

Critical Arguments

Friday, January 12, 2018 9:34 AM

1. Communication
 - a. Inform or persuade
 - b. Use information to persuade others to act/ change behavior
 - c. Persuade by communication, using words/numbers/facts
2. Objectives
 - a. Argument structure/purpose
 - b. Extract critical arguments from text
 - c. Analyze critical arguments
 - d. Synthesize arguments
 - e. Learn visual/oral critical arguments
3. Good critical thinking
 - a. Ask good questions
 - b. Develop convincing, persuasive answers to questions
 - c. Develop clear, purposeful actions/plans based on reasoning
 - d. Develop abilities to persuade others to buy into actions/plans
 - e. Be successful in whatever you choose to do in career/life
4. Significance of critical arguments
 - a. Why we behave
 - b. Persuade others
 - c. Role of engineers to beneficially impact lives of people
 - d. Understand why/how people make decisions/act and persuade others to act
5. Heap of sand
 - a. Dump a pile of 10 trillion grains
 - b. One grain at a time, when is there no longer a heap
 - i. Subjectivity
 - ii. Ambiguity in communication
 - c. Words are vague
 - i. Understand audience
 - ii. Come to common agreement for meanings of words
6. Significance of Critical arguments
 - a. Translate technical knowledge into social/business context to make decisions, have impact, enable change/improvement
7. Critical argument structure
 - a. Premises that lead to a conclusion which requires an action, decision, or specific behavior
 - b. Strong: compels a rational person to agree with conclusion
8. Strength of a critical argument
 - a. Premises are objective/accurate/true (soundness)
 - i. Pure water boils at 212 deg. F at 1 atm pressure (objective)
 - ii. Women are attracted to tall men (subjective)
 - b. Conclusion logically results from premises (validity)
 - c. Strong, compelling argument has sound premises and valid logic.
9. Answer the question of WHY?
 - a. Why get a raise?
 - b. Why remove food beyond expiration date?
 - c. Why should somebody choose to do X?
10. Example
 - a. "should", "must", etc. indicate action or change in behavior.

11. Inductive vs. Deductive Premises
 - a. Inductive - specific observations lead to generalization
 - i. i.e. every apple I have ever seen has been red, there are apples at the grocery store, therefore the apples at the grocery store must be red
 - b. Deductive - conclusion based on definitions
 - i. i.e. all rectangles have 4 sides, square has 4 sides, squares are rectangles
12. Subjective vs. Objective Premises
 - a. Objective: factual, generally agreed upon criteria for evaluating soundness
 - b. Subjective: not agreed upon criteria for evaluating soundness
13. Premise evaluation
 - a. Carefully evaluate the soundness
 - i. Use of words, evaluation of type
14. Logic Format
 - a. Written like mathematical relationships
15. Logical Fallacies
 - a. Error in reason or logic
 - b. Types
 - i. Deductive
 - ii. Inductive
 - iii. Circular reasoning
 - iv. Causal
 - v. Equivocation
16. Deductive Fallacies
 - a. i.e. apples fall from trees onto ground, observe apple on ground, must have fallen from tree (cause-effect) -- does not say ALL apples fall from tree to ground
17. Composition
 - a. i.e. kangaroos have pouch, kangaroos are mammals, bob is a mammals (true of part must be true of whole) -- all mammals are not kangaroos
18. Inductive
 - a. i.e. it usually rains in evening, it is evening, it will rain -- since something could occur does not mean it will occur
19. Circular reasoning/begging the question
 - a. Best colors are the ones I like, I like the color green, green is the best color.
20. Causal
 - a. Computer broke yesterday, I did not turn in my homework today, I did not turn in my homework today because my computer broke yesterday (no logical relationship between events)
21. Equivocation
 - a. Murder is depriving a living entity of life, washing hands kills bacteria, killing is action of depriving living entity of life, washing hands is murder (defining words as equal to make an argument)
22. Common mistakes
 - a. Do not introduce a new concept/word into conclusion not used in premise (adding new variable)
 - b. Premises falsely implying all of something in reverse
 - c. Not including word like should in conclusion
 - d. Not including all facts/limitations in premises, only giving partial information.
 - e. Use of good/bad, right/wrong in premises (moral arguments)
23. Extraction of Critical Arguments