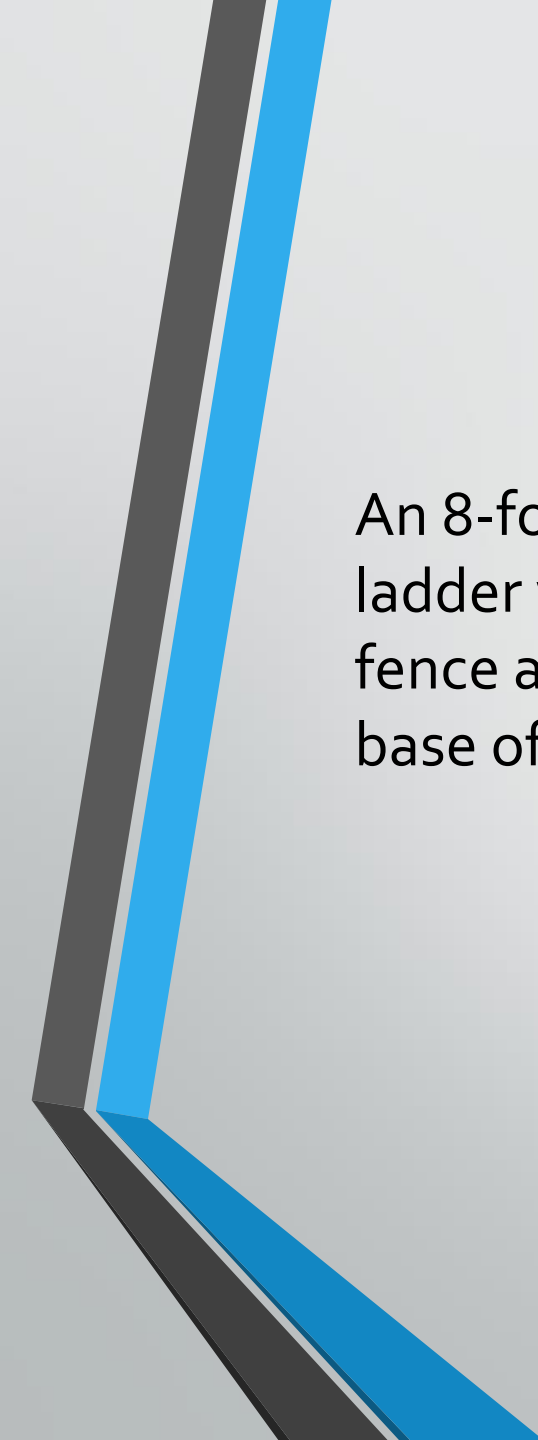




# Critical Thinking

Yesoda Bhargava



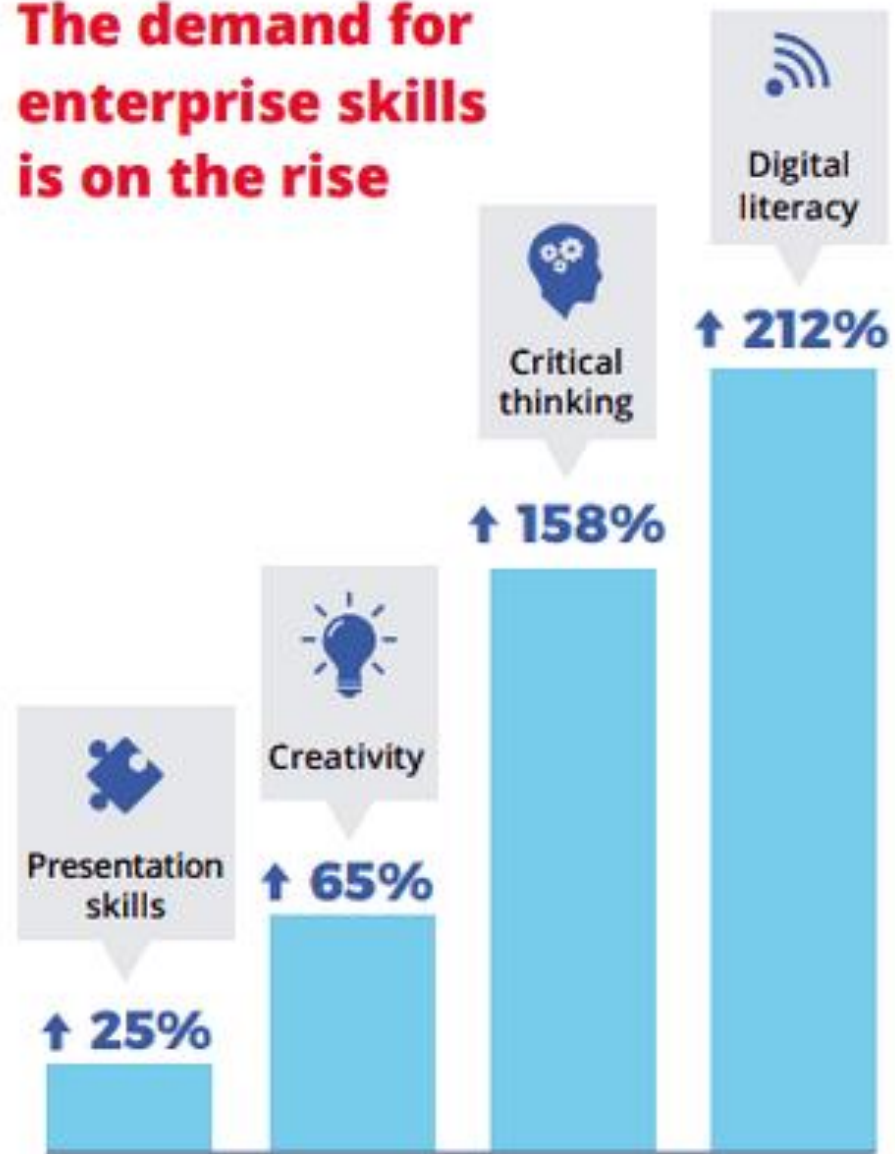
An 8-foot fence is located 3 feet from a building. Express the length  $L$  of the ladder which may be leaned against the building and just touch the top of the fence as a function of the distance  $X$  between the foot of the ladder and the base of the building.

# Why bother?



- **Core academic skill** required for students to question or reflect on their own knowledge and information presented to them.
- Essential for working on assignments and performing research.
- Invaluable in working scenarios.
- Your ability to critically think will strongly determine your growth, productivity, and success in professional career.

## The demand for enterprise skills is on the rise



...as observed in early career job ads over the past 3 years

(Image source: [The Foundation for Young Australians](#))



State of critical thinking today...

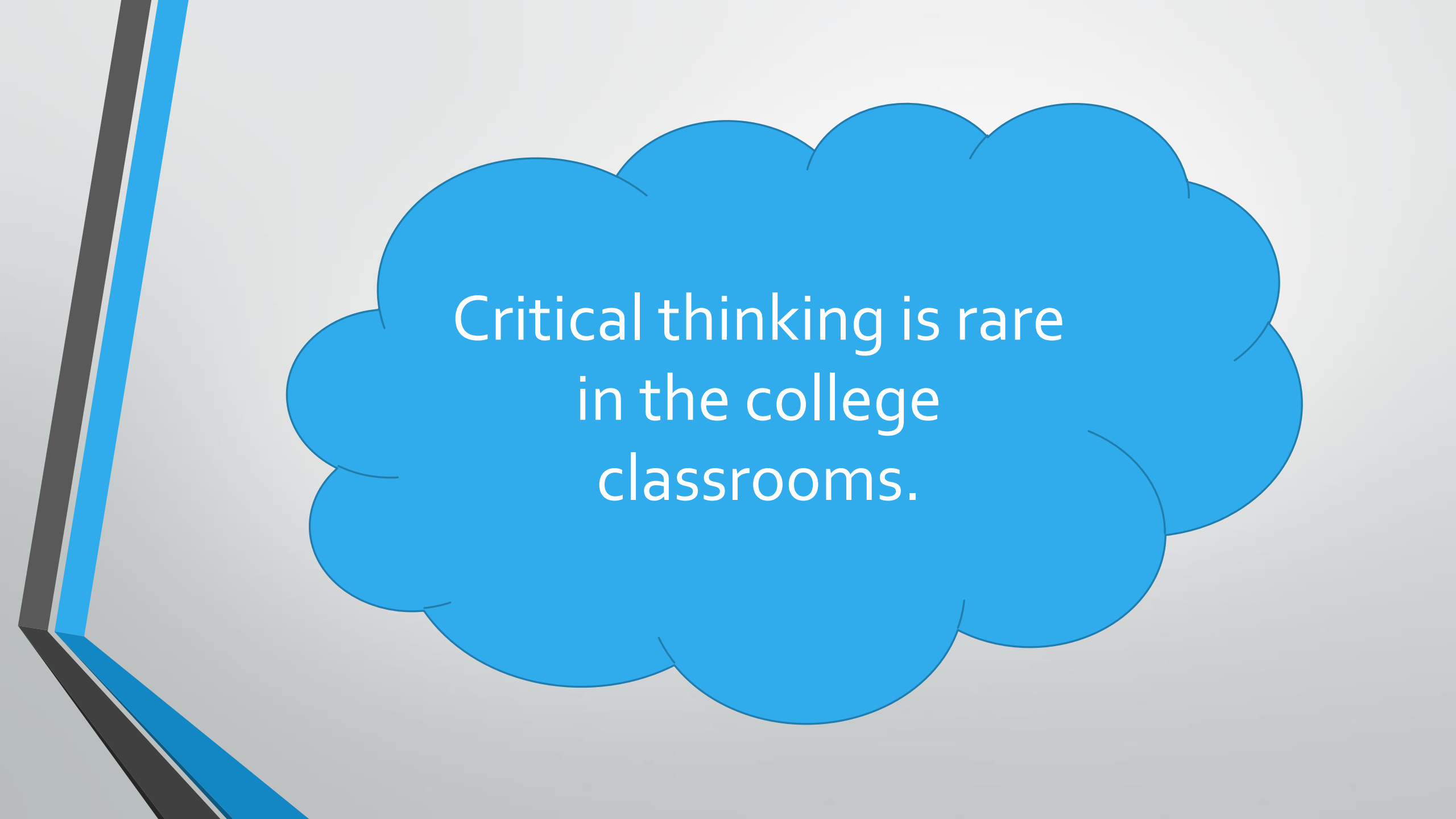
***"Too many facts, too little conceptualizing,  
too much memorizing, and too little  
thinking."***

**-Paul Hurd**, the Organizer in Developing Blueprints  
for Institutional Change

# Consider...

- You may know Biology, but may not know biological thinking.
- You may know History, but not historical thinking.
- You may know Mathematics, but not mathematical thinking.
- Elements of Analysis need to be taught...., here comes Critical Thinking.
- There is a strong relationship between critical thinking and creativity, problem solving and decision making.
- If you understand deeply what a biological cell is and the essential characteristics of all living systems, you have the substantive knowledge to ask vital questions about all living things. **You begin to think biologically.**





Critical thinking is rare  
in the college  
classrooms.

# But what is critical thinking....

- The capacity to evaluate skillfully and fairly the quality of evidence and detect error, hypocrisy, manipulation, dissembling, and bias – is central to both personal success and national needs.
- Critical thinking is the art of thinking about thinking with a view to improving it.
- A person is a critical thinker to the extent that he or she regularly improves thinking by studying and “critiquing” it.

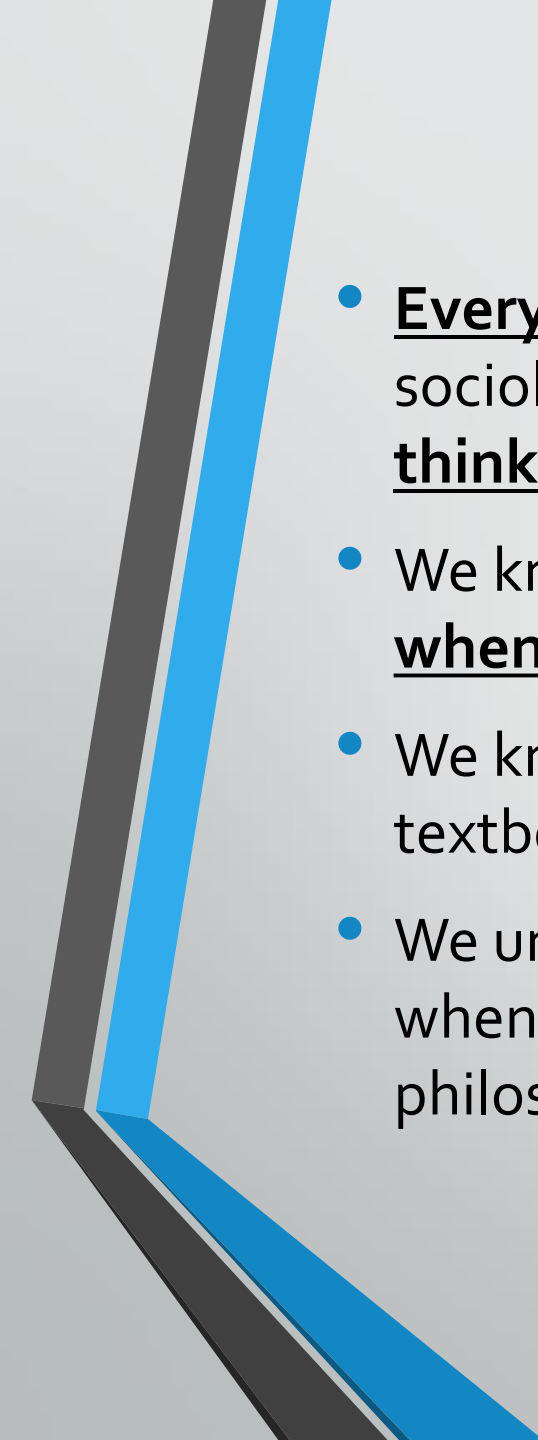


*A critical thinker does not say:*

“My thinking is just fine. If everyone thought like me, this would be a pretty good world.”

*A critical thinker says:*

“My thinking, as that of everyone else, can always be improved. Self-deception and folly exist at every level of human life. It is foolish ever to take thinking for granted. To think well, we must regularly analyze, assess, and reconstruct thinking — ever mindful as to how we can improve it.”

- 
- **Every discipline** — mathematics, physics, chemistry, biology, geography, sociology, anthropology, history, philosophy, and so on — **is a mode of thinking.**
  - We know mathematics, not when we can recite mathematical formulas, but **when we can think mathematically.**
  - We know science, not when we can recall sentences from our science textbooks, **but when we can think scientifically.**
  - We understand sociology only when we can think sociologically, history only when we can think historically, and philosophy only when we can think philosophically.

# How to improve critical thinking?

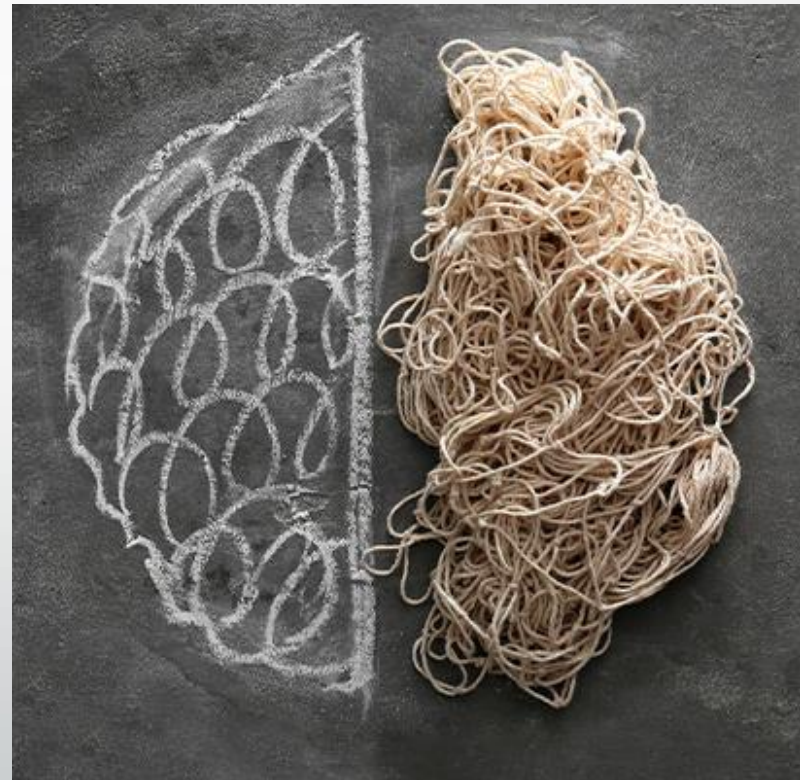
- Define your question.
- Gather reliable information
- Ask the right questions.
- Look short and long-term solutions.
- Explore all sides : Nothing is black or white.
- Practice...

## Pertinent Questions to ask while thinking critically....

- What's happening? What am I seeing?
- Why is it important? Who is affected by this?
- What am I missing? What's hidden and why is it important?
- Where did this come from? How do I know for sure?
- Who is saying this? Why should I listen to this person? What can they teach me?
- What else should I consider?
- What if ...?
- Why not?

# Critical Thinking Activity

- The online mode of education is preferable to traditional mode.
  - Please share your opinions.
  - Why do you feel so? Elaborate.
  - Counter the arguments of your classmates.
- Fear is a more potent emotion than happiness when it comes to emotional marketing.





# Going forward...

- Do good projects during your under-graduate study and use each of them as a learning ground for Critical Thinking.

# Lastly...

- Critical thinking is not a one time thing or something we can learn through workshops.
- It is something to live with and grow with.
- **Not only to think, but to think about how we are thinking,** is the key to our development as learners and knowers.

