

# How to teach critical thinking?

Theoretical framework

# Critical thinking

The mode of thinking – about any subject, content, or problem — in which **the thinker improves the quality of his or her thinking by skillfully taking charge of the structures** inherent in thinking and **imposing intellectual standards upon them.**

(Paul and Elder, 2001).

# Critical thinking aspects

- Critical thinking instruction should not be relegated to one or two disciplines or departments with discipline specific language and conceptualizations.
- Rather, critical thinking instruction should be **explicitly infused in all courses so that critical thinking skills can be developed and reinforced in student learning across the curriculum.**
- The use of a common approach with a common language allows for a central organizer and for the development of critical thinking skill sets in all courses.

# The Paul-Elder framework

This approach is one of the most widely published and cited frameworks in the critical thinking literature. According to Paul and Elder, critical thinking is the:

- **Analysis of thinking (reasoning)** by focusing on the parts or structures of thinking ("*the Elements of Thought*")
- **Evaluation of thinking** by focusing on the quality - the intellectual standards that should be applied to the elements of reasoning ("*the Universal Intellectual Standards*")
- **Improvement of thinking** by using what you have learned - the intellectual traits associated with a cultivated critical thinker that result from the consistent and disciplined application of the intellectual standards to the elements of thought ("*the Intellectual Traits*")

# Paul-Elder Critical Thinking Model

## Intellectual Standards

Accuracy	Precision
Clarity	Depth
Relevance	Significance
Logical	Fairness
Sufficiency	Breadth

## Intellectual Traits

Humility	Perseverance
Autonomy	Empathy
Fair-mindedness	Integrity
Courage	Confidence in reasoning

Must be applied  
to



## Elements of Reasoning

Purposes	Inferences
Questions	Concepts
Points of view	Implications
Information	Assumptions

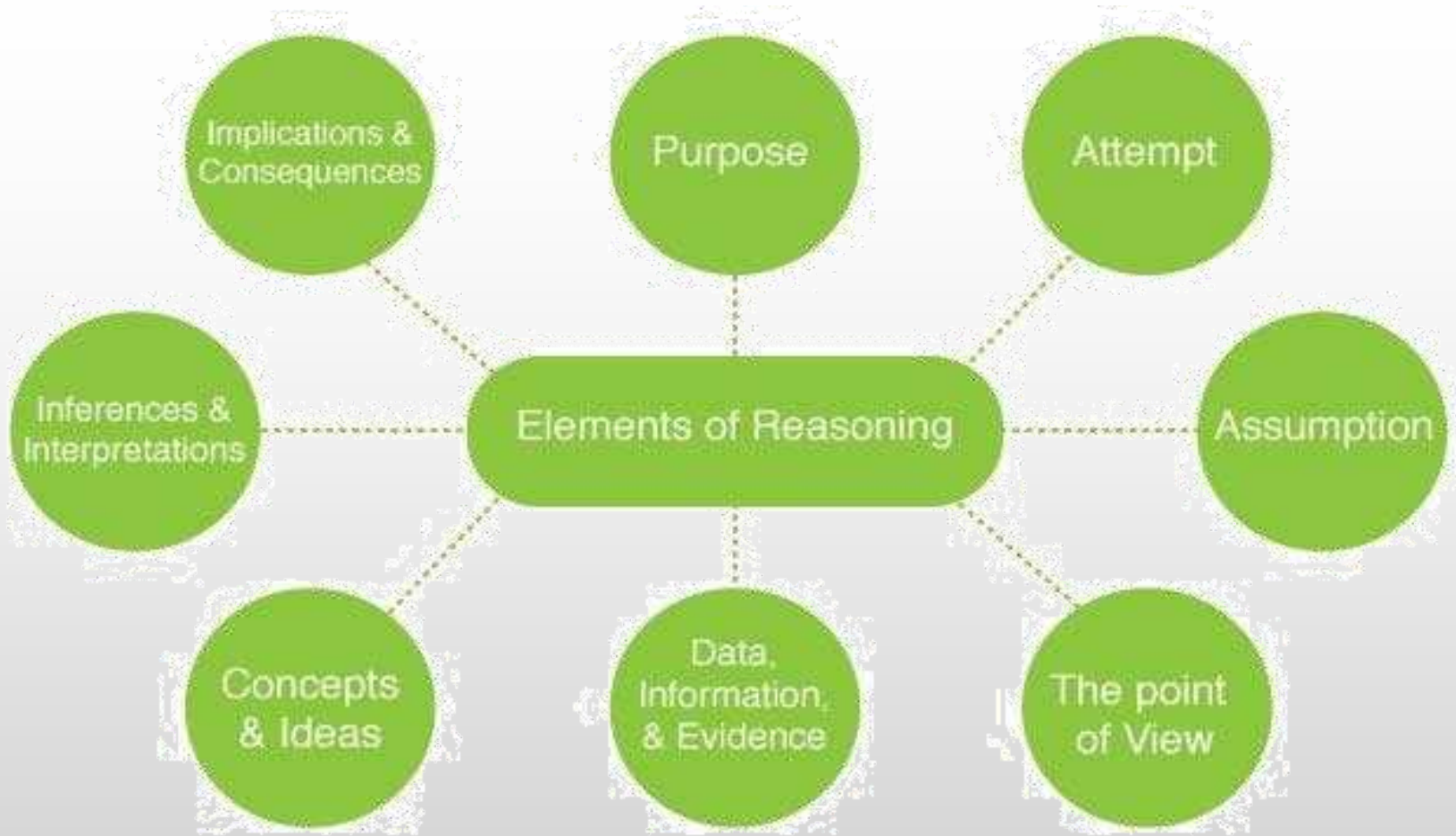
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# Elements of Thought (reasoning)

The parts or elements of thinking are as follows:

1. All reasoning has a purpose
2. All reasoning is an attempt to figure something out, to settle some question, to solve some problem
3. All reasoning is based on assumptions
4. All reasoning is done from some point of view
5. All reasoning is based on data, information and evidence
6. All reasoning is expressed through, and shaped by, concepts and ideas
7. All reasoning contains inferences or interpretations by which we draw conclusions and give meaning to data
8. All reasoning leads somewhere or has implications and consequences



Elements of reasoning based on Paul-Elder Framework (Redraw from source: Foundation of Critical Thinking) <https://www.designorate.com/critical-thinking-paul-elder-framework/>

# Elements of Thought (reasoning)

- **Purpose** – This part of our thinking include defining a goal or objective of the topic. For examples, the goal may include solving a problem or achieve a target.
- **Attempt** – This part includes the attempts that previously addressed the topic or attempts to solve a problem.
- **Assumption** – Before starting to solve a problem, we don't have much information about the topic. Therefore, we build assumptions to act as the base of our research about the topic. We usually start with inductive assumptions, then we use the research data in order to validate these assumptions. For example, we assume that all apples are red and start to research the different types of trees to know that some apples are green, and some are red.
- **The point of View** – this part includes our point of view such as the perspective that we take while thinking about the topic. For instance, we can think about the product from the consumer perspective rather than the business perspective.
- **Data, Information, and Evidence** – Here, we cover the data and information related to the topic. Also, here we have all the evidence that supports our topic.
- **Concepts and Ideas** – Here, we have all the principles, models, and theories related to the topic. For example, this part may include all the theories related to the application of a specific solution.
- **Inferences and Interpretations** – The last part includes the concluded solutions based on the previous parts. The conclusion may include the suggested solution of a specific problem.
- **Implications and Consequences** – All the reasons must lead to consequences that are a result of implementing the results of the the reasoning process.



# Universal Intellectual Standards

- Good critical thinking requires having a command of these standards.
- The intellectual standards are used to determine the quality of reasoning.
- The ultimate goal is for **the standards of reasoning to become infused in all thinking so as to become the guide to better and better reasoning.**

## Clarity

Could you elaborate?  
Could you illustrate what you mean?  
Could you give me an example?

## Accuracy

How could we check on that?  
How could we find out if that is true?  
How could we verify or test that?

## Precision

Could you be more specific?  
Could you give me more details?  
Could you be more exact?

## Relevance

How does that relate to the problem?  
How does that bear on the question?  
How does that help us with the issue?

## Depth

What factors make this difficult?  
What are some of the complexities of this question?  
What are some of the difficulties we need to deal with?

## Breadth

Do we need to look at this from another perspective?  
Do we need to consider another point of view?  
Do we need to look at this in other ways?

## Logic

Does all of this make sense together?  
Does your first paragraph fit in with your last one?  
Does what you say follow from the evidence?

## Significance

Is this the most important problem to consider?  
Is this the central idea to focus on?  
Which of these facts are most important?

## Fairness

Is my thinking justifiable in context?  
Am I taking into account the thinking of others?  
Is my purpose fair given the situation?  
Am I using my concepts in keeping with educated usage, or am I distorting them to get what I want?

Intellectual standards based on Paul-Elder Framework (Redraw from source: Foundation of Critical Thinking) <https://www.designorate.com/critical-thinking-paul-elder-framework/>

# Intellectual Traits

Consistent **application of the standards** of thinking to the **elements of thinking** results in the **development of intellectual traits**:

- *Intellectual Humility*
- *Intellectual Courage*
- *Intellectual Empathy*
- *Intellectual Autonomy*
- *Intellectual Integrity*
- *Intellectual Perseverance*
- *Confidence in Reason*
- *Fair-mindedness*

## Intellectual Traits (1)

As a result of the application for the above reasoning parts and validating them using intellectual standards, the below characteristics are expected to be developed, known as the intellectual traits:

### Intellectual Humility

- This trait develops one's ability to perceive the known limitation and the circumstances that may cause biases and self-deceptively. it depends on recognizing that one claims what one's actually knows.

# Intellectual Traits (2)

## Intellectual Courage

- Courage represents developing a consciousness to address ideas fairly regardless its point of view or our negative emotions about it. Also, it helps us to develop our ability to a evaluate ideas regardless our presumptions and perceptions about it.

## Intellectual Empathy

- Empathy is related to develop the ability to put ourselves in the others' shoes in order to understand them. also, it develops how we can see the parts of reasoning of the others such as the viewpoints, assumptions, and ideas.

## Intellectual Integrity

- This part is related to develop the ability to integrate with others intellectual reasoning and avoid the confusion that comes from our own reasoning. Unlike the empathy, integrity focuses on the ability to others' reasoning for the topic and integrate with it.

# Intellectual Traits (3)

## Intellectual Perseverance

- The perseverance develops the need to have the truth about the insight regardless the barriers that face against it such as difficulties, frustration, and obstacles. this helps us to build rational reasoning despite what is standing against it.

## Confidence in Reason

- By applying the reasoning parts and encouraging people to come with their reasons, they start to build confidence in their reason and think in a rational way.

## Fair-mindedness

- This trait develops the ability to start with a fair look at all the reasoning and traits all the viewpoints alike putting aside one's feelings, raises, and interests.

# Sources

- <https://louisville.edu/ideastoaction/about/criticalthinking/what>
- Paul, R. and Elder, L. (2010). *The Miniature Guide to Critical Thinking Concepts and Tools*. Dillon Beach: Foundation for Critical Thinking Press.