
*Measuring Critical Thinking:
Lessons Learned in a 4-Year
Project*

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Examples of Typical Concerns

Educational Testing Service Report in 2007
on *America's Perfect Storm*:

- An “uneven distribution” of essential skills
 - A “perfect storm that’s threatening American prosperity and tearing at our political cohesion.”
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Hypothesis

- Societies get the behaviors they reward—even if they don't want those behaviors.
 - What seems to be happening: Part of our students have been rewarded with good grades
 - for plagiarizing
 - and for methods that **no** one, no matter how smart or persistent, could make work
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If the hypothesis is correct and students are doing things that guarantee failure

- How do you measure to identify these students?
 - How do you put the responsibility on the student—where it belongs—but provide aids so students can succeed?
 - How do you measure their work and aid continuous and incremental improvement so students change how they do their work?
 - How do you do all of the above while reducing the demands on instructors?
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2 Major Parts to the Presentation

Part 1: What the *Follow Your Brain* method shows about students

- Brief background and examples
- Activity when each of you will do 1 of 3 examples and we'll discuss each example as a group

Part 2: What resources are available to you as links

- Brief background on the method and examples
 - A guide to trying the method, with links to examples
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Quick Clarifications and Credits

- The *Follow Your Brain* method:
 - is **not** the only way—but it may show you some things that you will want to apply to *your* way.
 - is still in development—but some of the resources for that method may compliment *your* way and therefore you may want to stay informed about, and participate in, its development.
 - The essential partners in the *Follow Your Brain* method are the students who invested in this project and who provided the examples.
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Part 1 of the Presentation: Explanation to Students on the *Follow Your Brain* Method

Comparing your work to information that you and I both have (the textbook) means I can tell:

- if you read accurately and completely,
- if you analyzed the facts and therefore also organized them,
- and if you wrote on *your* own.

Full explanation provided to students

Example 1 – Does It Look OK?

- A 1647 law in Massachusetts required that every town support a school. Many communities failed to comply, but a modest network of public schools emerged as a result. The Quakers and others operated church schools. In some communities widows or unmarried women conducted "dame schools" by holding private classes in their homes. (p. 88)

But let's look in context.

Example 2 – Does It Look OK?

- In Massachusetts, in 1647 a law made it required that each city help pay for a school. Although many cities failed to do this, a small number of schools for the public started. The Quakers and other religious groups ran schools, and in some cities women who were single or widowed ran "dame schools" in their houses. (p. 88)

But let's look in context.

Examples 3 and 4 – Do They Look OK?

- Example 3
Public schools started to develop in Massachusetts because of a mid-1600s law requiring each town to support its own school (p. 88).
- Example 4
Massachusetts developed "a modest network of public schools" as a result of its 1647 law requiring each town support its own school (p. 88).

But let's look in context.

Example 5 – Does It Look OK?

- In September of 1913, in Ludlow, Colorado, the United Mine Workers started a strike to defend the workers of the Colorado Fuel and Iron Company, run by John Rockefeller, who had a monopoly over the oil industry. This strike lasted around 8 months until they were forced to stop shortly after a violent riot broke out between National Guardsmen and strikers. As many other strikes had started, employees were upset and frustrated with cheap earnings for hard work. In this case, the workers were also having to deal with harsh security men. The National Guard was called out by Rockefeller to help stop the havoc and resume control. The strikers had set up a camp with tents, and when the Guard came they fired upon the colony. "Five strikers and one soldier were shot, and two women and eleven children died in the flames that broke out in the tents." This became known as the "Ludlow Massacre" (p. 592) - But let's look in context.
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Comparing with the Source Shows Problems that Preclude Critical Thinking

- Example 1: Passive writing because the student didn't write the words at all. It's plagiarized.
 - Example 2: Passive writing because it copies another's sentence structures and organization.
 - Example 5: Passive reading because of such habits as
 - Not knowing basic terms and not looking them up
 - Not knowing basic concepts in the discipline and not paying attention to the cues in the source that could have revealed those concepts
 - Misreading facts
 - Misreading sequence and thus cause and effect
 - Not checking assumptions
 - Omitting facts contrary to assumptions
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Wineburg on Comprehension

- With these students, there seems to be a failure to try to comprehend the text—to be responsible to hear what the textbook author is trying to communicate. These students may not know they aren't really understanding.

In *Historical Thinking and Other Unnatural Acts: Charting the Future of Teaching the Past*, Sam Wineburg notes that reading comprehension often becomes what is measurable by testing, such as “the ability to respond correctly to multiple-choice questions that presume an unambiguous right answer.”

Before You Try the Examples, About the (p.) and the Follow Your Brain Method

- President Theodore Roosevelt did not oppose the growth of big business, but he also believed that business must act in the public interest and, if it did not, that the federal government should act (p. 608). To deal with corporations, he proposed a new department, the Department of Commerce, which was to include a Bureau of Corporations with the power to show which corporations were acting in the public interest (p. 609). Also, firms he "disliked, including Standard Oil, would be disciplined by federal lawsuits." On the other hand, he made "private agreements" not to bring "anti-trust prosecutions" with companies he believed acted in the public interest, such as United States Steel, if they agreed that the federal government could "examine their financial records" (p.620).

Roosevelt pushed for regulation of an "unpopular" industry, the meat-packing industry (p. 609). *The Jungle*, a novel by the socialist Upton Sinclair, showed the filthy conditions in this industry and led to public outrage. Partly to reduce any appeal of Sinclair's socialism, Roosevelt pushed for federal inspection of meat. During Roosevelt's administration, regulation of over-the-counter medicines also occurred because of problems publicized by muckrakers and tested in experiments by the Department of Agriculture (p. 619).

Before You Try the Examples, An Alert about **3 Myths Revealed by Student Explanations**

- Myth 1

A student copied immense amounts of words **exactly** as written in the textbook into her notebook, but she didn't put any quotation marks around those words. She then typed those words from her notebook exactly into her paper—again without the symbols (“”) used in American writing to indicate that the words are some person's intellectual property. She felt it was not plagiarism since she had written the words in her notebook first.

Before You Try the Examples, An Alert about **3 Myths Revealed by Student Explanations**

- Myth 2

Previously an instruction began not with *Exact words from the source* but with the word *Quotations*. I replaced the word *Quotations* with that phrase because a student said that she learned in high school:

a) that a quotation means a *speech* (such as the Gettysburg Address) and a speech is the **only** text that requires “” marks in a paper

b) that it was fine to copy **exact** words from a source—without “” marks—into a paper that she presented as her own work as long as she wrote where she got those words.

Before You Try the Examples, An Alert about **3 Myths Revealed by Student Explanations**

- **Myth 3**

Many students say similar sentences to this one. “I couldn’t have plagiarized. I made A’s on all my papers.”

Looking at an Example on Your Own

1. Look under your chair for 1 of the 3 examples.
 - First, a copy of what a student wrote
 - Second, copies of the textbook pages that the student used as the source of evidence
 2. Read over the student's work.
 3. Then place it side by side with the pages from the textbook that the student used.
 4. Take about 5 to 7 minutes. Just see what you see.
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Examining Each Example

- Example of Student 1's Work
 - Example of Student 2's Work
 - Example of Student 3's Work
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Part 2 of the Presentation: Overview of the *Follow Your Brain Method* and Guide

- Stages in the method
- Checklists of criteria on evidence and on writing that serve both to guide students' work and measure it
- Prerequisites and use of brief assignments to help students improve incrementally (but not exhaust their teachers)
- Student resources and online support, including quizzes to assess and to tutor

[Do It Yourself Guide with Samples and Resources](#)
