Critical Thinking

IT3010 - Empirical research methodologies in IT and digitalization

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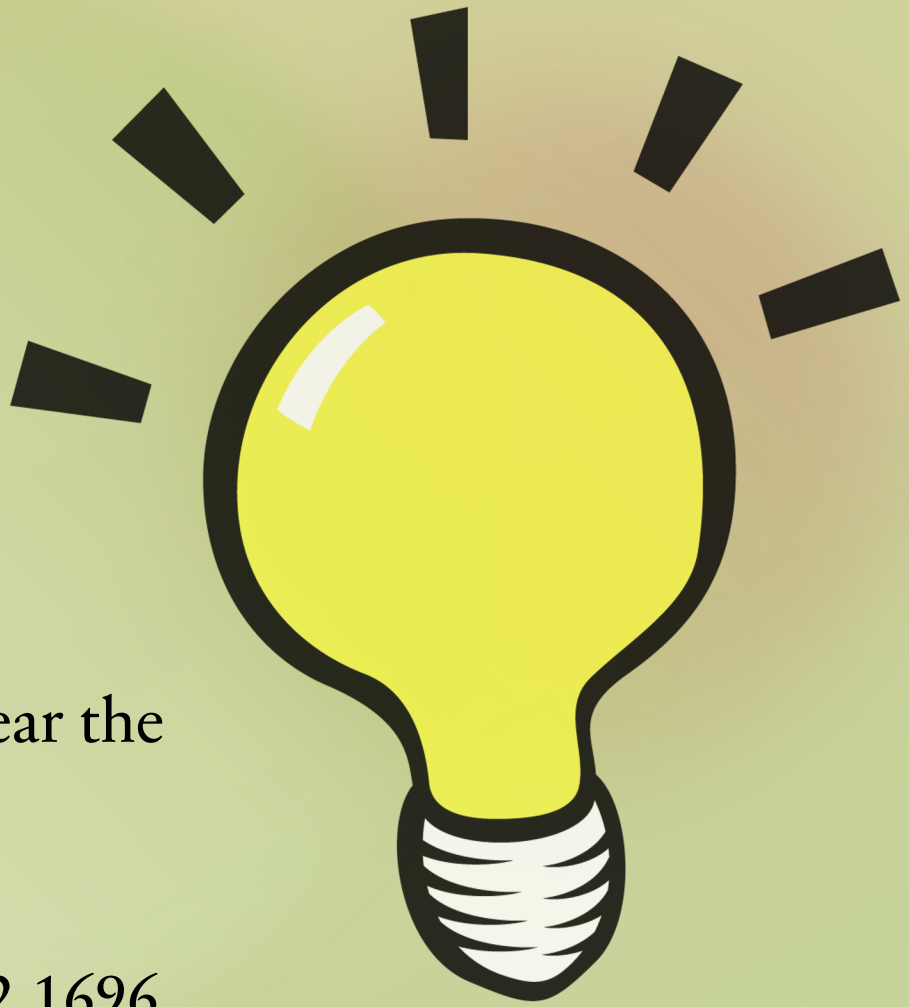
What is Critical Thinking?



What comes to your mind when you hear the word critical thinking?

Go to menti.com and use the code 8202 1696

Uncritical Thinking

Automatically believing what you read or are told without pausing to ask whether it is accurate, true or reasonable.

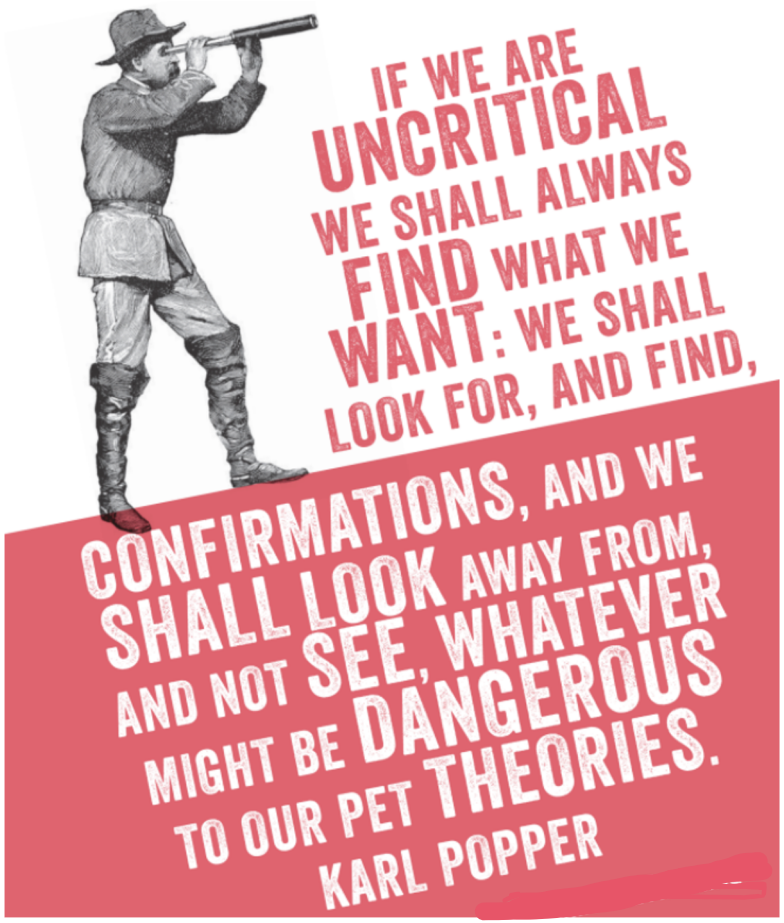
Subject: I'm writing this with tears on my eyes !!!
Hello,
I'm sorry for this odd request and I'm writing this with tears on my eyes due to the situation of things right now, I'm stuck in London United Kingdom with my family,we came down here for vacation and we got Mugged at gunpoint, worse of it is cash cell phone and credit cards were stolen , it's such a crazy and terrifying experience for us, we need help sort out our hotel bill and flying back home, the authorities are not being 100% helping us, but we thanks God we still have our passports, Our return flight leave today,But we still have problem in sorting out the hotel bills.Please help us i promise to refund it back.
Now I'm freaked out.
David.

Critical vs uncritical thinking

- **Scepticism:** not automatically accepting something you hear, read or see as true

- **Objectivity:** Trying to understand something from a more neutral perspective, rather than relying on a single opinion or the first piece of information that comes to hand

"Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action."



Why is critical thinking important?

- Helps you look beyond the surface of things
- It tries to eliminate (to the extent possible) emotional reaction
- Identifies bias
- Gives you nearly accurate view of reality
- Abstract thinking

Identifying the problem or the question

- How do we find out a suitable problem?
  - Past research or calls for conference papers or special issues of journals
  - Recent events reported in media
  - Needs expressed by clients
  - Personal circumstances or opportunities

Identifying the problem or the question

- Brainstorming is a great tool
  - Get advantage of the full experience and creativity of all team members
  - If one member gets stuck with an idea, another member's creativity and experience can take the idea to the next stage.
  - You can develop ideas in greater depth with group brainstorming than you can with individual brainstorming.
  - It helps everyone feel that they've contributed to the project, and it reminds people that others have creative ideas to offer

Identifying the problem or the question

- Framing the problem or the question
  - Be as precise as possible: the narrower the issue, the easier it is to find out the solutions or answers
  - Use relevant verbs; understanding, exploring, creating, explaining etc.
- **Is drinking coffee good for humans?**
  - Too broad
  - What does good even mean?
- **What is 2+2?**
- **What are the two values that add to 4?**

Group Activity – Framing RQs

- Breakout rooms with groups
- Choose one of the following practical problems
  - (Groups with odd numbers) Covid-19 contact detection apps violate our privacy.
  - (Groups with even numbers) Online teaching leads to social isolation among students.
- You are IT researchers addressing these problems (15 minutes)
  - Formulate two research questions to address the practical problem.

The battle against Bias

- Bias is about approaching something in a one-sided way that creates a distorted account of the way things actually are.
- Conscious vs unconscious bias
  - Conscious bias is when someone deliberately presents a one-sided view of something or explicitly holds a one-sided opinion.
  - Unconscious bias is when someone's opinions are distorted by factors that they are not even aware of.

You see what you want to see!

- We form a judgement based on what we know, without pausing to consider whether we know enough to justify such a judgement.
- Using the most easily available information or sources or looking at only successful outcomes – survivorship bias
- When conducting experiments and assessing research, being able to minimize bias of all kinds is a vital skill.

Confirmation bias

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Playing online isn't all fun and games—children are **at risk from bullying, identity theft, credit card fraud and even sexual exploitation**. Make sure to talk to your children about these risks. Only by establishing a dialogue at an early age, will they be prepared to avoid these threats.

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- Group play provides social benefits.

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Selective attention