

Critical Thinking - Learning Objectives & Answers

Episode	Learning Objective	Answers
1. The Critical Thinker 001_ About Your Host	a) What is critical thinking and why we have to take this course?	a) - Critical thinking is about logic including: (a) Self realization (b) self defence (c) empowerment (d) Truth and Wisdom. - The goal of this course in critical thinking, namely the science and art of reasoning well. - The goal of critical thinking as self-realization, awareness of who we are as individuals and as society and ultimately the search for truth and wisdom.
2. The Critical Thinker 002_ Self-Defense	a) Give 4 reasons why learning critical thinking skill is important b) State the purpose of Self-Defence technique	a) - The 4 reasons: 1) Self-defence (defensive gain) 2) Empowerment (offensive gain) 3) Civic duty 4) Truth and wisdom b) - Self defense section allows recognition/awareness of the false rhetoric and bad argument, which can influence one's belief - Sensitize and Immunize ourselves from manipulations and influence by powerful social Institutions in the influence business - Become independent thinkers who have ownership of our beliefs and values.
3. The Critical Thinker 003_ Empowerment	a) Distinguish the relationship between logic, argumentation, rhetoric psychology, white magic and black magic b) Define and Identify the empowerment tool/critical thinking tools kit	a) - Black magic – Rhetoric and psychology - White magic – Logic and argumentation b) - Critical thinking with the white magic, rhetoric, you can persuade and influence your audience through eloquence and understanding of human psychology. And with the white magic, your good critical thinking skills require the use of the right tools for effective and efficient outcome.
4a. The Critical Thinker 004_ Duty and Democracy (Part 1_2)	a) Discuss the role of critical thinking in individual and society	a) - The role of critical thinking is important for individual self interest and is the core requisite for humanity. It expands our thinking box by exercising our duty as a critical independent thinker to achieve the above. Also its expanding role outside our self interest is important in the interest of society. - Critical thinking is important for citizens to participate in a liberal democratic process by critically evaluating politicians and their platform, value and beliefs.

4b. The Critical Thinker 004_ Duty and Democracy (Part 2_2)	a) Define the importance of liberalism and democracy, and ways to accomplish them.	a) - The importance lies in recognition that the Global trend in education is economic impact rather than cultivation of humanity - Critical thinking should be taught in all schools and universities - Global trend of learning: fragmentation of learning in colleges evidenced as marginalizing of liberal arts due to uprising economic impact
5. The Critical Thinker 005_ Philosophical Wisdom	a) Define philosophy b) Define wisdom c) State the three methods of acquiring wisdom d) Describe ways to acquire philosophical wisdom e) State the different types of wisdom	a) Philosophy is defined as love of wisdom b) Wisdom is defined as acquired knowledge on the true and good of reality and the willingness with the ability to act on that knowledge c) revealed religion, mysticism and philosophy d) Philosophical wisdom is pursued through rational argumentation (dialectics) employing logic, argumentation and critical thinking e) Revelations, Mysticisms and Philosophy <i>Revelation</i> – acquired/experienced the wisdom which is revealed by God to Humanity – religions beyond human. To atheist, revealed religion does not have to be a God (no argument) <i>Mysticisms</i> – acquired by oneself (visualization). Make effort to transcend the phenomenology <i>Philosophy</i> – the study of the fundamental nature of knowledge, reality, and existence. Obtain wisdom through knowledge, experience, awakening and awareness
6. The Critical Thinker 006 _ Introduction to Fallacies	a) Define what is a fallacy b) Discuss 3 common fallacies	a) - Fallacy is a bad argument with certain general generic characteristic features that can be mistaken as good argument. Fallacy is a bad logic. It is a mistaken belief, especially one based on unsound argument. It is the type of argument that recognized to be bad but very persuasive - An alternate definition of Fallacy (1) it is an argument (2) it is a bad argument (3) it is convincing (4) deceptively disguised as a good argument b) The 3 common fallacies are: 1) Use-mention fallacy. It is confusion of words used to describe a thing with the thing itself 2) Equivocation fallacy. It is the misleading use of a term with more than one meaning or sense 3) Fallacy of begging the question
7. TCT 007 _ 5 Essential Components of Critical Thinking _	a) In order to become effective critical thinkers, what are the 5 pillars of critical thinking? b) Define, distinguish and understand the definitions of logic, argument and rhetoric, the 3 key components of critical thinking	a) The five pillars of critical thinking are: 1) logic, 2) argument, 3) rhetoric, 4) background knowledge and 5) attitudes and values b) Argument has 2 steps: 1) logic – good or bad fallacy 2a) premise – true or false. This requires background knowledge. 2b) Rhetoric is the way to deliver the premise effectively

Part 1_ Logic vs. Argumentation		
8a. CTT 008_ Logic for Critical Thinkers _ Part 1_2	<p>a) Define logic, Formal/Symbolic Logic, syntax (structures) and semantics (contexts)</p> <p>b) Cite 3 practical forms of logic in daily lives with examples</p>	<p>a) - Logic is a disciplinary studies, correct reasoning and rules to determine the sequence of events</p> <ul style="list-style-type: none"> - Formal logic is the study of inference with purely formal content - Symbolic logic is the study of symbolic abstractions that capture the formal features of logical inference. - Syntax is structure (thought form) - Semantics is contexts (vocabulary and components of Language) <p>b) 1) Categorical Logic (Aristotelian): Use diagram method to model the relationship between categories to see if the argument is valid or invalid form, i.e. All A are B, No A are B, Some A are B, Some A are not B</p> <p>2) Propositional Logic (Compound Statement): We propose that is so by using a single alphabet to represent a statement, i.e., A or B, not B, therefore A etc. E.g. Equations in Perception of Realities lecture</p> <p>3) Predicate Logic: Analyse every single word in the argument. Use arcane symbols to represent them</p>
8b. TCT 008_ Logic for Critical Thinkers _ Part 2_2	<p>a) Cite 5 benefits of master practice and apply logic in daily lives (beneficial tools of logic)</p> <p>b) Understand the principle concept of logic.</p> <p>c) State the meaning of developing “Logic Literacy”</p>	<p>a) The 5 benefits:</p> <ol style="list-style-type: none"> 1. Studying logic helps develop clarity and precision in our use of language 2. Studying logic helps develop a basic vocabulary for thinking and talking about arguments 3. Mastering the argument forms which will give us all the tools we need to do logical analysis “on the fly” 4. Some basic logic is necessary to understand fallacies 5. Logical analysis and criticism can be very persuasive when used in the right way (most important benefit) <p>b) Logic is about consistency and contradiction. Both concepts are the heart of relationship between the logic and the psychological persuasion</p> <p>c) Developing "logical literacy" is to stay focused on basic logical concepts, ability to reason critically can be developed with the above 5 process</p>
9. TCT 009_ Argumentation and Rhetoric	<p>a) Distinguish the relationship between argumentation with philosophy or with rhetoric and give examples</p> <p>b) realize the importance of the goal for argument</p>	<p>a) There are 2 types of argumentation: (1) philosophy and (2) rhetoric</p> <ul style="list-style-type: none"> - From philosophical point of view, the goal for argumentation is to persuade for good reasons, to get the truth of the matter (not just winning) - Rhetoric can be good or evil. It’s the art of an effective and persuasive speaking and writing that can be used to motivate, influence and persuade people. For example, White magic i.e., Martin Luther King, Black magic i.e., Hitler <p>b) The goal of argument is to seek the truth of the matter and not just winning and ultimately to better understand ourselves and the world</p>

<p>10. TCT 010_ Critical Thinking's Dirty Secret</p>	<p>a) Define essential background knowledge and give examples</p> <p>b) State the basic rules of argument analysis</p>	<p>a) - Background knowledge is one of the most important component of critical thinking Essential background knowledge is:</p> <ol style="list-style-type: none"> 1. General subject matter knowledge 2. Knowledge of the intellectual history of an issue 3. Knowledge of the way the human mind actually works, i.e. which includes all sides of the issue <p>- Background knowledge can strengthen the true or false of the premise/premises. Ascertain if conclusion will follow. C.T. does not teach background knowledge, you teach yourself.</p> <p>b) Analysis of Argument has 2 steps. First is assess the logic (grammatical structure). Second is the true or false of the premise.</p> <p>- Step-1. Evaluate the logic – Does the conclusion follow the premise? Is it logical or a fallacy? As long as the sentence is grammatical correct, it passes the step-1 analysis</p> <p>- Step-2. Evaluate of premises – Is this premise correct or not? That depends mainly on the comprehensiveness of background knowledge</p>
<p>11. What Critical Thinkers Can Learn From Actors</p>	<p>a) Recognize the importance of comprehensive background knowledge. Learning and understanding the foundation of various viewpoints from all sides</p> <p>b) Use actor’s skill to emulate into another person’s mind set to test our understanding of their views and to test whether our intellectual belief and attitude are true</p>	<p>a) Role playing – being in someone else's shoes; the willingness and ability to see things through other people's eyes. The ability to see different viewpoints. – Not only analyse their scientific and psychological issue but understand their arguments</p> <p>b) Learn and understand different viewpoints – provide a comprehensive solution strategy, a prerequisite to enlightenment and solution solver for complex problems.</p>
<p>12. Cognitive Biases_ What They Are, Why They're Important</p>	<p>a) Explain how human’s mind actually works for reasoning and why</p> <p>b) State reasons why we should learn cognitive biases (literacy)</p>	<p>a) - Human beings actually think and reason, form beliefs and make decisions. But there are differences between how we ought to reason and how we actually reason. It’s all because of biases (cognitive) and heuristics (rule of thumb or short cut)</p> <p>- Definition of Heuristic is pertaining to the use of the general knowledge gained through experience, sometimes expressed as "using a rule-of-thumb”.</p> <p>b) Definition of a cognitive bias refers to a systematic pattern of deviation from norm or rationality in judgment, whereby inference about other people and situations may be drawn in an illogical fashion https://en.wikipedia.org/wiki/Cognitive_bias</p> <p>- Reason to learn cognitive biases:</p> <p>- Able to recognize the most important and most discussed cognitive biases and won’t be affected by them in decision making</p>

	<p>c) Give example for one of the most common cognitive biases</p>	<ul style="list-style-type: none"> - Aware of the process that influences our judgement for decision making - Avoid conscious manipulation and exploitation (which further their interests rather than your beliefs and values). <p>c) There are over 100 examples of cognitive biases. Anchoring effect is seen commonly in our everyday life – good example is Dollarama Store. The \$1.00 advertisement makes the shoppers think that all items are \$1.00.</p> <ul style="list-style-type: none"> - Google to see a long list of cognitive biases. <p>https://en.wikipedia.org/wiki/List_of_cognitive_biases</p>
<p>13. Simultaneous Causation, God and the Big Bang</p>	<p>a) Define causation and give examples</p> <p>b) Cite the difference between Kalam argument and Kalam Cosmological Argument</p> <p>c) Describe what the Kalam Cosmological Argument is. Recognize how it was used to prove the existence of God</p> <p>d) Describe how the Kalam Cosmological Argument collapsed by using the logical analysis</p> <p>e) State the difference between the Humean and non-Humean theory</p> <p>f) Define what simultaneous causation is and why it was used for the argument</p>	<p>a) - Causation is cause and effect</p> <ul style="list-style-type: none"> - Monotheistic religion – God is the cause and effect is the universe <p>b) - The Big Bang Theory:</p> <ol style="list-style-type: none"> 1) Kalam argument (Al-Kindi, 9th century) only has 1 premise: Things that comes to exist is caused (http://www.f.bg.ac.rs/bpa/pdf/BPA-27-2014-Drago-Djuric.pdf) 2) Kalam Cosmological Argument (William Lane Craig, 21st century, modified) has 2 premises: <ul style="list-style-type: none"> • Everything that begins to exist has a cause of its existence. • The universe began to exist. <p>Conclusion: Therefore, the universe has a cause of its existence</p> <ul style="list-style-type: none"> - Argumentation is wrong because of no time before Big Bang) <p>c) - The existence of God based upon purely empirical premises and brute force of logic</p> <p>d) - It collapsed (right from the premise-2) because there is no time before Big Bang, therefore no cause</p> <ul style="list-style-type: none"> - Physicists debunked the Kalam Cosmological Argument with <i>NO Time</i> before Big Bang – no cause, no effect <p>e) - David Hume (Humean Approach): The Humean view is against cause for the universe. Cause and effect is illusionary; is human's psychological projection and perception of reality problem. It is also temporal and there is no time before Big Bang. According to the Humean view, there is no such thing as cause for the universe.</p> <ul style="list-style-type: none"> - The non-Humean view says, "Yes, there are causes". <p>Natural law causes things to happen i.e. Thermodynamics, conservation of energy, conservation of mass and from ice to vapour. But the non-Humean approach argues against cause and against God because natural laws are not Gods. And the universe itself is not God.</p> <p>f) - Simultaneous causation – cause and effect happen at the same time</p>

	g) Define the first principle by using the Kalam argument.	<p>- Because the existence of God theory was collapsed and the God based religion try to counter argue by using simultaneous causation to prove God exist</p> <p>- Simultaneous causation: theist wants to believe that god somehow caused the universe to exist at the <i>same time</i> as the effect took place</p> <p>g) - See the most fundamental level of boiling down from three words to one word, which is the first principle</p>
14. Cognitive Biases and the Authority of Science	<p>a) Cite 3 common weaknesses in human nature for biases</p> <p>b) Understand the relationship of cognitive biases to scientific knowledge</p> <p>c) Describe the two main cognitive biases that induce error</p> <p>d) Define cognitive bias</p> <p>e) Describe a few importance biases</p> <p>f) Outline the scientific methods to reduce the systematic error caused by cognitive bias</p> <p>g) Determine whether the superiority of scientific knowledge can be defended without resorting to a “mythic” view of science.</p>	<p>a) Cognitive bias is inherent human weakness, i.e. (1) Undisciplined Pattern-seeking, (2) Suck at weighing evidence (Confirmation Bias), (3) Bias towards confirmation</p> <p>b) - Human beings are prone to biases that lead to error</p> <p>- Scientific methodology aims to neutralize the effect of these biases and thereby reduces error</p> <p>c) - Pattern seeking error. Human beings are pattern recognition machines leading to identifying patterns that do not exist e.g. apophenia and pareidolia. Apophenia: the experience of seeing meaning patterns or connections in random or meaningless data, e.g. pareidolia, back masking Pareidolia is visual apophenia e.g. considering the moon to have human features.</p> <p>- Error in weighing evidence e.g. confirmation biases</p> <p>d) Three types of biases that constitute confirmation bias:</p> <ul style="list-style-type: none"> • Biased search for information • Biased interpretation of evidence • Biased memory. <p>e) Expectation effects /biases, Experimenter effects</p> <p>f) - Blind, randomized control group to reduce Expectation biases. Double-blind control groups to reduce Experimenter effects, controlled studies and statistical methods</p> <p>- Give one example of a kind of methodology that can prevent us from falling into the trap of cognitive bias, e.g. confirmation biases: biased search, interpretation and memory</p> <p>g) - Yes, science is what we do to keep us from lying to ourselves – Richard Feynman</p> <p>- Following scientific protocol will render our knowledge more reliable thus less prone to error</p>
15. TCT 015_ Confirmation Bias	a) Discuss the evolutionary origin and nature of human reasoning with special emphasis on confirmation biases	a) This is a stance that acknowledges our limitations and propensity to fallacies and biases. The usefulness of background knowledge is emphasized

<p>and the Evolution of Reason</p>	<p>b) Contrast 2 evolution theories of human reasoning</p> <p>c) Define epistemic humility and its benefit.</p>	<p>b) The development of human reasoning as an improvement to the quality of individual beliefs and decisions vs the evolution of human reasoning for social persuasion (Argumentative theory) an important ingredient to improve the quality of our judgment and decision</p> <p>c) The benefit of reasoning in diverse group requires humility in accepting viewpoints of other members. It is superior to individual reasoning because of opinions from diverse group members</p>
<p>16. TCT 016_ Critical Thinking About Conspiracies (Part 1)</p>	<p>a) Define conspiracy</p> <p>b) Identify the critical elements in conspiracy theory.</p> <p>c) Understand the motive in the execution of conspiracy</p> <p>d) State methods or techniques use to mind control people.</p>	<p>a) People making plans and acting in secrecy usually with a sinister or objectionable goal. Namely in the explanation of historical events and appeal to a conspiracy of some sort</p> <p>b) Implausibility, misinterpretation of reality, inconsistencies, inferences, fallacies</p> <p>c) To execute an agenda objectionable to the public</p> <p>d) - Dumbing down the public by popular cultural diversion and by elimination of critical thinking education. - Deception through mass media and propaganda - Subliminal advertising - Surveillance technology - Mind-altering toxins - Electromagnetic radiation</p>
<p>17. TCT 017_ Critical Thinking About Conspiracies _ Part 2</p>	<p>a) Recognize the inverse relationship of the plausibility of a conspiracy to its major determining factors</p> <p>b) Become familiar with the argument of proponents and opponents (default skepticism) of conspiracy theory</p>	<p>a) Plausibility is inversely related to grandeur, number of people involved, duration, force to keep quiet and layers of structure required</p> <p>b) the main arguments of proponents are persuasion, mind control, disinformation and distraction, vs the main arguments of opponents (Skeptics) are impossibility to have magical power and control over information, psychology and nature of human and human society</p>
<p>18. TCT 018_ Conspiracies, Mind Control and Falsifiability</p>	<p>a) Reinforce the argument of proponents and opponents (default skepticism) of conspiracy theory.</p> <p>b) Introduce the methods in the evaluation of conspiracy theory</p>	<p>a) the main arguments of proponents are persuasion, mind control, disinformation and distraction, vs the main arguments of opponents (Skeptics) are impossibility to have magical power and control over information, psychology and nature of human and human society</p> <p>b) the concept of falsifiability, unfalsifiability, ad hoc revision, rational criticism and openness to genuine empirical testing</p>