



COLLEGE OF IDAHO

Logic and Validity

Critically Evaluating the Logic and Validity of Information

Many articles and essays are not written to present information clearly and directly; instead, they might be written to persuade you to accept a particular viewpoint, to offer an opinion, or to argue for one side of a controversial issue. Consequently, one must recognize and separate factual information from subjective content.

Subjective content is any material that involves judgment, feeling, opinion, intuition, or emotion rather than factual information. Recognizing and evaluating subjective content involves distinguishing between facts and opinions, identifying generalizations, evaluating viewpoints, understanding theories and hypotheses, weighing data and evidence, and being alert to bias.

Evaluating Various Types of Statements

Distinguishing between Facts and Opinions

Facts are statements that can be verified or proven to be true or false. Factual statements from reliable sources can be accepted and used in drawing conclusions, building arguments, and supporting ideas. Opinions are statements that express feelings, attitudes, or beliefs and are neither true nor false. Opinions must be considered as one person's point-of-view that you are free to accept or reject. With the exception of informed opinions or testimony*, opinions have little use as supporting evidence, but they are useful in shaping and evaluating your own thinking.

* Informed opinion or testimony - the opinion of an expert or authority

Recognizing Generalizations

A generalization is a statement made about a large group or class of items based on observation or experience with a portion of that group or class. It is a reasoned statement about an entire group based on known information about part of the group. It involves a leap from observed evidence to a conclusion which is logical, but unproven. Because writers do not always have the space to describe all available evidence on a topic, they often draw the evidence together themselves and make a general statement of what it shows. But generalizations need to be followed by evidence that supports their accuracy, otherwise the generalization is unsupported and unusable. A generalization is usable when these two conditions exist:

1. Your experiences are sufficient in number to merit a generalization.
2. You have sampled or experienced enough different situations to draw a generalization.

Testing Hypotheses

A hypothesis is a statement that is based on available evidence which explains an event or set of circumstances. Hypotheses are simply plausible explanations. They are always open to dispute or refutation, usually by the addition of further information. Or, their plausibility may be enhanced by the addition of further information. Critical thinking and reading requires one to assess the plausibility of each hypothesis. This is a two-part process. First, one must evaluate the evidence



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provided. Then one must search for information, reasons, or evidence that suggests the truth or falsity of the hypothesis. Ask questions such as:

1. Does the hypothesis account for all known information about the situation?
2. Is it realistic, within the realm of possibility and probability?
3. Is it simple, or less complicated than its alternatives? (Usually, unless a complex hypothesis can account for information not accounted for by a simple hypothesis, the simple one has greater likelihood of being correct.)
4. What assumptions were made? Are they valid?

Weighing the Adequacy of Data and Evidence

Many writers who express their ideas use evidence or data to support their ideas. One must weigh and evaluate the quality of this evidence; one must look behind the available evidence and assess its type and adequacy. Types of evidence include:

- Personal experience or observation
- Statistical data
- Examples, particular events, or situations that illustrate
- Analogies (comparisons with similar situations)
- Informed opinion (the opinions of experts and authorities)
- Historical documentation
- Experimental evidence

Each type of evidence must be weighed in relation to the statement it supports. Evidence should directly, clearly, and indisputably support the case or issue in question.

Evaluating Persuasive Material

While the main purpose of textbooks is to explain and present information that can be accepted as reliable, other sources may have very different purposes. Some materials are intended to convince or persuade rather than to inform, and these sources need to be carefully and critically evaluated. Persuasive writers use both language and logical argument to exert influence.

Recognizing Persuasive Language

A writer's or speaker's choice of facts and the language used to convey them may influence the reader's or listener's response. Careful choice of details to describe an event shapes a reader's perception of the incident. Selective reporting of details is known as slanted writing. Careful choice of words allows one to hint, insinuate, or suggest ideas without directly stating them. Through deliberate choice of words, one can create positive or negative responses. This is often accomplished through manipulation of the connotative meanings.

Identifying Biased and Slanted Writing



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Bias is when a statement reflects a partiality, preference, or prejudice for or against a person, object, or idea. Much of what you read and hear expresses a bias. As you read biased material keep two questions in mind:

1. What facts has the author omitted?
2. What additional information is necessary?

Slanting is when a writer or speaker uses a selection of facts, choice of words, and the quality and tone of description, to convey a particular feeling or attitude. Its purpose is to convey a certain attitude or point of view toward the subject without expressing it explicitly. As you read or listen to slanted materials, keep the following questions in mind:

1. What facts were omitted? What additional facts are needed?
2. What words create positive or negative impressions?
3. What impression would I have if different words had been used?

Evaluating Arguments

An argument is a logical arrangement and presentation of ideas. It is reasoned analysis, a tightly developed line of reasoning that leads to the establishment of an end result or conclusion. Arguments are usually developed to persuade one to accept a position or point of view. An argument gives reasons that lead to a conclusion. Analyzing arguments is a complex and detailed process. The following guidelines are useful:

- Analyze the argument by simplifying it and reducing it to a list of statements.
- Are the terms used clearly defined and consistently applied?
- Is the thesis (the point to be made) clearly and directly stated?
- Are facts provided as evidence? If so, are they verifiable?
- Is the reasoning sound? (Does one point follow from another?)
- Are counterarguments recognized and refuted or addressed?
- What persuasive devices or propaganda techniques does the author use (examples: appeal to emotions, name-calling, appeal to authority)?

Asking Critical Questions

- ***What is the source of the material?*** Some sources are much more reliable and trustworthy than others; knowledge of the source will help you judge the accuracy, correctness, and soundness of the material. Articles from professional or scholarly journals are often more useful and reliable than articles in newsstand periodicals. To evaluate a source, consider:
 - its reputation
 - the audience for whom the source is intended
 - whether references or documentation are provided



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- ***What are the Author's Credentials?*** You must assess whether the material you are reading is written by an expert in the field who can knowledgeably and accurately discuss the topic.
- ***Why was the Material Written?*** Identify an author's primary purpose. If the author's purpose is to persuade or convince you to accept a particular viewpoint then you will need to evaluate the reasoning and evidence presented.
- ***Is the Author Biased?*** Does the author display partiality, preference, or prejudice for or against a person, object, or idea?
- ***Does the Author Make Assumptions?*** An assumption is an idea or principle the writer accepts as true and makes no effort to prove or substantiate.
- ***Does the Author Present an Argument?*** An argument is a logical arrangement and presentation of ideas. It is reasoned analysis, a tightly developed line of reasoning that leads to the establishment of an end result or conclusion.