

# Critical Thinking in Education

Teaching not just “How” but “Why”



*“You are  
the ones  
who are  
going to  
be caring  
for the  
ones that I  
love”*





EVIDENCE

BASED

MEDICINE

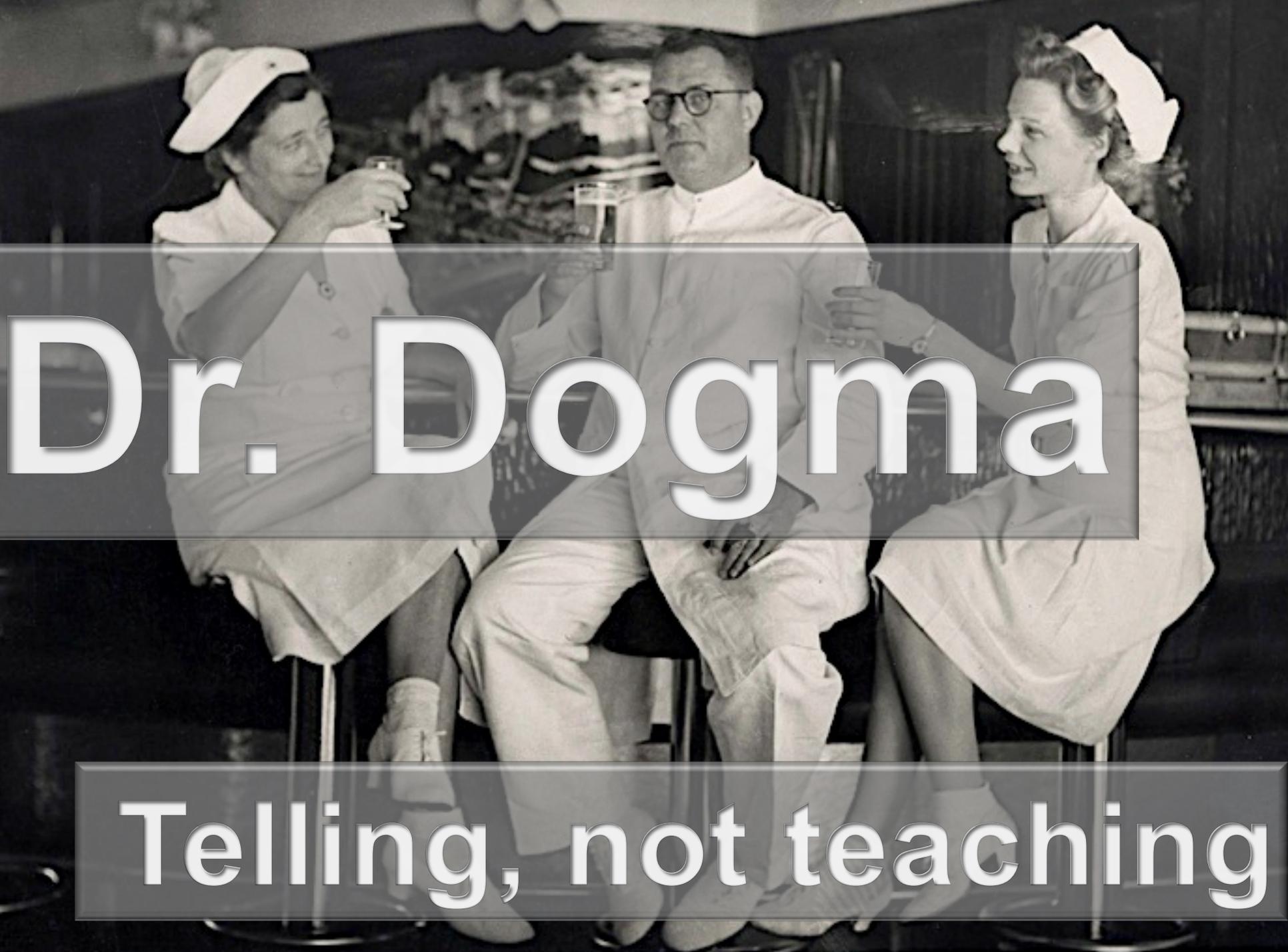
**SCIENCE**

**ART**

# Patient



# Centered



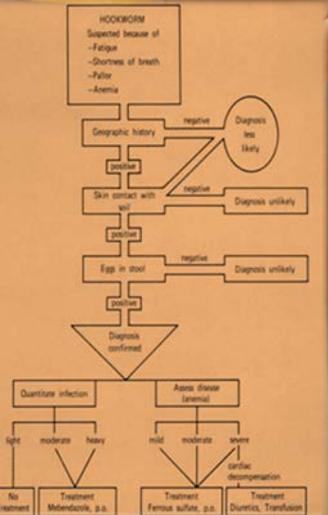
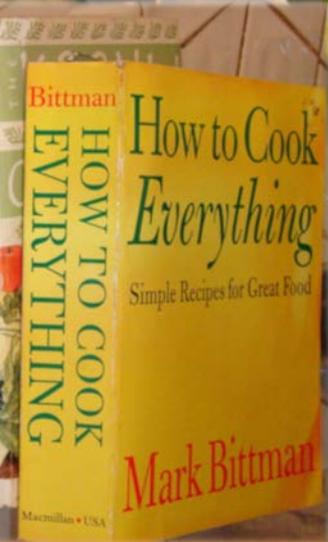
# Dr. Dogma

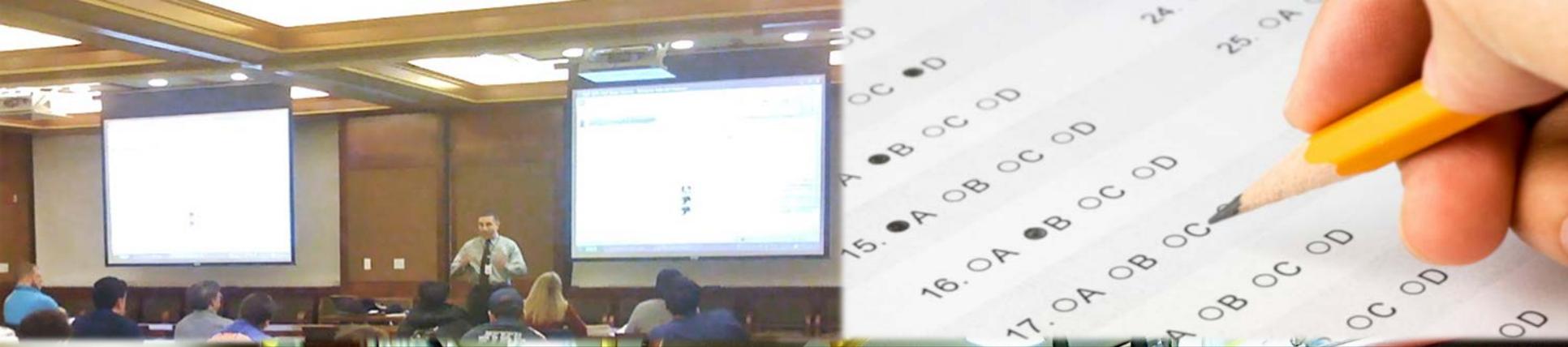
Telling, not teaching



- Management: Neurological**
- Altered Mental Status (causes)
    - CVA / TIA
    - Intoxication
    - Medication Reaction
    - Electrolyte imbalance
    - Acid-Base imbalance
    - Hypoglycemia
    - Hypothermia
    - Seizure
    - Sepsis
    - Tumor
    - Subdural Hematoma
    - Aneurysm
    - H...

# NOT GOOD ENOUGH





# Outcome Focused Education



202-748-2433  
TEST PLAN  
CENE Appendix III

# Critical



# Thinking

**Clinicians**

**not**

**Technicians**

WHAT

# Critical Thinking

**“The process of actively evaluating information as a guide to observing, understanding, decision-making and action.”**



WHERE



Pr

Pa

Educato

WHY

# Bloom's Taxonomy

Create

Evaluate

Analyze

Apply

Understand

Memorize

Critical Thinking



## Observe

- CT Parse “Signal” from “Noise”

## Orient

- CT Assimilate
- CT Forecast

## Decide

- CT Recall or Create Options.
- CT Evaluate Pros / Cons
- CT Prioritize

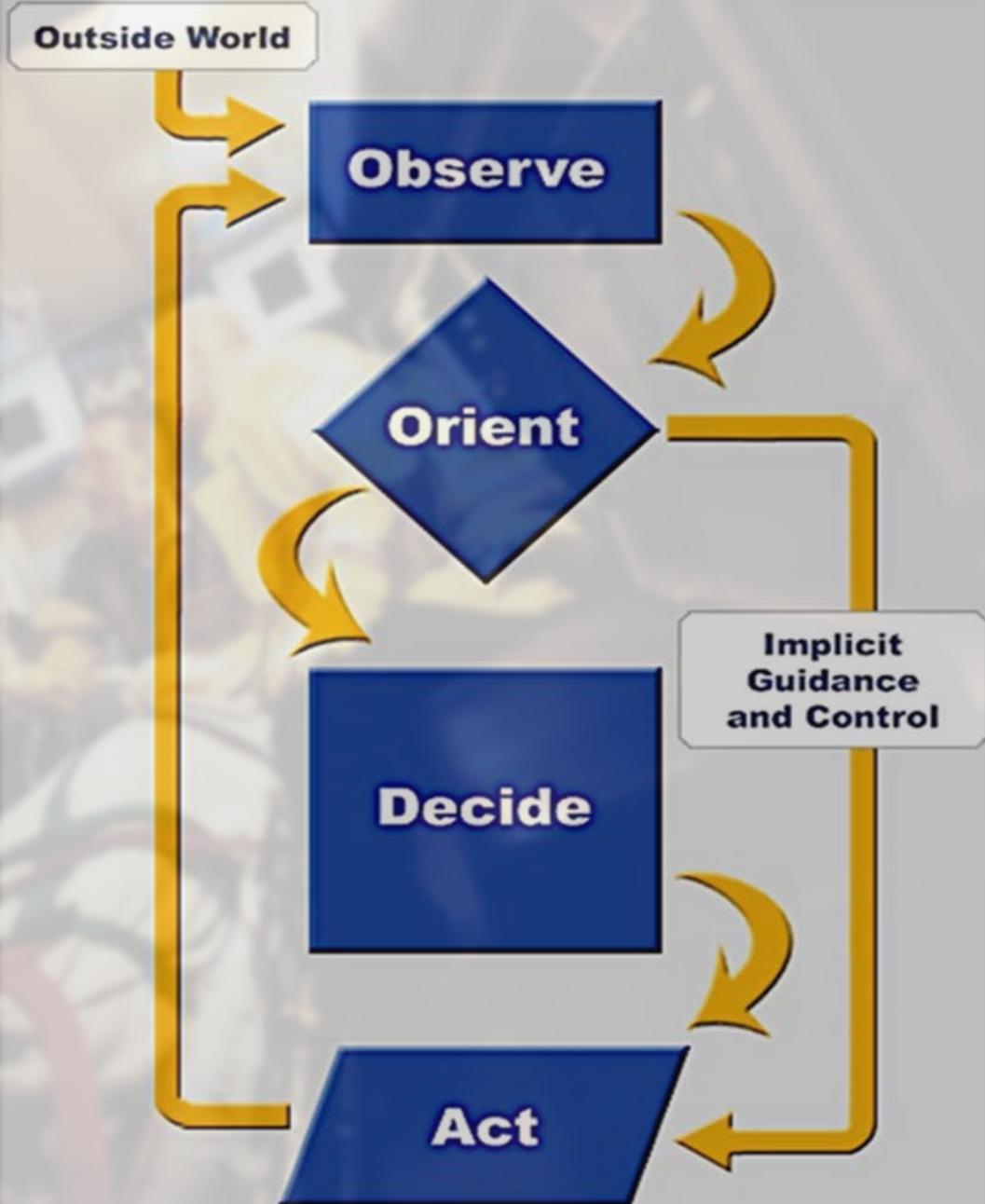
## Act

- CT Act / Command Action
- CT Timely

## Loop

- CT Evaluation
- CT Reflection
- CT Metacognition

# THE OODA LOOP



WHO



Educators

New Students

Current Practitioners

WHEN

# Instructor Updates

## Initial Education

## Ongoing Education

CEU

Workshops

In-Service Training

After Action Reviews

Leadership Development

HOW



## Socratic Method

- Present case where concept is illustrated.
- Students work to operationalize.

## Questions

- What are the issues?
- What other options?
- Why have you chosen?
- Can you provide evidence?
- How can we evaluate this?



## Teach Arguments.

- Cognitive biases
- Logical fallacies

## Recognize a problem and find a way to solve.

- What if you couldn't use that tool you chose first?

## Prioritize problems and solutions.

- List problems. List solutions. Prioritize them.



# Pick Your Love / Hate.

- Reasoning?
- Alternatives?
- Modifications?
- “Con” from the “Pro”.



# Purposeful Practice

- 3 uses for gauze NOT bleeding control.
- Use any device OTHER than THESE to splint.
- Make a practical scenario. Give to another group to solve.
- Write out an algorithm for care & answer questions.



## Identify Excellence & Errors.

- Reflect during after action reviews.
- Evaluate outcomes compared to best practices (our CPR vs. perfect CPR).
- Compare student vs expert reasoning.



Provide Student “Wait Time”

Provide “Try It Out Time”

Reign in distracting discussions.

Focus frequently.

- What have we done so far?
- Why is it important?
- How can we use this?

Our Role

# Best Practices

Truth?

A Single Right Way?

A Guide To Decision Making?



# Assessment

Incorporate Critical Thinking in Objectives



# Formative Testing

Give me 5 reasons why this might be happening.

Come back with 3 ways to accomplish this.



# Summative Testing

Make ALL answers possible, but one BEST choice.

Multiple choice questions prioritized.

Extra Questions.



WATCH

OUT

Culture

Shock



Admin:

*"It will cost how much?"*

Educators:

*"What the heck is this crap?"*

Students:

*"Just give me the answer!"*

Not every student is capable

Not every educator is capable

Takes Time

Takes Work

Takes Effort



Cognitive biases / Logical fallacies

Lack of CT education or practice

Group think

Emotion

Social filters



**“Because I SAID SO!”**

**“But the nurse will look at me funny!”**

**“Just shut up and do what I tell you.”**

**“Rookies should be seen and not heard.”**

**“When I want your opinion I’ll give it to you.”**

**“I’m the Instructor”**

**“That’s not what the protocols say.”**

**“I’m not here to question what my supervisor tells me to do.”**

**“That’s the way we’ve always done it”**

**“When I say jump, you ask...”**

# Administration

A woman with long brown hair, wearing a white cable-knit sweater over a black turtleneck, is sitting at a desk. She is smiling and looking towards the camera. On the desk in front of her is a laptop, a printer, and several papers. To her left, there is a black wire basket containing various office supplies like pens and pencils. The background shows a white cabinet or wall.

Revise Objectives

Adjust Curriculum

Develop Questions / Activities

In-Line in Lectures / Practicals

Revise Testing



# Educators

Listen First

Critical Thinking Workshops

Establish Stakeholders / Champions

Develop Questions / Activities / Exams

# Students

A group of students is seated in a room, facing a presentation screen. The room has a drop ceiling with recessed lights and a light-colored wall. The students are sitting on chairs, and the presentation screen is displaying some text. The overall atmosphere is that of a classroom or lecture hall.

Gradual Introduction

Increase Engagement

Explain Exams

**Con**

**trast**





A large group of people, mostly men, are seated in a conference room. Many of them have their hands raised in the air, suggesting an interactive session or a vote. The room has a wooden floor, a large chandelier, and a screen on the left. The word "Support" is overlaid in large white letters on a semi-transparent grey background in the upper right corner.

# Support

A large group of people, mostly men, are seated in a conference room. Many of them have their hands raised, suggesting an interactive session or a vote. The room has wood-paneled walls and a large chandelier hanging from the ceiling. A semi-transparent grey banner is overlaid on the top half of the image, containing the text "Call to Action" in a large, white, sans-serif font.

# Call to Action

A large group of people, mostly men, are seated in a conference room. Many of them have their hands raised, suggesting an interactive session or a vote. The room has wood-paneled walls and a large chandelier hanging from the ceiling. A semi-transparent grey banner is overlaid on the top half of the image, containing the text "Call to Action" in a large, white, sans-serif font.

# Call to Action

# Signs of Life



Engagement, Understanding, Performance

# Signs of Life

The image shows the interior of an ambulance. A paramedic in a dark uniform is seated at the back, attending to a patient lying on a stretcher. The ambulance is equipped with various medical supplies and equipment. The doors are open, and the interior is brightly lit. The text "Signs of Life" is overlaid at the top in a white, sans-serif font. The ambulance's exterior is white with yellow and red accents. The words "FIRE DEPT." and "RIDGEFIELD" are visible on the side of the ambulance. A large red cross is visible on the right door.

Better, more dynamic solutions to problems



**ATTENTION**  
FAILURE TO USE THE  
SUPPLIER CONNECTION POINTS  
FOR CUSTOMER OR DEALER  
INSTALLED ACCESSORIES MAY  
VOID THE ELECTRICAL WARRANTY



Support Operations



CFD

SMOKE DIVE









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