

FILA for Critical Thinking Competency (CTC)

A Structured Thinking Method for Lecturers



What is CTC?

Critical Thinking Competency

- Definition: Analysing, questioning, and evaluating information & assumptions.
- Key Skills:
 - Identify critical questions
 - Assess new information
 - Differentiate evidence from opinion
 - Reflect on assumptions
- Goal: Make thinking visible and rigorous.



What is FILA?

A Structured 4-Column Thinking Method

F = Facts (What is stated?)

I = Ideas (What does it mean?)

L = Learning Issues (What do we need to know?)

A = Actions/Answers (What next?)

Key Benefit: Slows down thinking to separate evidence from interpretation.

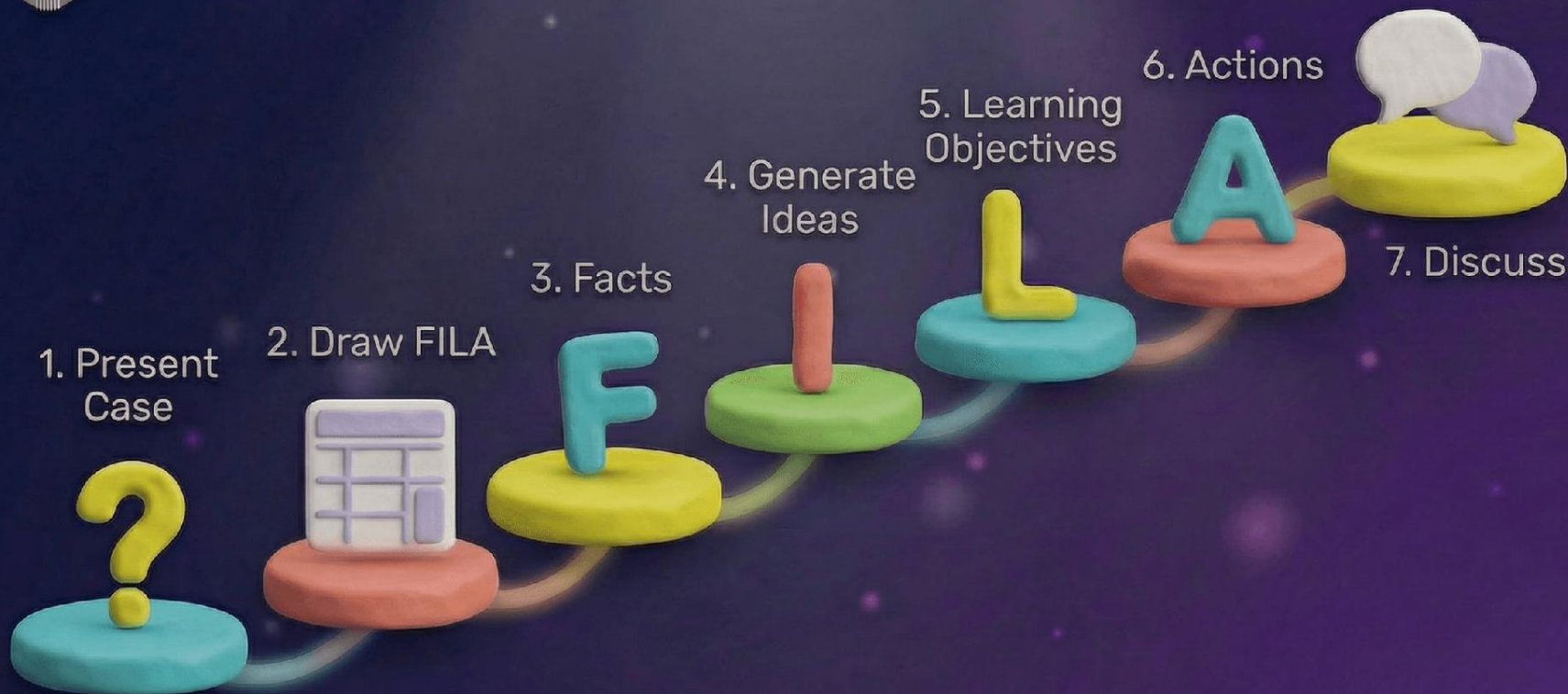


Why FILA Suits CTC

- Separates Evidence vs. Interpretation
- Prompts Better Questions (L Column)
- Evaluates Assumptions (I Column)
- Builds Reasoning: Facts → Ideas → Questions → Answer
- Makes Thinking Visible



How to Run FILA in Class



Example 1: Fish Immunology

Question: Why do spawning carp produce high lysozyme?

F

(Facts):

- Carp are fish; reproductive phase; lysozyme lyses bacteria.

I

(Ideas):

- Maternal protection? Transferred to eggs?

L

(Learning Issues):

- Does spawning increase infection risk?

A

(Actions):

- Review innate & reproductive immunity.



CTC: Avoid guessing, connect science.

Example 1: Fish Immunology (SDG 14.A)

Question: Why do spawning carp produce high amounts of lysozyme?

Facts

F: Carp are fish; lysozyme
lyses bacteria;
reproductive phase.



Ideas

I: Immune role; maternal
protection; transfer to
eggs?

Learning Issues

L: Does spawning increase
infection risk? Is lysozyme
transferred?



Action

A: Review innate immunity;
examine reproductive-stage
immunity.

CTC Link: Students must avoid guessing and connect known science carefully.

Example 2: Biochemistry (SDG 3.4)

Question: Why do cells consume glucose rapidly but produce less ATP?

Facts

F: High glucose use, low ATP, high lactate, active growth.

Ideas

I: Altered metabolism, glycolysis shift, biosynthesis focus.

Learning Issues

L: Why this pattern?
Is it metabolic reprogramming?

Action

A: Cells favor rapid growth/biosynthesis over ATP efficiency.



CTC Link: Questioning assumptions about metabolic efficiency.

Example 3: Biodiversity (SDG 15.1)

Question: Why is biodiversity changing despite high plant cover?

Facts

F: High plant cover,
native species decline,
insect/bird changes.



Ideas

I: Invasive species,
habitat quality loss,
food web disruption.



Learning Issues

L: Why is biodiversity
changing?
What is missing?



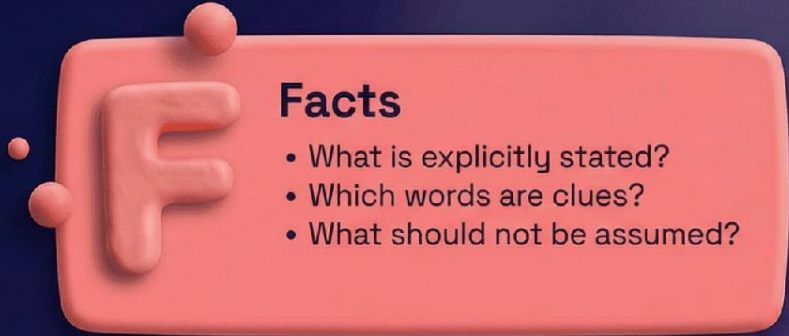
Action

A: Ecosystem quality
degraded; loss of
native composition.

CTC Link: Looking beyond surface-level data to analyze hidden changes.

Guiding Questions for Each Column

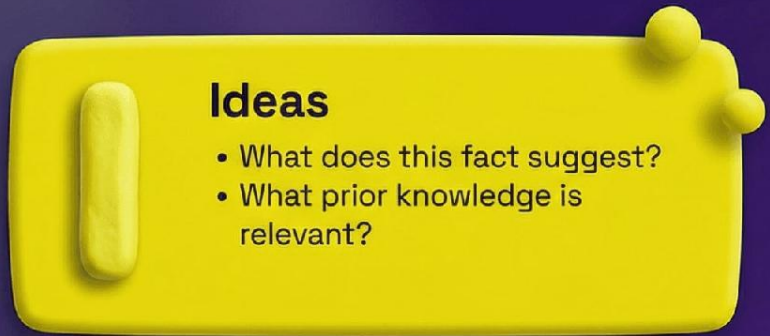
A Structured Thinking Method for Lecturers



F

Facts

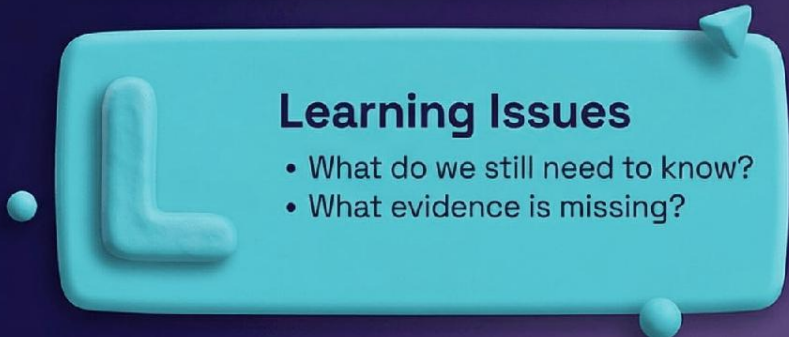
- What is explicitly stated?
- Which words are clues?
- What should not be assumed?



I

Ideas

- What does this fact suggest?
- What prior knowledge is relevant?



L

Learning Issues

- What do we still need to know?
- What evidence is missing?



A

Actions

- What should we investigate next?
- What explanation is supported?

Strengths & Limitations of FILA

A Structured Thinking Method for Lecturers

Why it Works



- Simple & teachable
- Prevents premature answering
- Separates Fact vs. Interpretation
- Improves questioning

When to Adapt



- Best for analysis & questioning
- Less for ethical negotiation
- Pair with other methods for SC/NC

Key Takeaways — FILA for CTC



Structured Method:

Organises problems into Facts, Ideas, Learning Issues, Actions.



Visible Thinking:

Makes student reasoning assessable.

FILA



Critical Distinction:

Separates Evidence from Interpretation.



Universal:

Works in Science, Engineering, & Social Science.