

How to Think About Critical Thinking Skills

Using Content-Based Instruction to Achieve Your Ultimate Goals: Critical Thinking and Problem Solving

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Agenda

We will

- Examine the challenges in teaching literacy skills. As defined by society today, literacy involves critical thinking, problem solving, and a deep understanding of what is read.
- Explore concepts related to critical thinking and problem solving using examples of text and strategies.
- Reflect on teaching methods, models, and strategies that promote critical thinking and problem solving.



Learning to Be Literate in Today's World

Challenges

- We can't teach everything!
- Information is coming at a fast pace—led by technological advances that are changing all the time.
- Gaps in achievement are present—technologically savvy students vs students who do not have access to those resources.
- The goal is to motivate, engage, and inspire students to learn and to be life-long learners in spite of these challenges.

Polling Question:

How important is background knowledge in teaching critical thinking skills?

- A) extremely important
- B) important
- C) not that important
- D) not relevant

Teaching in Today's World

The power of prior knowledge

Reading and learning
builds knowledge.
That builds schema: a
framework or conceptual
understanding of a
system, process,
or pattern.



What is critical thinking?

Critical thinking is the art of analyzing and evaluating thinking with the purpose of informing and improving thinking. Critical thinking involves a complex thought process that includes

- Being an active participant
- Having an open mind
- Being able to reason
- Finding a focus
- Analyzing
- Questioning
- Comparing
- Reflecting



Questioning: Types of Questions

- **Literal** require simple recall or memory of what is read or learned.
- **Inferential** require answers that reflect one's use of schema and/or reading between the lines.
- **Critical** require careful analysis and making judgments using known criteria or data.
- **Creative** requires inventive uses of data or interpretations, solutions, improvements.

Exploring Concepts

Polling Question: Should students be sponges or prospectors?

Do you want students to be sponges absorbing information or prospectors "panning for gold nuggets" of information?

- A) Sponges absorbing information
- B) Prospectors panning for gold nuggets
- C) Neither
- D) Both

Exploring Concepts

Polling Question:

What should students “mine” from this?



NEWS DEBATE WR

BIG TOP BAN

Do animals belong in circuses?

There's a showdown brewing at the greatest show on Earth. Bolivia has outlawed the use of animals in circus performances, and officials in the South American nation aren't clowning around! They say all Bolivian circuses must stop using animals by July.

Some people applaud the law. They say animals should not be forced to work and that circus creatures are **confined**, or caged, in tight spaces when they travel. However, other people say that many of the four-legged performers are cared for by animal experts. Plus, they point out, circus animals entertain millions of fans.

Should animals perform in circuses? *WR News* student reporters Michael Tobin and Emily Jue showcased the issue.

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Exploring Concepts

Polling Question:

What should students “mine” from this?

- A) I like to see animals in the circus.
- B) I understand why people disagree about animals being in the circus.
- C) I want to find out more, study both sides, and weigh the evidence.
- D) Animals do not belong in the circus.

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Exploring Concepts

Why is critical thinking so hard to teach?

- Students have to understand multiple perspectives and know what they are before they can think critically.
- Students need domain and content knowledge and practice in putting that knowledge to work.
- We can teach students meta-cognitive strategies, but they can only take students so far. Critical thinking isn't a skill that once learned can be applied to everything with equal aptitude.
- Research says that students must be taught explicitly when to think critically in context with subject matter.

(Based on research from article by D. Willingham, 2007, American Educator.)

Exploring Concepts

Example of nonfiction text: Grade 2

FACT & OPINION

[Lesson Plan](#)
[More Practice](#)

Should You Be Afraid of Sharks?

Sharks are mean and scary!—That's what a lot of people think. But one scientist thinks people should not be scared of sharks. Dr. Peter Klimley is a scientist who studies sharks. He says sharks would rather eat seals and sea lions than people. Seals and sea lions have a lot of fat on them. Eating that fat gives sharks energy. Klimley says people's bodies do not have enough fat to fill up a shark.

Sharks should be afraid of people! Each year, people kill about 65 million sharks. Some people eat shark meat. And some sharks die because they live in water that is polluted.

There are at least 340 kinds of sharks. Klimley says that at least seven kinds of sharks are endangered. The number of those sharks has dropped in the past ten years. People should help protect sharks.

Clues

- (1) This is an opinion.
- (2) This is a fact. You can prove it's true.
- (3) This can be proven. It's a fact.
- (4) This is an opinion.



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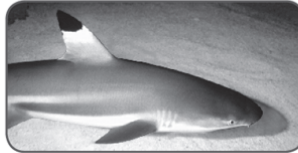
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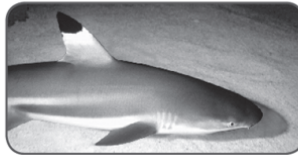
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I Am a Critical Thinker!

I am a critical thinker about _____ .
First, I absorb like a sponge.
Then, I pan for gold nuggets like a miner.

Things I absorb like a sponge

Facts:

Thoughts:

Other opinions:

Things I pan like a miner

My questions:

My thoughts:

My opinions:

Exploring Concepts

What is problem solving?

Problem solving involves determining options for action using information, interpreting data, making improvements.

An effective problem-solver

- Takes problems one at a time
- Studies the problem
- Becomes informed
- Determines and evaluates options
- Adopts a strategy
- Acts or waits
- Monitors and revises as needed



Example of nonfiction text: Grade 3

Gasping for Air

Kids living in areas with air pollution¹ are more likely to develop asthma than kids who live in other areas. Asthma is an illness that makes breathing difficult. About 9 million children in the United States suffer from asthma.

Scientists got these facts when they did a recent study. More than 3,500 kids, ages 9 to 16, who lived in California took part in the study. About half of the kids lived in areas that had lots of air pollution. The other half lived in areas that had clean air. All the children played outdoor sports.

After studying the kids for five years, doctors found that about 260 of them developed asthma. Most of those kids lived in towns that had lots of air pollution. Doctors say that breathing too much polluted air caused the asthma cases.

A California health official said the study shows the need to do more to prevent air pollution. For example, cars can be built to run on cleaner fuels. In the meantime, doctors say that children should still play outside but only on days when air pollution isn't bad.

¹air pollution: air made impure or unhealthy by harmful substances

Terms: Methods/Models, Strategies, Skills

Methods and models refer to the ways we teach or the philosophy we follow.

Strategies refer to the tools we teach students so they can perform independently.

Skills are acquired abilities that demonstrate proficiency or the accomplishment of tasks.

Methods and Models

Which of these are new to you?

- A) Inquiry-based learning projects
- B) Constructivism
- C) Collaborative learning
- D) Learning cycle
- E) Questioning techniques
- F) Daybooks
- G) Text comparisons
- H) Phonics instruction/Inventive spelling



Methods and Models

- **Inquiry-based learning projects** are driven by students. Instructors coach learners to construct questions, research answers, and evaluate their learning. Students accept an invitation to learn and readily engage in the exploration process.
- **Constructivism** proposes each learner constructs knowledge for himself individually and socially constructs meaning as he learns.
- **Collaborative learning** involves joint intellectual effort by students, or students and teachers together. Usually, students are working in groups of two or more, mutually searching for understanding, solutions, meanings, or creating a product.
- **Questioning techniques** enable students to direct their learning. Learning something through discovery will lead to improved memory, self-motivated and engaged learning.
- **Learning cycle** provides active learning experiences through the five E's: Bybee's (1997) five steps of Engagement, Exploration, Explanation, Elaboration, and Evaluation.
- **Daybooks** are journal-like paperbacks that help students become active, critical readers. Students are immersed in quality literature and use the reading-writing connection to enhance critical thinking and problem solving.
- **Text comparisons** teach children to evaluate resources and the information they offer readers.
- **Phonics** instruction automatically teaches many aspects of formal logic through decoding and encoding. **Inventive spelling** shows how children solve problems.

Example: First-Grade Problem Solver

Question:

I was reading a book about our country's presidents. I accidentally tore a page. What should I do now?

Answer:

You can tell the teacher you accidentally ripped the book and you will not get in trouble because every body makes mistakes.

Strategies

Which of these are new to you?

- A) Prospecting for gold nuggets
- B) Asking the right questions
- C) Look for ambiguity
- D) Think-Pair-Share
- E) Reading with a pen
- F) Technology tools
- G) Self-questioning
- H) Semantic mapping (graphic organizers)

Strategies and Definitions

Prospecting for gold nuggets: Students use the prospecting metaphor to determine the important points in a passage and their connections to and thoughts about those points.

Asking the right questions: Students practice finding the “right” questions to inquire about and learn from a text.

Look for ambiguity: Students learn to look at or read something and think what else it might be or mean.

Think-Pair-Share: Students construct meanings by making personal connections to text, pairing with a partner and discussing them, then sharing with the whole group.

Reading with a pen: Students learn how to mark, highlight, and use sticky notes to think actively while reading.

Technology tools: Students use search engines and online resources to seek out alternative perspectives and resources on a topic.

Self-questioning: Students practice monitoring their comprehension and pushing their thinking by composing questions before, during, and after interacting with texts.

Semantic mapping: Students use a graphic strategy to bring meaning to content and concepts and to clarify complex information.

Strategy

Problem

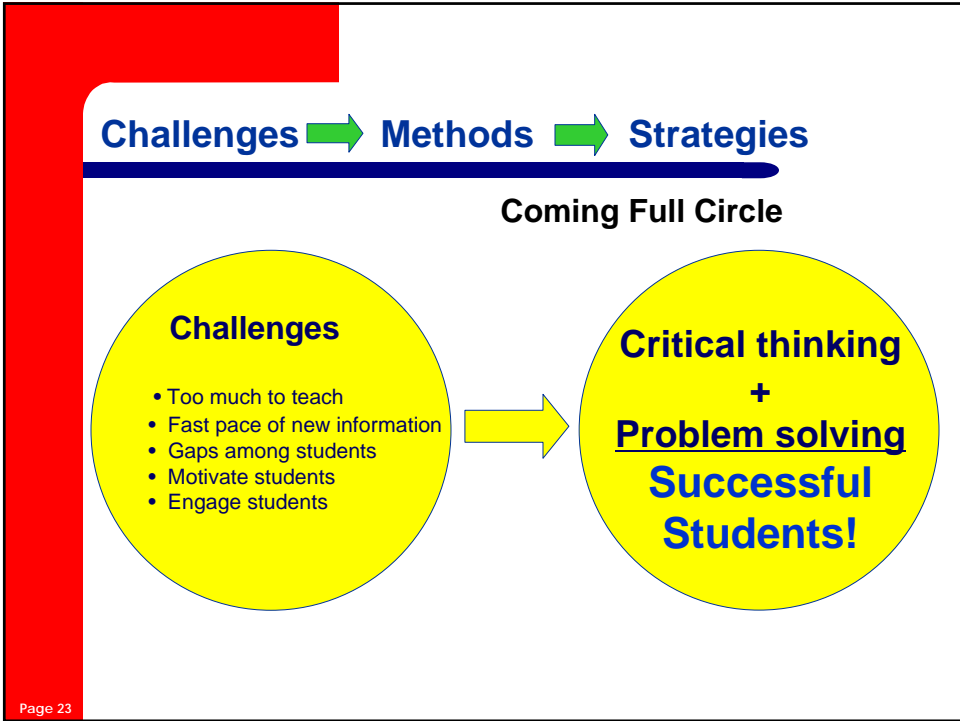


Possible Solutions



Solutions That Worked





Summary

We can achieve our goals!

Improve student performance through

Critical thinking

AND

Problem solving

Success = Life-long Learners

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Thank you for participating in this webinar!

“Education is not the filling of a pail, but the lighting of a fire.”

—William Butler Yeats

Presenter

Extending the Conversation

Speaker: Cindy Lassonde, Ph.D., is an associate professor at the State University of New York College at Oneonta. Cindy teaches undergraduate and graduate courses in literacy and special needs. She is a veteran teacher with more than 20 years of experience teaching at the elementary level. She is also an author, editor, and an active member of the International Reading Association. Cindy believes in the importance of integrating critical thinking with reading and writing and does so in her research and teaching.

You can reach Cindy Lassonde on Twitter at http://twitter.com/Cindy_Lassonde.

You can e-mail Cindy at: lassonc@hotmail.com.

Share your experiences, ask questions, extend this conversation about critical thinking so we can help each other.



References

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Strategy

Problem



Possible Solutions



Solutions That Worked

