Welcome to Critical Thinking in 10 minutes, your starting point to developing the skills that will help you succeed in your readings, studies, researching, and writing throughout university.

What is Critical Thinking?

✧ Critical thinking is a skill that allows you to reflect on and evaluate what you hear and read.

✧ Critical thinking can also be applied to your own researching and writing to ensure your assignments meet the standards required for submission or publishing.

Critical thinking is part of almost everything you do in the university setting. This skill allows you to reflect on and make judgments about both the information you're presented and the information you present. By gaining an understanding of how arguments are structured, you can protect yourself from bad arguments, and make sure the arguments you're presenting are good ones.

Critical Thinking Strategies

◇ Strategies / Principles:
- The Role of Language in Arguments.
- Argument Structure: Premises and Conclusions.
- Standardizing Arguments.
- Deductive and Non-deductive Arguments.

In this presentation, we will be presenting you with four principles that can be used as strategies to assist you in critical thinking. We will examine the role language plays in arguments; how arguments are structured; the important role that standardizing arguments can take; and, the differences between deductive and non-deductive arguments.

Throughout this presentation keep in mind two things:

1.Critical thinking strategies are important while reading and listening to arguments in order to properly assess their validity.

2.These same strategies can be used in your own writing to make your research papers and other assignments stronger.

Let's begin.

Principle 1: Language

Meaning:
◇ Ensure that the words used in arguments actually mean what the author intends them to.

Definition:
◇ Ensure that any definitions used to support arguments are accurate.

Clarity of language:
◇ Ensure that language is clear. If you don't understand an argument it will become difficult to assess it.

Accuracy of language:
◇ Ensure that the language used for an argument is accurate and in context. So called 'extreme' language may indicate the author's personal bias.

The use of proper language when assessing arguments is essential.

Check the **meaning** of words to ensure that they are being used correctly. Many times, a word may have multiple meanings depending on the context of the argument.

Check the **definition** of words to ensure that their descriptions are accurate within the context of the argument and to support the argument.

Check the **clarity** of the language being used to state the argument. Does the argument make sense from a language perspective?

Lastly, check the **accuracy** of the language being used to state the argument. Does the language suggest any judgmental statements from the author that may further suggest any personal bias on the topic being argued?

The words and phrases authors use to present their arguments are very important in the assessment of the overall argument.

Principle 2: Structure

Arguments = Premises + Conclusion

Premises
◇ statements that provide reasons or evidence in support of an overall conclusion

Conclusion
◇ overall claim being made by the researcher must be supported by the premises

The basic structure of every argument is essentially the same: two or more premises lead to a conclusion.

The **premises** of an argument are its supporting structure. They're statements that provide evidence in support of the conclusion of the argument.

The **conclusion** of an argument is the overall claim being made by the author. Most, but not all, conclusions can be picked out by looking for common indicator words like "so", "therefore", "consequently", and "because", and usually appear either near the very beginning or the very end of an argument.

It is important to understand the structure of arguments in order to be able to extract them for assessment or write them for assignments.

Principle 3: Standardization

Arguments are not always clearly stated. The following strategies can assist you to standardize arguments and make them clearer.

Strategies:
- Logical Order
- Clusters
- Implied Conclusions
- Missing Premises

Arguments are not always clearly stated. Standardizing arguments is a process where the premises and conclusion of arguments are extracted from their respective texts and are reorganized to assist the reader to clarify them. The following strategies are powerful tools to assist you in the standardization process.

The premises and conclusion of arguments may not always be presented in a **logical order**. By extracting these components of an argument the reader can then reassemble the argument in a logical order to properly assess the argument.

Sometimes two or more arguments may be presented in the same passage of text and may also share some of the same premises. Extracting these components of the arguments and **clustering** them into separate arguments can assist the reader in both properly distinguishing between the arguments and then assessing each argument.

Occasionally an argument may be missing a conclusion. The author of the argument may imply the conclusion without outright stating the conclusion. By extracting the relevant premises the reader may be able to better assess the **implied conclusion**.

Finally, sometimes an author may not include a premise that would otherwise complete the argument. It may be that the missing premise is common knowledge within the specific field of study being presented by the author. By extracting the relevant premises and conclusion and placing them in a logical order the reader may be able to "fill in the blank" and determine what the **missing premise** it.

The preceding strategies are important in assisting a reader to assess an author's arguments. They can also be used to critique an author on their respective ability to present a good argument.

Arguments can be classified as either deductive or non-deductive.

Deductive arguments have premises that provide guaranteed proof of the conclusion.

Non-deductive arguments have premises that do not guarantee the truth of the conclusion.

Depending on whether your argument is deductive or not will determine the strategies used for assessing the argument.

Deductive Strategies

Incoherent:
✧ Conclusion doesn't follow the premises.

Coherent (or "valid"):
✧ Conclusion follows the premises; however, the premises are not necessarily true.

Good (or "sound"):
✧ Conclusion follows the premises and the premises are always true.

When assessing deductive arguments the reader needs to determine whether the deductive argument is incoherent, coherent, or good.

Incoherent deductive arguments occur when the conclusion does not follow from the premises. The premises are good, but the conclusion the author makes from the premises doesn't make sense.

Coherent deductive arguments, also known as valid arguments, occur when the conclusion follows from the premises, but the premises are not necessarily true. In deductive reasoning, all premises must be true in order for the argument to be good. If even one premise is not true than the argument is simply coherent. Keep in mind that for a coherent deductive argument doesn't have to be true. In this case, the coherence is more about the structure of the argument rather than the content of the argument.

Good deductive arguments, also known as sound arguments, occur when the premises and conclusion are actually true.

When examining deductive arguments, first make sure that the conclusion follows from the premises (it is coherent) then examine each premise to determine whether or not it is true. If even one premise is false, the argument is not a good one.

Non-Deductive Strategies

Inductive reasoning:
- Specific examples, information, or statistics are used to create a generalized conclusion.

Argument from analogy:
- Significant similarity between things that are different are used as a premise to support the conclusion.

Argument from cause:
- A cause is used in an attempt to prove a conclusion (usually an effect).

Argument from authority:
- Appeals to an expert or authority are used to support the premises or conclusion.

When assessing non-deductive arguments the reader needs to determine whether the method being used to support the premises and conclusions are valid. These methods include inductive reasoning, as well as arguments from analogy, cause, or authority.

Inductive arguments occur when the author takes specific examples, often individual cases over a long period of time, and draws a general conclusion from them. If these examples involve case studies or statistics then those examples must be evaluated for legitimacy and validity in order to prove the argument good.

Arguments from an analogy occur when the author takes two things that are similar in some way, but different in another, and compares them to each other in order to arrive at a conclusion. Good arguments from analogy have to be made using sufficiently similar things.

Arguments from a cause (or cause and effect) occur when the author uses the cause in an attempt to prove the effect. Through sufficient experimentation and testing a linkage between a cause and an effect may be made.

Lastly, arguments from an authority occur when the author appeals to an authority figure to support the premises and/or conclusion or an argument. When evaluating arguments from an authority always try to establish who the authority being used to support the premises is and try to determine if their expertise is enough to support the premises without any other proof.

Critical Reading

- ◇ Identify arguments
- ◇ Extract arguments
- ◇ Assess language
- ◇ Assess arguments
- ◇ PQ4R

Principle 2 and 3 provided strategies to assist readers in identifying and extracting the components of arguments from text.

Principle 1 and 4 provided strategies to assist readers in assessing the language used in arguments and the arguments themselves.

The critical reading strategy known as PQ4R can assist you further with this process. For more information on PQ4R, check out the "Active Reading and Note Taking" workshop on the Study Skills & Centre's website.

Critical thinking is one of the most important skills you can develop while at university. Like many of these skills, the process can seem daunting at first, but with time these steps become second nature and habitual.

For more assistance and information about critical thinking strategies, visit our website, stop by the Study Skills Office, or call to book an appointment with the Centre's Coordinator — you'll be glad you did!