AI Theories

Lesson 2: Decision making process using AI

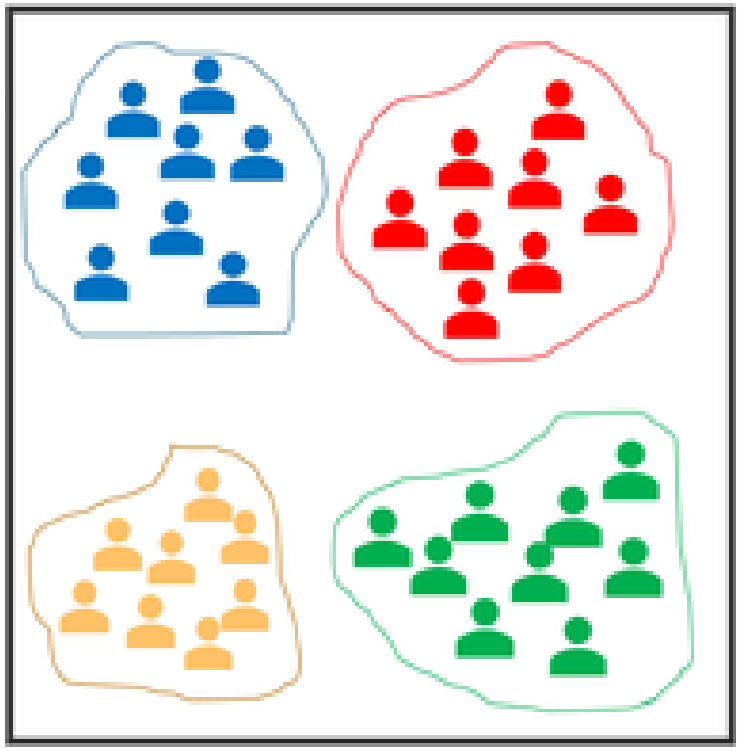
Topic : Critical thinking & Analytical thinking for Decision Making

Art of Decision Making

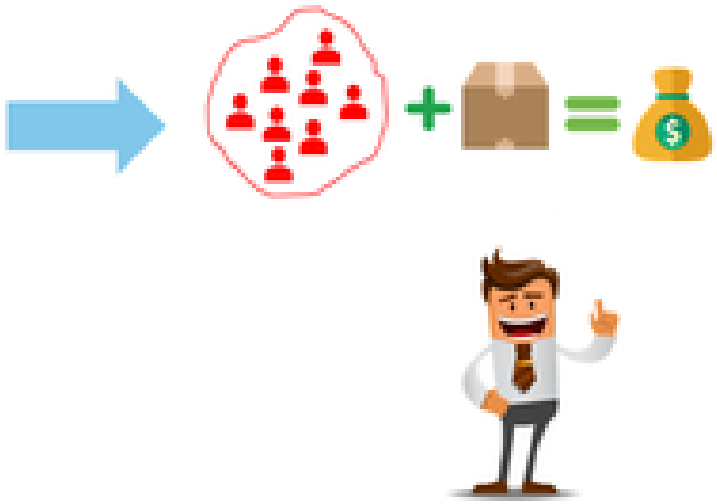
Problem Solving, Critical thinking and Analytical thinking

Objective: Create a Solution for decision making

Trying to determine the appropriate audience for the product



Create A Solution using AI to Separate Audiences and Rank Them

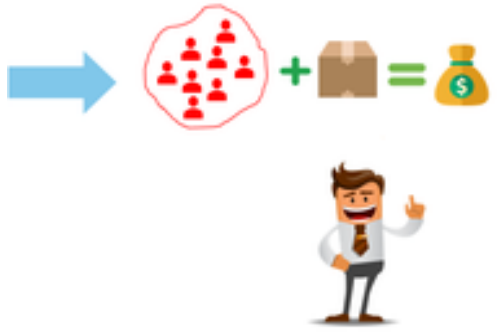


Selling the product to the targeted audience

Objective: Create a Solution for decision making

Trying to determine the appropriate audience for the product

Create A Solution using AI to Separate Audiences and Rank Them



Selling the product to the targeted audience

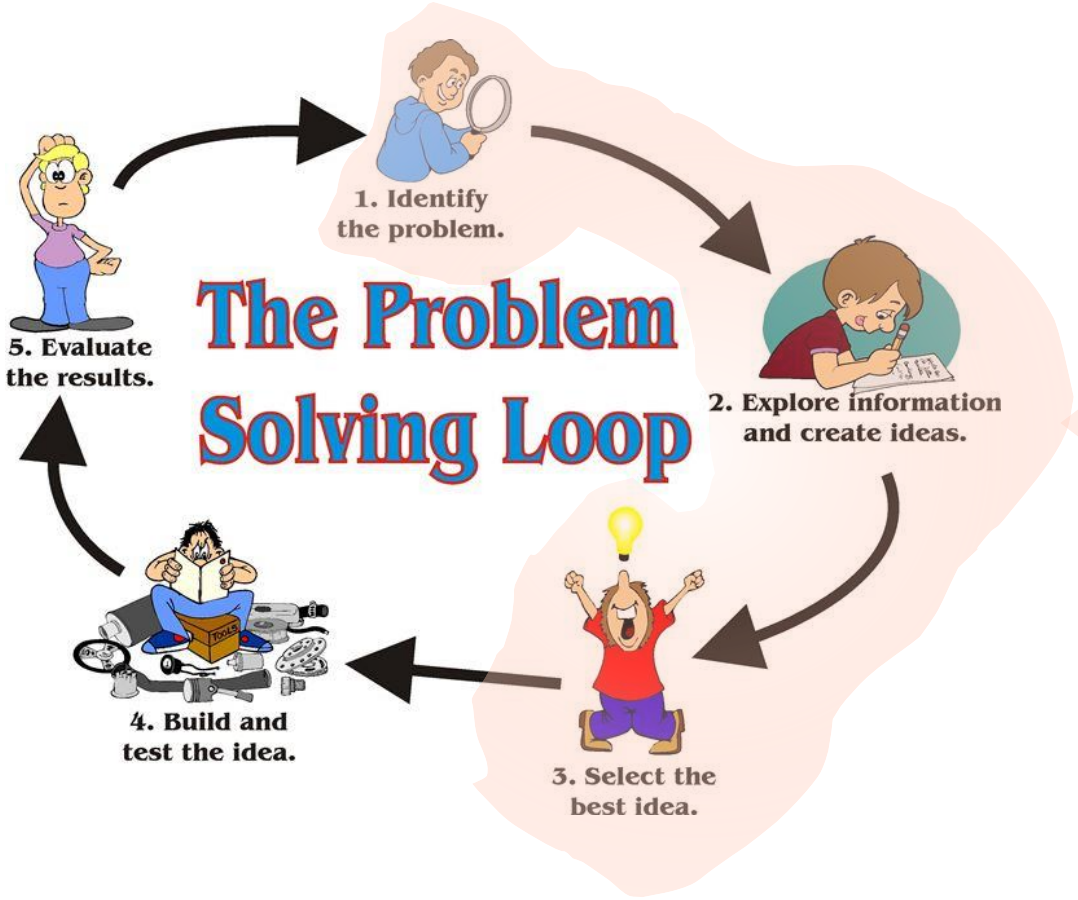
Problem

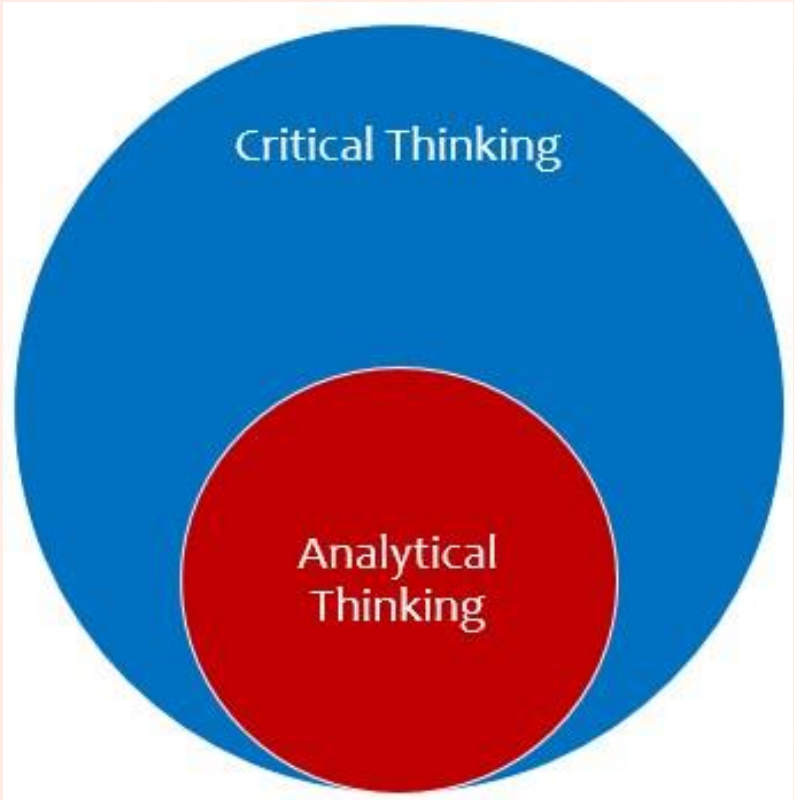
Sort the most effective group
How to sort it?

Solution Process

Decision→Action

To make best decision you have to go through problem solving loop





Solving Problem performing Critical thinking and Analytical thinking

Data Analysis Can be Misleading

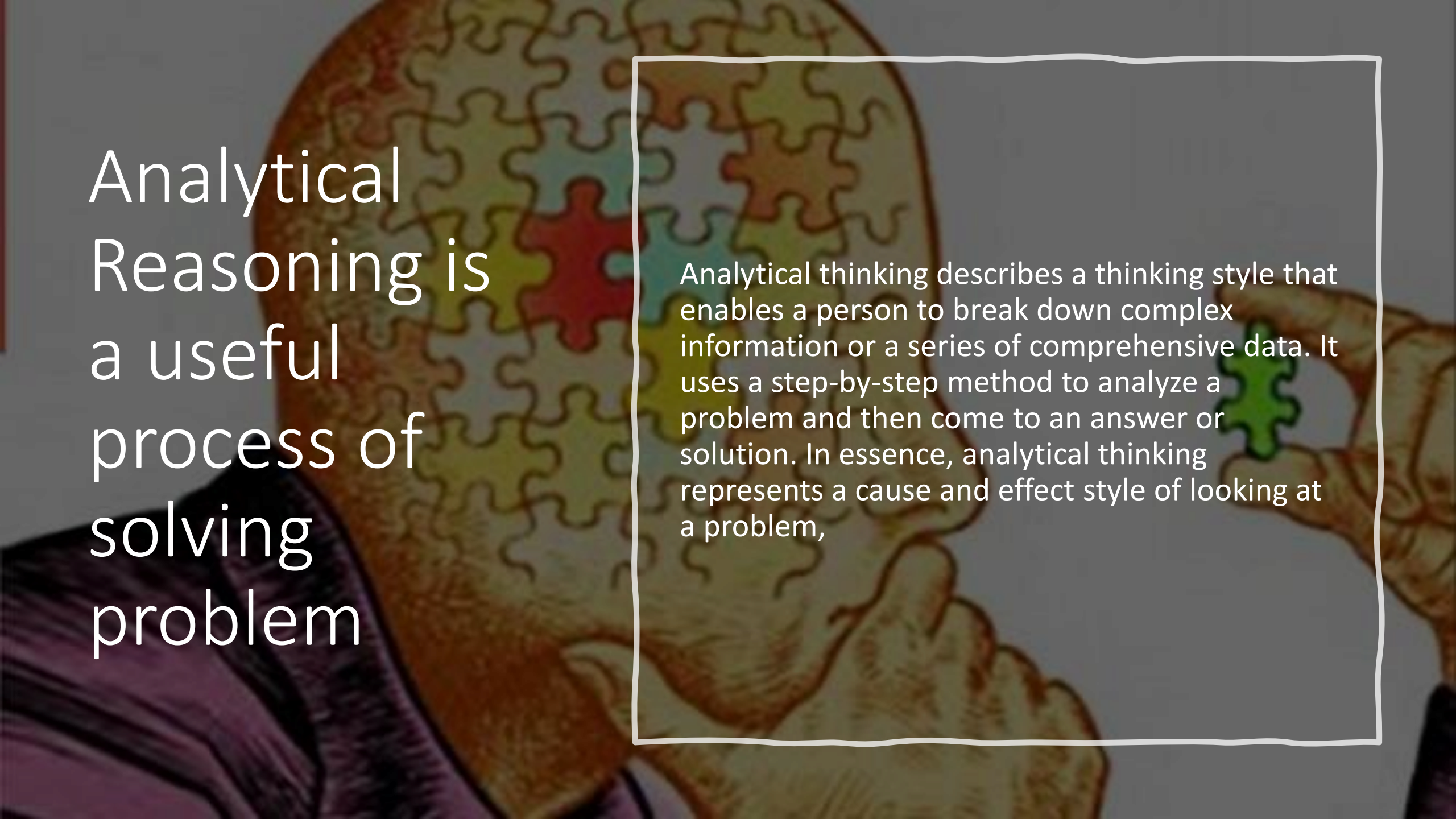
Critical Thinking, Analytical Thinking, and Problem-solving skills are required to create AI solutions

Critical thinking: the ability of an individual to seek information, analyze alternatives and making conclusions or making decision. It includes the analytical thinking and uses it to generate a standpoint for someone's world view.

Analytical thinking: Analytical thinking describes a thinking style that enables a person to break down complex information or a series of comprehensive data. This process improves person's ability to identify patterns within a group of facts or rules and use those patterns to determine outcomes that could be or must be true or logically in identifying causes and effects.

The difference between the two skills is that the analytical thinking breaks down a complex information into small parts while critical thinking involves taking outside knowledge into account when evaluating information and making a conclusion about it.


Analytical Skills



Analytical Reasoning is a useful process of solving problem

Analytical thinking describes a thinking style that enables a person to break down complex information or a series of comprehensive data. It uses a step-by-step method to analyze a problem and then come to an answer or solution. In essence, analytical thinking represents a cause and effect style of looking at a problem,

Analytical Reasoning Example 0

Example 0 – What could be the weight of a midsize Boeing 777?

x 1

x 3

x 8

x 10

x 8

x 3

3x8x10x8x3x65kg=374.4

Analytical Reasoning Example

Example 1 – Underlying Assumptions

Wife to Husband: Our joint income is lower than it could be. But soon I will begin to work an additional part-time job and I will earn extra income.

Proposed Assumption: **Asking for a raise at her current place of work is not the best way to increase the wife's income**.

A. True

B. False

Answer explanation:

- The conclusion of the wife's statement: Soon we will increase our joint income.
- The evidence supporting this conclusion: I will begin to work an additional part-time job.
- The underlying assumption/s that must be true for the conclusion to be true: A part-time job will provide me with extra money.
- The proposed assumption: "Asking for a raise at her current place of work is not the best way to increase the wife's income" is not necessary for the conclusion to be true.

The correct answer is (B), False

Analytical Reasoning Example 2

Several years ago, Harold and his wife adopted a two-year-old orphan named Betty. Today, Betty is an undergraduate student, living far away from home. Harold feels unhappy and misses Betty tremendously. He would like her to come home more often.Proposed

Assumption: Harold's wife doesn't feel unhappy.

A. True

B. False

Answer explanation:

- Harold's wife is not mentioned in the passage, and,
- therefore, you cannot presume any information regarding her feelings.

The correct answer is (B), False

Analytical Reasoning Example 3

Example 3 – Inferences

Following a reduction in the number of applicants, the college has been asking students to evaluate faculty teaching performance for the last two years. The college's management announced that the purpose of these evaluations is to give information to faculty about teachers' strengths and weaknesses, and to allow those who make decisions about pay raises and promotions to reward the better teachers. Last week, Professor Burke, a recently retired senior lecturer at the college, wrote a letter in which he objected to these evaluations, claiming they compromise academic standards.Proposed Assumption: There is more to the management's announced intentions than those mentioned by them in the passage.

A. True
B. Probably true
C. Insufficient data
D. False
E. Probably false

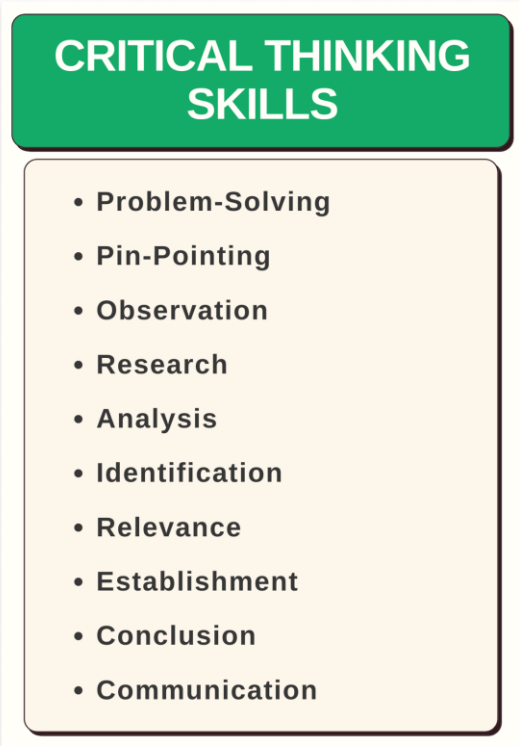
The correct answer is (B)

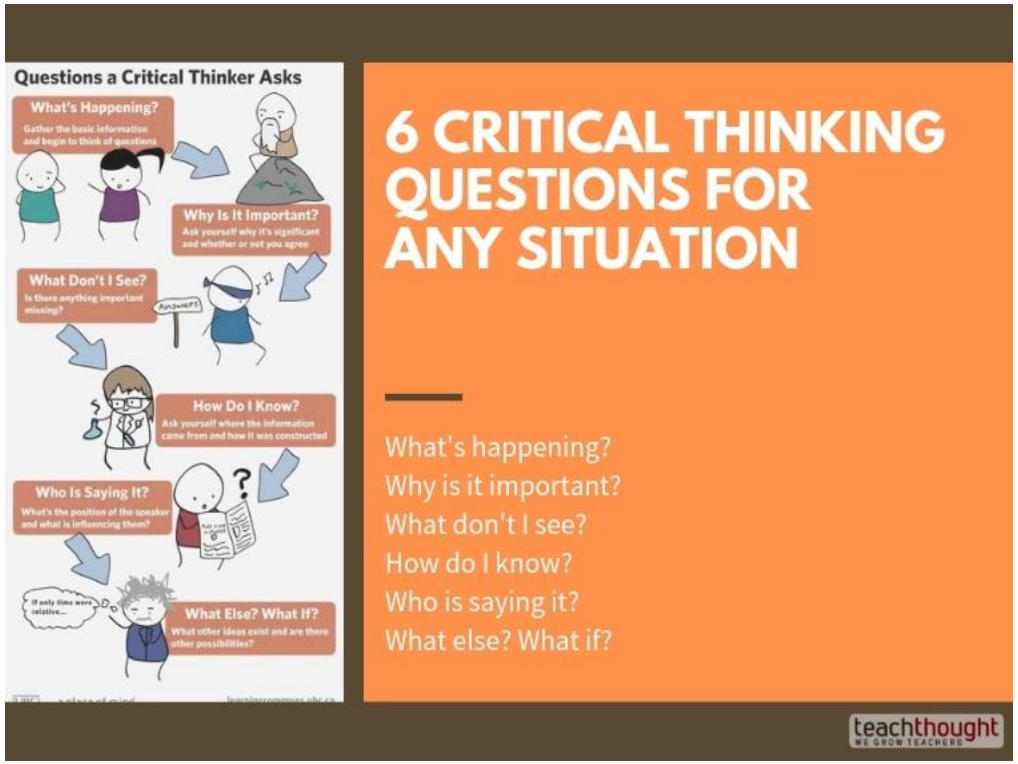
Answer explanation:

- The text begins by introducing the management's announcement as a reaction to a negative trend—reduction in the number of student applications.
- While the announcement explicitly addresses both the college's staff and its students, it is likely that the issue at hand is not only a wish to achieve academic excellence
- but, in fact, a means to resolve the issue of reduced applications and college reputation, which has implications on the college's future.
- Therefore, the correct answer is probably true.


CAPACITY
INTELLECTUAL
LOGIC
ANALYSIS
CRITICAL
PROBLEMS
FACTS
CLEAR
THINKING
INFORMATION
CRITIQUE
DECISION
OBJECTIVE
RECOGNIZE
JUDGEMENT
ATIONAL
ROCESS

Process of Critical thinking





Seek Information: How?

- Speak to a Domain Expert
- Literature Survey
  - Subject related books
  - Papers
  - googling

1st Step: understand or Identify the Problem

Finding root cause of a problem using “why”

Finding root cause of a problem using Fishbone

Problem

Critical Thinking

1. Gathering relevant information
2. Evaluating information
   - Analytical Thinking
     - I. Examining chunks of data or information i.e. See plots scatters, lines, histograms etc.
     - II. Identifying key issues
     - III. Use logic and reasoning to process information
     - IV. Separating more complex information into simple parts
     - V. Sub-dividing information into more manageable sizes
3. Asking questions: why, what, who, where
   1. Ask domain experts, literature survey, wiki, google etc
   2. Understand connections and relationships
   3. Identify Cause and Effect
   4. Drawing conclusions
   5. Assess bias

   Analytical Thinking
4. Weighing Opinions
5. Reach well organized conclusions
6. Consider alternate possibilities
7. Testing conclusions
8. Verifying if evidence support the conclusion

Root Cause

ACTION

Solving Problem performing Critical thinking and Analytical thinking