, can sometimes be employed to obtain attention and keep it.

It also helps if you are given key features of a concept before reading about the concept, as you will comprehend the paragraph more effectively than if you have not read the key features. Again, this programming is often called “advanced organizers.”

Basic Rules for Comprehending

Rule 1 Demonstrate reading comprehension

In order to teach your children how to comprehend, you’ll need to obtain a match between the material and the information in your students’ brains. Then you’ll demonstrate, get your students to respond, give feedback, and make corrections if necessary. Listed below are several things you need to model for them in order for them to comprehend their reading assignments:

- Model trying to understand every sentence. To start, you can pause after every sentence or so to think about the sentence. Demonstrate how you will tell yourself that you intend to understand every sentence like, “I’m going to concentrate and keep my attention on every sentence in this section. I must focus. I need to monitor what I’m thinking about and recognize when I’m not concentrating.”
- Model how to re-read a sentence when you do not understand. Use the dictionary or electronic device when some words are new or confusing. (Think out loud with such statements as, “I don’t get this one. Let me slowly read this again.)
- Model how to reread the past few sentences when you do not understand.
- Model how to look ahead for an example that will help you understand. (“Well, I’ve reread the sentence, and I still don’t understand. What else can I do . . . I’ll look ahead for examples. They always help.”)
- Model looking for the definitions and breaking the sentence into parts for analysis, if necessary. You can do this by saying out loud. “Let me think about this. The sentence says that positive reinforcement does not have the same features as negative reinforcement. First, I better find out what is meant by feature. Then I better see if I can find the features for positive reinforcement . . . and then I can find the features for negative reinforcement. That way, I might be able to understand the sentence.”
- Model how to find help in the dictionary or internet or model how to ask for help if you cannot find the meaning of the sentence after doing all the above. Google Home, Amazon Echo and other similar electronic devices can give children definitions of words, how to pronounce words, and even spell them in a second.
Rule 2 Require student responses

Ask your students to demonstrate the understanding of every sentence. You might do this by starting with some selected paragraphs instead of a complete text. That way you can start with something that the youngsters can easily understand and gradually make the assignment more demanding. To determine if they understand a sentence, ask them to paraphrase the sentence—to put it in their own words. When they come to a sentence they do not understand, prompt them to read the sentence again and use the other strategies.

Active and passive learning

Learning can best take place when you get your students to actively respond. Active responding would be to say, write, point, compute, etc. These are things you can see or hear. Passive responses, such as thinking, visualizing, self-rehearsing, etc. would be examples of passive learning, and unfortunately that’s how many students respond in many schools and tutoring situations today. Parents and some teachers may do all the showing and telling as the students passively listen . . . if they are listening at all. Even if they listen, active responding on the part of the pupils is necessary for maximum learning.

Keep in mind that it is important for you to make some kind of overt or covert response when reviewing this chapter if you are to understand and retain the information. According to a study at the University of Montreal, students were asked to view a series of words on a screen. One group was asked to think the words (covert practice), a second group asked to move their lips as they thought of the words, and a third group was asked to tell someone the words. Telling the words resulted in the most learning. This is just another piece of evidence showing that you should make some kind of overt response to better remember this chapter.

Example of active learning

Assume that you are teaching punctuation by showing and telling how to put an apostrophe (‘s) on the end of a word to show ownership. Using the sentence, “Larry’s book is gone.”

Parent/Teacher: You place an apostrophe before the “s” on the end of the word “Larry” which shows Larry’s ownership of the book.

Parent/Teacher: Now you tell why this is done as you show me how to punctuate the word “Bill” so it shows that he owns a bicycle?

Student: I use an apostrophe by putting it after Bill and before adding an “s.” (Student does this.)

Rule 3 Give feedback and make corrections

Feedback for comprehension could be such words as “good,” “go on,” “not exactly there.” Corrections could also be prompts like, “You said work was not actually moving something. Now, in this example did someone try to move or accomplish something?”

Feedback can range from short feedback like saying “right,” to prompts, like “what else?” or correcting misconceptions, providing important ideas, and asking for summaries.

Keep in mind that feedback and corrections with these kinds of questions should help pupils reason and think—to use past information to help answer the questions, to evaluate their
answers, and to make coherent summaries that allow the information to be meaningful so the content will be stored into memory.

**Reasoning**

Reasoning has been found to be an important skill in becoming an intelligent thinker. When participants are taught to use inductive logic, they are able to improve their predictions of real-life events. In this series of chapters, several types of reasoning will be shown, so keep in mind that reasoning cannot be taught in one easy lesson. Parents should continue to seek opportunities for the use of reasoning and teachers should include reasoning in their curriculum.

In this chapter, *criterion reasoning* could be used with the steps for comprehending. *Criterion reasoning* is making a comparison to established criteria. For example, if your children have difficulty with understanding what they are reading have them compare what they have done to the steps for comprehending. They would ask themselves:

- “Did I really try to understand the sentence?” If they answer no, they could then ask themselves,
- “Did I reread the sentence?” They would try to reason whether they had missed a step(s) and how this may have affected their performance. Encourage them to ask themselves how they could find out why they had difficulty understanding the passage. Select several topics with rules or steps for subtraction, division, or grammar, like punctuation and verb tense. You can even use a task, like having them follow the rules for putting together a rocking chair. Have students compare the rules they have completed to what they should have done. The more topics with which you do this, the better your students will understand that they can use reasoning (instead of trial and error) to determine what went wrong.

**Parents, Teachers, and Children Together**

By working together, parents, teacher, and children can teach and learn the skills to critical thinking much more effectively than they can alone. Parents and teachers: if you are going to be effective in teaching the skills to critical thinking, you must know these steps. How could you demonstrate using the skills if you do not know them? Here are some suggestions that will help you learn the skills yourself while teaching them to your children:

- Use a notebook to record your answers to the questions in each chapter and make notes on such things as the three steps for teaching and the steps for comprehending mentioned in this chapter. You can start now before reading more chapters. You can also find more information on this activity and even a letter to parents about participating at: [http://ed.fnal.gov/trc_new/sciencelines_online/fall97/activity_inserts.html](http://ed.fnal.gov/trc_new/sciencelines_online/fall97/activity_inserts.html).
- As soon as your children can write, have them write in a notebook the steps for critical thinking, like the steps for comprehending mentioned in this chapter. They can start using the steps for comprehending as soon as they can read proficiently.
- Teachers, you may work with your Parent Teacher Organizations to start a communication program with parents about skills they can teach at home. Copies of the basic rules for teaching or the basic rules for comprehending could be used with examples from this book.
Example of questions at beginning of chapter.
Use your own words to answer the questions. You’ll learn why in the next chapter. If you answer these questions you will likely determine the essence of this chapter and there will be no need to preservative on an essence answer.
Q1 The steps for basic comprehension are to try to understand every sentence, read the paragraph or sentence again, look up words you do not know, read the paragraph before and after the paragraph you are trying to understand, look for examples and if you still cannot understand, ask for help.
Q2 The basic rules for teaching after getting the children’s attention is to first demonstrate by showing and telling, have your students show and tell and them give feedback and make corrections.

Example of questions within a paragraph or section
Before you start to teach comprehension of a subject, make certain your students have the background with the words in the paragraph, they can read the material at an instructional level, and key words should be explained before reading the section.
Q1 Why do questions within a lesson produce more learning than questions at the end of a lesson?
   Well, if you have just read something and immediately asked a question about what you read, you will remember it better after reading only a short section than you will at the end of the large section. Since you have increased the likelihood of answering it correctly, you will experience success and success increases the chances that you will answer the question correctly again.

Q2 Schema can be maps with connections of what you have learned or categories for storing information that you have learned. Many experts believe that in order to remember something, you must connect that new information with something you already know. So if you are given the definition or meaning of a key word before reading a section, as you read the section you will have something to connect the new learning with.

Example of Essence
The answers above to the questions more or less explain the essence, but you could add whatever you think get to the heart of the section like it is very important for you and your students to record their answers in their notebooks to the questions and to take notes that reflect the essence.

Reward Yourself
Questions
As you may recall, you were asked to answer questions presented to you at the beginning of this chapter when you finished reading the chapter. Did you do it? You can do it now and then note how well you did this according to a standard:

Questions at the beginning of the chapter
5 points for writing the answers to two of the questions given at the beginning of the chapter.
3 points for moving your lips or whispering the answers to two of the questions at the beginning
of the chapter.
1 point for thinking of the answers to two of the questions given to you at the beginning of the chapter.

Questions within the chapter
5 points for answering at least three questions within the lesson by writing the answers in your log book.
3 points for answering at least three questions within the lesson by whispering or moving your lips as you said the answers.
1 point for answering at least three questions within the lesson by thinking of the answers.

Essence
Remember, the essence is the most important part of the chapter, not necessarily a summary. By answering the questions given at the beginning of the chapter, you have probably covered most of the essence and it is not necessary to repeat these. But add whatever else you considered to be most important.
5 points for writing the essence for the chapter.
3 points for saying out loud or whispering the essence.
1 point for thinking of the answer to yourself.

Compare how you performed as compared to a standard:
Outstanding: 13-15 Excellent! You should feel really good about this.
Good: 12 Good; this should give you confidence that you can do this.
Fair: 9 You’re hanging in there and have the idea. Now go for the big numbers!

Keep your cumulative record.

Manage your Learning
What you have been asked to do is a form of self-management where you set your own goal, like making at least Good on answering the questions at the beginning and within a lesson. Not that someone else sets the goal for you. You also have a plan to get to your goal, like answering questions after reading the chapter, instead of reading a couple of chapters first. And you will determine what kind of reinforcement you will give yourself. It may be just pride for reaching your goal or you may decide to call a friend and talk a little longer than usual. If you follow these steps you will have a better chance of teaching your children these same steps.