



EXPLORING HIGHER ORDER THINKING AND REASONING ROUTINES

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<https://bit.ly/ExploreHOTR>.



Session Objectives

- Participate in an overview of Higher Order Thinking Routines
- Engage in a dialogue about Higher Order Thinking Routines
- Provide feedback about ways to expand the use of Higher Order Thinking Routines

Course Map

This Course:

CER Webinar Series

Presenters:

Barb & Darren

includes

○ Community Principles

Partnership Principles
Active Engagement

○ Learning Rituals

- Have a place to record your thoughts
- Unmute to share
- Ask questions and participate in chat

○ Performance Options

Use chat or unmute to participate
Watch the recording later
Contact us with additional questions
Attend more sessions

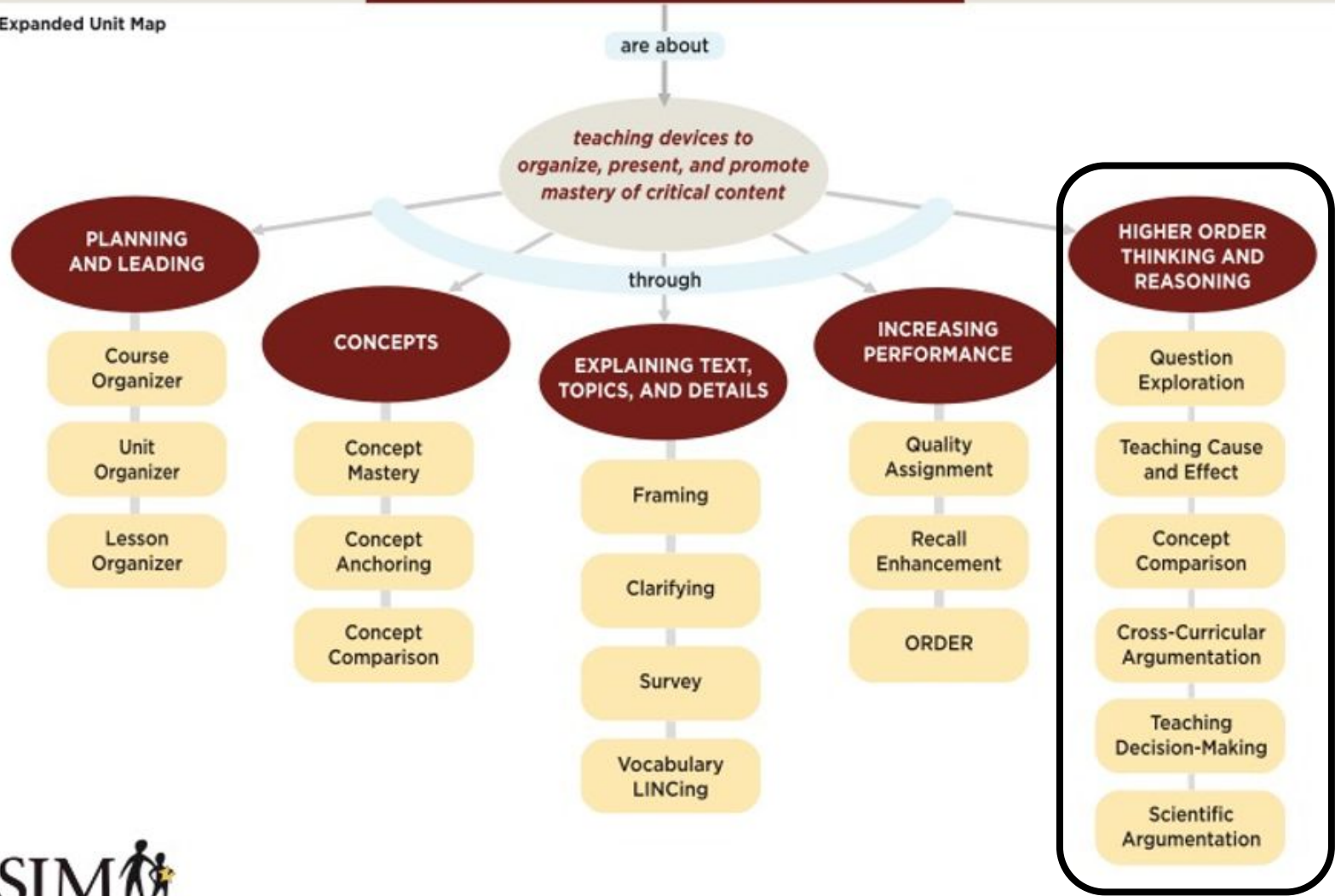
○ Critical Concepts

~Understanding Reasoning
~Types of Reasoning
~Answering questions that include different kinds of reasoning.

What are Higher Order Thinking Routines?



Expanded Unit Map



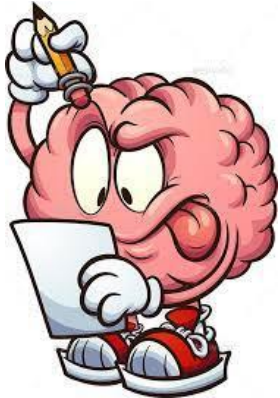
Let's Demystify REASONING

- ❑ WHY is understanding reasoning **important**?
- ❑ WHAT are **types** of reasoning?
- ❑ HOW do we understand and answer **questions** that require different types of reasoning?

Why is understanding reasoning important?

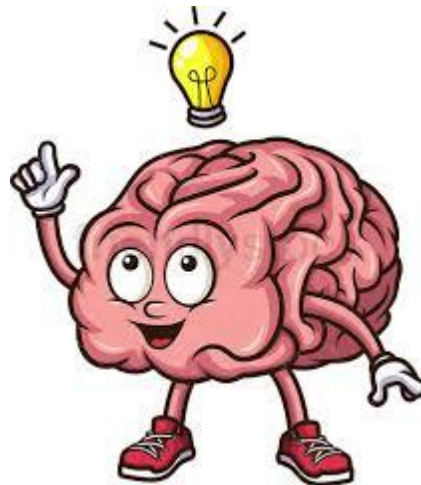
- Response to national standards
- Performance on assessments
- Learning in the modern world
- Use in the real world, everyday life
- Job requirements
- Recognizing misinformation

Why is understanding reasoning important?



What motivates students to want to learn more?

**Why does this matter?
So what? Why am I learning this?**



Don't Be a Leap Frog

- Because **I** believe it.
- Because **we** believe it.
- Because **I want** to believe it.
- Because **I have always** believed it.
- It's in **my selfish interest** to believe it.



What are the types of higher order reasoning?

1. Explaining a main idea
2. Tracing causes and effects
3. Comparing and contrasting
4. Making a decision
5. Identifying a claim with an argument

Other related terms such as Critical Thinking and Problem Solving often require use of one or more type of higher order thinking and reasoning.

Demystifying Higher Ordering Thinking & Reasoning

I think what you are saying is

- Explaining a main idea

We had three inches of rain, so the river will rise.

- Tracing causes and effects

We should buy this brand of cookie because it is cheaper than this brand.

- Comparing and contrasting

Let's discuss two suggestions for where to go on vacation.

- Making a decision

Here's a report from the CDC with data and expert commentary that proves the value of vaccines.

- Identifying a claim with an argument

How do we Deconstruct Questions?



How do we deconstruct questions?

- **Simplify** – remove extra information
- **Synonyms** – use words with similar meanings
- **Paraphrase** – put into your own words
- **Break apart** – isolate those sentences that present the question.

What is this question *really* asking?

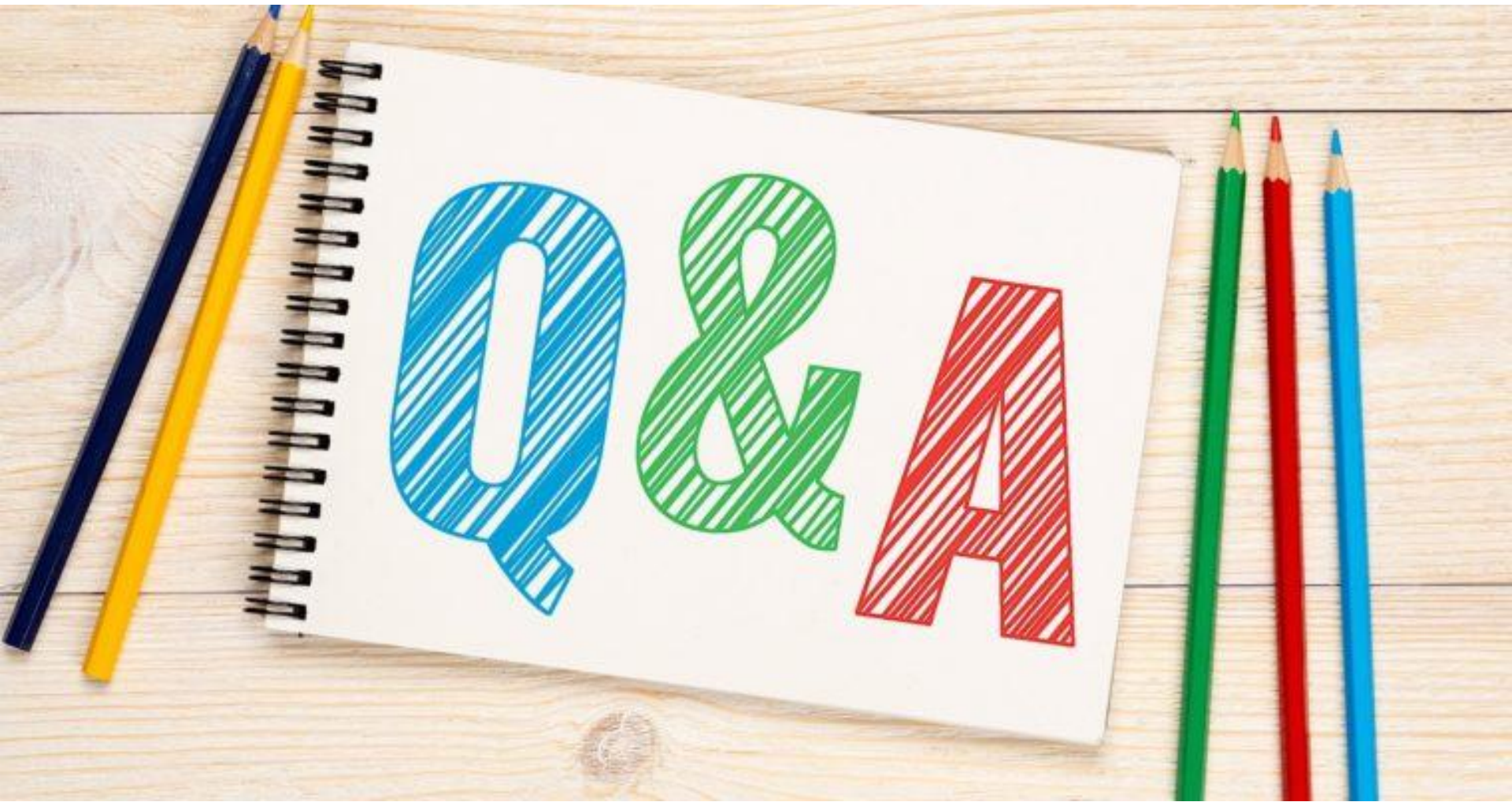
Deforestation has reached levels of about 40 million acres each year. More than 50 percent of the rain forests have been cut. About 2% of the rest of the rain forests are destroyed in each succeeding year. What brought about deforestation, and what could result?

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MORE COMPELLING QUESTIONS

- <https://padlet.com/pyggqsmqkcq/tt2ndjwmpu630pp8>







Presentation located at:
<https://bit.ly/ExploreHOTR>

How does this image relate to today's discussion?



Additional Slides

- The slides which follow provide additional information about Higher Order Thinking Routines.
- They may be used in your presentations.
- Please feel free to modify them to fit the needs of the group you're working with.

Options for Co-constructing Digitally

in classroom or in Zoom Room

- CORGI
- Tech-Enhanced CER Instruction

Content

- Based on **student needs**, school demands, and learning standards.

Enhancement

- Employs visual devices.
- Explicitly states key content language.
- Embeds “linking” steps

Routine

- Follows an instructional sequence “Cue-Do-Review”
- Teachers and students use regularly

Let's try it! Select one question. Type in the chat what HOTR CER would help ~~students deconstruct the question.~~

Word Bank: **Concept Comparison, Cause and Effect, Question Exploration (main idea), Argumentation, Decision-making**

1. What are **similarities and differences** in independent and dependent variables?
2. How did the war of 1812 **affect** the United States?
3. **How** did Jefferson **argue** his political points?
4. Explain **qualitative and quantitative** data.
5. What is the **difference between** exponential and logistic population growth?
6. How do mutations in the cell cycle **lead to** uncontrollable cell division (cancer)?
7. **How** is light energy converted to chemical energy?
8. **Take a position** on whether the President of the US should

What types of questions do we need to deconstruct (take apart)?

HIGHER ORDER THINKING AND REASONING QUESTIONS such as those that ask students to:

- Explore and explain an important **Main Idea**
- Trace **Causes and Effects** of an event or idea
- **Compare and Contrast** two or more event or ideas
- Make a **Decision** about choosing among options.
- **Analyze a Claim and Argument** and its evidence, reasoning