Foundations of Critical Thinking
Critical Thinking

What is It?
Why is it Important?
How Does it Improve Teaching and Learning?
LOGIC
OF

Instruction

Content

Student Thinking
John Henry Newman

A man may hear a thousand lectures, and read a thousand volumes, and be at the end of the process very much where he was, as regards knowledge. Something more than merely admitting it in a negative way into the mind is necessary if it is to remain there. It must not be passively received, but actually and actively entered into, embraced, mastered. 'The mind must go half-way to meet what comes to it from without.'
"He had learned how to pass examinations by ‘cramming’; that is, in three or four days and nights he could get into his head enough of a selected fragment of some scientific or philosophical or literary or linguistic subject to reply plausibly to six questions out of ten. He could retain the information necessary for such a feat just long enough to give a successful performance; then it would evaporate utterly from his brain, and leave him undisturbed."

On what George Amberson had learned in college, from the Magnificent Ambersons (1918)
Circle – Dots
“The result of teaching small parts of a large number of subjects is the passive reception of disconnected ideas, not illuminated with any spark of vitality. Let the main ideas which are introduced into a child’s education be few and important, and let them be thrown into every combination possible.”
“The child should make them his own, and should understand their application here and now in the circumstances of his actual life. From the very beginning of his education, the child should experience the joy of discovery. The discovery which he has to make is that general ideas give an understanding of that stream of events which pours through his life.”
Typical student beliefs.

- Learning should be fun.
- Learning should be easy.
- If I do what the teacher says, that’s all that matters.
- All I need to do is the absolute minimum to get an A.
- Learning means doing what the teacher says.
- I shouldn’t have to waste my time learning anything I can’t use.
- Cheating to get by is fine because all I need is the piece of paper (the college degree) to get a job anyway.
- I believe that learning biology is a waste of my time.
Three Types of “Knowledge”

- Inert Information
- Activated Ignorance
- Activated Knowledge
Critical Thinking

Something you add onto everything else

Rather

The Way You Do

Everything You Do
“Science is built of facts the way a house is built of bricks, but an accumulation of facts is no more science than a pile of bricks is a house!”
Content is:

- Understood by thinking
- Constructed by thinking
- Modified by thinking
- Applied by thinking
- Questioned by thinking
- Assessed by thinking
Therefore, to learn content students have to *think* it into their *thinking* using their *thinking*.
Critical thinking provides the tools students need to think through content.

Critical thinking is a system of thinking that opens up all other systems of thinking.
What is Critical Thinking?
What is Critical Thinking?

To be clear in writing:
1) state
2) elaborate (In other words…)
3) exemplify and/or illustrate

Write your understanding of critical thinking, in this form:

1) Critical thinking is ….
2) In other words…
3) For example …
Critical Thinking is a *self-directed* process by which we take *deliberate steps* to think at the *highest level* of quality.
Substantive Learning

- Read It
- Write It
- Hear It
- Draw It
- Teach It
- Apply It
Critical Thinking

Something you add onto everything else

Rather

The Way You Do

Everything You Do
Thinking that analyzes thinking

Thinking that assesses thinking

critical thinking: disciplined, self-guided thinking aimed at living a rational life.

thinking that combats its native egocentricity

Thinking that develops within itself intellectual habits
Why Critical Thinking?

Work in pairs. *Concepts and Tools* mini-guide. Person A, Person B. Critically read page 2 together, using the following method:

a. Person B reads one sentence aloud, then states in his/her own words what has been read. In other words, person B interprets the sentence.

b. Person A then either agrees with the interpretation or offers a different interpretation, adds to the interpretation, etc.

c. During this process, do not critique what you are reading, merely interpret.
d. Person B then reads the second sentence, and the same process occurs.

e. Person A then takes the next two sentences, one sentence at a time, reading, interpreting, getting feedback from person B, using the same method.

f. Take turns reading and interpreting using this method, each person reading and interpreting two sentences, then switching roles, until the entire page is read.
**Red Thinking:**
Higher order executive functioning. Thinking that analyzes, assesses and improves green Thinking.

**Green Thinking:**
Instinctive, automatic, spontaneous thinking. Unconsciously guided
Green Thinking

Unconscious Mixture Of High Quality
And Low Quality Thinking

Spontaneous  Subconscious  Uncontrolled
Impulsive    Self protecting  Unanalyzed
Reflexive    Self validating

Includes ideas that are valid, as well as nonsense, confusion, stereotypes, prejudices. The key is that we cannot distinguish the difference between high and low quality thought in green thinking mode.

Green thinking goes without assessing itself.
Red Thinking stops and assesses itself before going forward.

Disciplined  Seeks the truth  Self assessing
Critical Thinking  Self correcting  Probing

In red thinking mode, we actively work to eliminate prejudices, biases, dysfunctional thinking from our thinking. We actively work on our thinking.

We rigorously apply intellectual standards to our thinking.
Your Thinking

can either

Trap You

Free You

Hold you Hostage within uncritically held beliefs

Open your mind to new ways of thinking
LOGIC
OF
Instruction
Student
Thinking
Content
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The Critical Thinking Mind = The Educated Mind
To Learn Anything, We Must Actively Bring It Into Our Thinking
The Test:
What is Critical Thinking?

To be clear in writing:
1) state
2) elaborate (In other words…)
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Write your understanding of critical thinking, in this form:

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What do you know about thinking?

What do you know about the connection between thinking and learning?
What have you learned about how you think?

Did you ever study your thinking?

What information do you have, for example, about the intellectual processes that occur as your mind thinks?
What do you know about how to analyze, evaluate, or reconstruct your thinking?

Where does your thinking come from?

How much of it is of “good” quality?

How much of it is of “poor” quality?
Are you, in any real sense, in control of your thinking?

How do you control your thinking?

Do you know how to test it?

Do you have any conscious standards for determining when you are thinking well and when you are thinking poorly?
Have you ever discovered a significant problem in your thinking and then changed it by a conscious act of will?

If anyone asked you to teach them what you have learned, thus far in your life, about thinking, would you really have any idea what that was or how you learned it?
Why concern ourselves with thinking?
Whenever we are dealing with human life, we are almost always dealing with thinking.
Thinking is the way that the mind makes sense of the world.
There is no way to understand anything except through thinking.
Thinking tells us:

- what there is
- what is happening
- what our problems are
- what our options are
- what threatens us
- what is important
- what is unimportant
- who our friends are
- who our enemies are
- what our “history” is
- who we are
- who loves us
Thinking determines:

- what we learn
- how we learn
- what we think is important to learn
- what effort we should expend
- what we think is true
- what we think is false
- how things should be viewed
- whether our learning is of high or low quality
- whether our learning is deep or superficial
Everything we know, believe, want, fear and hope for, our thinking tells us.
Most of the world’s problems are caused by problems in human thinking
Consider these problems

- Humiliation
- Hunger
- Poverty
- Homelessness
- Torture
- Murder
- Rape
- Global Warming
Think of some problem behavior your students engage in.

See if you can identify the thinking that leads to the behavior.
When we place thinking at the center of instruction:

- we approach students as thinkers
- we continually seek to connect the content we are teaching to the thinking of students – illuminating how and why the content is important to them as thinkers
- we design instruction so that students have to think their way into and through the content.
Thinking is at the core of human life and human problems.
Therefore thinking must be at the core of the curriculum.
Think for Yourself: 1-1
Beginning to
Think About Your Thinking

- To begin to think about your thinking, make a list of any problems you believe currently exist with your thinking. Try to be as explicit as possible. The more problems you identify the better. For each problem you identify, complete the following statements:

  1. One problem with my thinking is...
  2. This is a problem because...
  3. If I adequately addressed this problem, the quality of my life would improve in the following ways...
Think for Yourself: 1-2
Critique Your Thinking

Consider your thinking in these domains of your life: at work, in personal relationships, in teaching, in intimate relationships, as a reader, as a writer, in planning your life, in dealing with your emotions, in figuring out complex situations. Complete these statements:

- Right now, I believe my thinking across all domains of my life is of ______________ quality. I based this judgment on _________________.

1. In the following areas, I think very well…
2. In the following areas, my thinking is OK, not great, but not terrible either…
3. In the following areas, my thinking is probably of low quality…

- List at least three areas for each of the above.
Critical Thinking Is Not New

In 1605, Francis Bacon, wrote the first book on critical thinking, The Advancement of Learning, in which he documented various forms of human irrationality and the need to establish new habits of thought through education.

Socrates 2,400 years ago discovered by a method of probing questioning that people often could not rationally justify their confident claims to knowledge.
The Quality of My Parenting

is given in the thinking that I do about my Parenting
What is critical thinking?

*Concepts and Tools Guide*

- Silently revisit page 2 – then discuss.
- p. 3 – then discuss.
- p. 6
- p. 7
- p. 8-9
- p. 11
- p. 13-15
- p. 16
- p. 19
- 21
Robert Reich, former secretary of labor for Bill Clinton

Reich identifies four components of the kind of thinking that highly paid workers will increasingly need to master:

1. Command of abstractions
2. Ability to think within systems
3. Ability to evaluate ideas
4. Ability to communicate effectively
The Underlying Principles of Critical Thinking

The Standards
- clarity
- accuracy
- relevance
- logical
- breadth
- precision
- significance
- completeness
- fairness
- depth

must be applied to

The Elements
- purposes
- inferences
- questions
- concepts
- points of view
- implications
- information
- assumptions
- Fair-mindedness

as we develop

Intellectual Traits
- intellectual humility
- intellectual perseverance
- intellectual autonomy
- intellectual integrity
- confidence in reasoning
- intellectual courage
- intellectual empathy
- intellectual perseverance
- intellectual autonomy
- confidence in reasoning
- intellectual courage
- intellectual empathy
- Fair-mindedness