

Building Critical Thinking Skills by Building Cognitive Functions

Efficient Cognitive Functions

Input Level

1. Focus and Perceive (The more data that goes in via our senses, the more info we use.)
2. Systematically search (Systematically approach new objects or information.)
3. Use labels (Without a name for something, we can't think about it.)
4. Know where you are in space (Right, left, front, and back are critical concepts.)
5. Be aware of time (How much, how old, how often, sequence of events.)
6. Conserve constancies (Decide what characteristics stay the same even when changes happen. What attributes must remain the same for an object to retain its identity?)
7. Collect precise and accurate data (The right information to get the right answer.)
8. Use more than one source of information (Keeping two ideas in the mind at the same time assists in comparing and higher order thinking.)

Elaboration Level

1. Define the problem (What am I to do? Problem, what problem?)
2. Search for relevant cues (What is relevant to the problem?)
3. Spontaneous need to compare (Seeking similarities and differences.)
4. Recall and use several pieces of information (Using info for long term-memory.)
5. Understand reality (Understand cause and effect relationships.)
6. Use logical evidence (Does this make sense?)
7. Abstract thinking (Moving away from the concrete; visualizing.)
8. Use hypothetical thinking / "iffy" thinking (If this is true, then what else must be true?)
9. Test the hypothesis (How can I see if this is true?)
10. Develop problem-solving strategies (Creating frameworks for solutions.)
11. Make a plan; think forward (State the steps and reasons.)
12. Form categories (Understanding relationships to categorize objects; applying conceptual labels: red, blue, green = colors.)
13. Summing up: see the BIG picture (What is the main idea? How many things are there?)

Output Level

1. Consider another person's point of view (The mind version of experiencing orientation in space physically — "Gee, it's different when I am in your position!")
2. Project virtual relationships (I can see things that aren't there: four dots can be a square; two women can be cousins.)
3. Stick to it – perseverance! (Don't ever, ever, ever give up! Overcome blocking.)
4. Just a moment... Let me think! (Avoiding trial-and-error responses.)
5. Give a thought response (Can I communicate clearly with just the right vocabulary?)
6. Use precision and accuracy (Do it right, take your time, say it or complete it accurately.)
7. Visual transporting (Copy accurately from the board or source.)
8. Show self-control (I think before I speak or act; controlling impulsivity)

Aristotle & Socratic Questions for Mediated Learning

Ask these questions when beginning a lesson and addressing a problem. These support the Cognitive Functions of Reuven Feuerstein and are the foundation of Equipping Minds.

Collecting	Processing	Expressing
<p>What or who do you see, hear, feel, taste, touch, and smell?</p> <p>What can you visualize or imagine in your mind?</p> <p>What is the name of what you see or are thinking?</p>	<p>What am I to do?</p> <p>Problem, what problem?</p> <p>What do you need to figure out?</p> <p>What is relevant to the problem?</p> <p>What is needed, and what can be ignored/omitted?</p>	<p>What does the other person believe and why?</p> <p>How does the other person feel?</p> <p>Can you imagine how you would feel in their position?</p> <p>How would the other person want to be viewed and treated?</p>
<p>Where are you starting?</p> <p>Do you have the correct information and materials?</p> <p>What parts do you need, and what order will you need to follow to make the finished product?</p>	<p>What is similar?</p> <p>What characteristics are different?</p> <p>Consider: number, color, shape, size, direction, position, feeling</p>	<p>Have you thought through what you want to say or write?</p> <p>Are your words relevant to the situation?</p> <p>Is your language clear to the audience?</p>
<p>What do you know to be true, or what is constant and does not change?</p>	<p>What different categories do you see?</p>	<p>Do you need to take a break and attempt later or tomorrow?</p>
<p>What is to your right?</p> <p>What is to my right?</p> <p>If you are facing in this direction, what is to your right? Left? Front? Back? East? West? North? South? Northwest? Southeast?</p>	<p>How are these related to each other?</p> <p>Ask: What is your plan? What are the steps you will follow and the reasons?</p> <p>Avoid trial and error! Have a plan.</p>	<p>Perseverance! <i>“Continuous effort—not strength or intelligence—is the key to unlocking our potential.”</i> —Winston Churchill <i>“You will never do anything in this world without courage. It is the greatest quality of the mind next to honor.”</i>—Aristotle</p>
<p>When do you see this happening – past, present, future?</p> <p>How long did the event occur?</p> <p>In what order did it happen?</p>	<p>Does this make sense?</p> <p>If this is true, then what else must be true?</p> <p>Are there different possibilities?</p> <p>How can you see if this is true?</p>	<p><i>“If we all did the things we were capable of doing, we would literally astound ourselves.”</i> —Thomas A. Edison <i>“Many of life's failures are people who did not realize how close they were to success when they gave up.”</i> Thomas A. Edison</p>

Building Critical Thinking Skills by Building Cognitive Functions