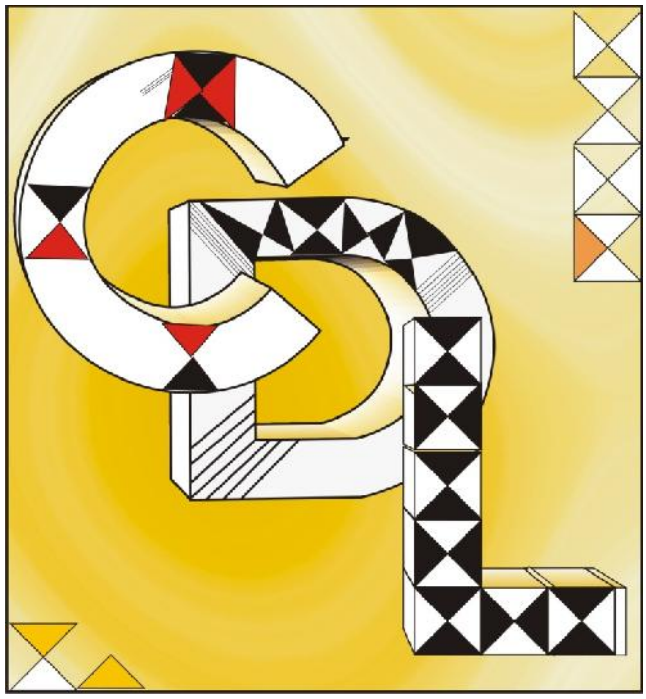
UNIVERSITY OF MAIDUGURI

Maiduguri, Nigeria

CENTRE FOR DISTANCE LEARNING

GENERAL STUDIES



GST 112: Logic and Critical Thinking UNITS: 2

STUDY GUIDE

GENERAL INFORMATION

Course Code and Title: GST 112: Logic & Critical Thinking
Credit Unit: 2

Year: 2015
Total Hours - 28 hours @ two per Week of Study.

For any queries or Questions contact the Course Lecturer Using your email through the Centre for Distance Learning Portal.
You are welcome to this study Unit. Each Unit is arranged to simplify your study. In each topic of the Unit we have introduction, learning outcome, in-text information, in-text questions and answers, summary and self assessment exercises. In-text questions and answers serve as motivation for your reading and to encourage to pay attention to major points in the text. Tutors will be available at designated contact Centre for Tutorial. Meet them to resolve your questions and other guide. The Centre expects you to plan your work well. Should you wish to read further you could supplement the study with more information from the list of references and suggested reading available in each study Unit.

PRACTICE EXERCISES

SELF ASSESSMENT EXERCISES (SAES)

This is provided at the end of each topic or Study Session. The exercises can help you to assess whether or not you have actually studied and understood the topic/study session. Solutions to the exercises are provided at the end of the Study Unit for you to assess yourself.

HOW TO PREPARE FOR EXAMINATION

To prepare for the examination you should read and understand the Study Materials provided for you on C.D.ROM, prints or downloads from the Portal.
Other things you need to prepare for examination include understanding all sample questions at the end of every Study Session/topic Reading the suggested/recommended reading texts.

ASSESSMENTS

-The continuous assessment for all courses consist of 30%.
-The Examination shall make up 70% of the total Marks.
-Feedback and advice is a component of the continuous assessment

The Examination shall be conducted at the Centre for Distance learning (Centre). Students are to come to the Centre on the Examination date with all the necessary requirements. The Examination is Computer based or e-testing one.

STUDY SESSION 1: FOUNDATION OF LOGIC AND CRITICAL THINKING

Introduction

A creative thinker is a gifted student who has the ability to substitute, combine, rearrange, redesign, adapt, design, amend, minify, maximize, brainstorm, hypothesize, restart, modify, alter, create, reverse and rename ideas. He has the ability to question what he reads or sees and has higher level of thoughts (‘Gifted Minds’, n.d.).

Learning Outcomes for Study Session 1

At the end of study 1, you should be able to:

1.1 Explain the concept of logic.

1.2 Define the concept of argument.

1.3 Define and explain proposition.

1.4 Define premise and distinguish the types of premises.

1.5 Define and explain the concept of syllogism and the rules governing it.

1.6 Explain the concept of critical thinking and how to improve it.

1.7 Explain the steps and keys of problem solving.

1.8 Examine the concept of fallacy and its kinds.

1.1 Logic

Actually, it is difficult to explain what logic means, especially to a layperson. However, various philosophers have given different definitions of logic. Copi (1968:3) defines logic as “the study and methods used in distinguishing correct from incorrect reasoning”. In addition, Kahane (1968:2) defines logic as “an attempt to distinguish correct (valid) from incorrect (invalid) reasoning. Similarly, Otakpo (1985:92) defines logic as “the systematic study of the structure or principle of valid inference by a method which

abstracts from their content or matter of the propositions and deals only with their logical form.

The definitions above imply that logic is concerned with arguments based on methods of reasoning whether as a universal or particular idea and on the principle of valid inference -whether it has a valid syllogism or not. Logic is best explained in terms of criticism and proofs. This means logic is not about presenting arguments to criticize other peoples' opinions but backing up your opinions with objective ideas that are sound. However, logic is neither the fundamental principle governing the universe (i.e. a divine law that instructs you to do things in a certain way) nor the fundamental standard governing human behaviours. Example, Mr. Audu is studying medicine and surgery logically he should become a doctor but he can decide to become a lecturer. Therefore, logic is not what the mind must follow but what the mind ought to follow.

The central idea of logic is that argument is presented as a proposed statement based on declarative sentence.

Summary

In study session 1.1, you have learned that:

Logic is concerned with an argument based on methods of reasoning whether as a universal or particular idea and principle of valid inference whether it has a valid syllogism or not.

1.2 Argument

An argument is the logical arrangement and presentation of ideas. An argument consists of two or more propositions otherwise it is not an argument. These propositions are called **premises** and the resulting idea from them is a **conclusion**. Although it is a conclusion in one argument, it can also be a premise in another argument. For example:

All Nigerians are Africans.

Some men are Nigerians.

Therefore, some men are Africans.

The first two statements are called premises while the last idea is the conclusion. The last idea can become a premise in another argument.

Summary

In study session 1.2, you have learned that:

An argument is composed of statements and a resulting conclusion.

1.3 Proposition

A proposition is a declarative statement with two inherent properties - yes or no. According to an Aristotelian logician, a proposition has four elements: **subject term, predicate term, copula** and **quantifier**.

Subject term is the main term in the sentence that is being talked about.

Predicate term is the term that indicates what the subject term is all about.

Copula is the term that links the subject and the predicate terms together.

Quantifier is a linguistic tool that shows whether the proposition is inferred based on universal idea or particular. Consider the four examples below:

1. All$^{\text{Quantifier}}$ Nigerians$^{\text{subject}}$ are$^{\text{copula}}$ hardworking$^{\text{predicate}}$
2. All$^{\text{Quantifier}}$ Stones$^{\text{subject}}$ are not $^{\text{copula}}$ mortal$^{\text{predicate}}$
3. Some $^{\text{Quantifier}}$ Students$^{\text{subject}}$ are$^{\text{copula}}$ politicians$^{\text{predicate}}$
4. Some $^{\text{Quantifier}}$ Doctors$^{\text{subject}}$ are not$^{\text{copula}}$ academics$^{\text{predicate}}$

The four sentences above are represented by the terms that categorize them. Moreover, these propositions are further categorized based on standard forms. A statement is either unconditionally affirmed or negated. It is unconditionally affirmed when there is relationship between the subject and predicate term while it is a negative proposition when the predicate term denies something about the subject term. Propositions are categorized forms based on the quantifier and the copula used in the proposition(s). Let us use the same four examples used above:

1. All Nigerians are hardworking = Universal affirmative proposition
2. All Stones are not mortal = Universal negative proposition
3. Some students are politicians = Particular affirmative proposition
4. Some doctors are not academics = Particular negative proposition

Propositions are categorized based on their respective standard forms. The first two propositions are regarded as universal statements because they are quantifiers that generalize the subject terms as indicated by “all” while the second two are regarded as particular propositions because they are inferred based on specific elements - “some”. Furthermore, the categorization based on either affirmation or negation is based on the relationship between the subject and predicate terms. When the predicate term establishes some sort of connection with the subject term using words such as “is”, “are”, “have”, “like” etc., then it is regarded as affirmation. Similarly, when phrases such as “are not ", “have not”, “don’t like” etc. are used, the predicate term is denying something about the subject term; that becomes a negation or a negative system. Moreover, the standard forms are represented by letters in a reduced form. The word affirmed is Latin “affirmo” and negative “nego”. The first two vowel letters are used to represent the standard form for each proposition. Thus, letters ‘a’ and ‘i’ are taken from the word “affirmo” to represent

the two affirmed statements while ‘e’ and ‘o’ are taken from the word “nego” to represent the two negative propositions (Otakpo, 2000). These give us:-

Sap = Universal affirmed proposition

Sep = Universal negative proposition

Sip = Particular affirmed proposition

Sop = Particular negative proposition

Summary

In study session 1.3, you have learned that:

Propositions are

a. declarative sentences

b. have four terms: quantifiers, subject terms, predicate terms and copulas

c. are classified based on four standard forms: universal affirmation, universal negation, particular affirmation and particular negation.

d. are also represented as Sap, Sep, Sip and Sop based on their respective standard forms.

1.4 Premise

The term *premise* refers to the central idea on which reasoning is based. It is one of the basic concepts of logic. It is either the main idea or the supporting idea. It is a proposition contained in an argument which provides a ground for the establishment of the conclusion (Neneye, 2003). A premise is said to be true or false by virtue of its content.

True premise: - Is an argument that is based on an objective idea. Example - All men are mortal.

False Premise:- Is an argument that is based on subjective or wrong ideas. Example - All dogs have five legs.

Conclusion: - Is a proposition that is drawn from the two premises in an argument. A conclusion is reached on the foundation of the information established by the premises. A conclusion is indicated based on the following phrases: “therefore”, “hence”, “thus”, “so” etc.

Inference:- Is the transition from premise to conclusion. It is also the process of reaching a conclusion. For example:

Some politicians are corrupt – major premise

Some northerners are Politicians – premise

So, some northerners are corrupt – conclusion

From the above argument it can be seen that “some northerners are corrupt” is drawn from the first two propositions (premises). This procedure of transition is called *inference*.

Summary

In study session 1.4, you have learned that:

Premise is the central idea on which the reasoning is based.

a. major premise is the major idea

b. minor premise is the supporting idea

c. Driving a conclusion from the two premises is called inference

1.5 Syllogism

Logic deals with formal science and the central idea is argument and since an argument comprises of propositions and a resulting conclusion, therefore there is the need to assess the logical arrangement of these propositions in the argument (Neneye, 2003). Syllogism serves as a device for measuring the formal structure of an argument. Thus, a syllogism is an argument that is composed of major premise, minor premise and a conclusion. The first or the main idea is called major premise, the second premise or the supporting idea is called minor premise while the last proposition is not a premise but a conclusion drawn from the premises. A valid syllogism is governed by a particular formula. The formula is given as follows:

All P's are Q's (major premise)

R is P (minor premise)

Therefore, R is P (conclusion).

The above structure is established in order to determine whether the argument has created a strong link between the premises and the conclusion. The application of syllogistic formula is done by demarcating the premise into two parts – subject and predicate terms in every proposition. Consider the following example below:

All Dogs$^{P's}$/ have five legs^{Qs}.(major premise)

Bingo^{R}/ is a dog^{P} (minor premise)

Therefore, Bingo^{R}/ has five legs^{Q} (conclision)

All men^{P}/ are mortal^{Q}

Dayo^{R}/ is mortal^{Q}

Therefore, Dayo /is a man^{P}

From the above argument, it can be seen that the first argument, despite having one false premise and a false conclusion, the syllogism is valid because there is a strong link between the premises and the conclusion. The premises have necessitated the establishment of the conclusion. However, the second argument has all true premises and true conclusion yet invalid syllogism. The reason is that the conclusion is not necessitated by the premises. The argument establishes that all men are mortal but the idea that *Dayo is a man* has not been established by the argument to warrant the authenticity of conclusion, hence invalid syllogism.

Rules of Valid Syllogism

There are certain rules that should be observed to arrive at a valid or invalid syllogism. Although traditional logicians identified eight rules, modern philosophers recognize five rules; either way, some rules must be considered in order to have an acceptable structure (Layman, 2002).

Rule one: A valid syllogism must contain exactly three terms and each term is used in the same sense right through the argument. The terms are major premise, minor premise and a conclusion. For example:

All mammals give birth to their young ones (major premise)

All human beings are mammals (minor premise)

Therefore, all human beings give birth to their young ones (conclusion)

Rule two: The middle term in a valid syllogism must be distributed in at least one premise and the subject term in the major premise must appear in the minor premise for the syllogism to be valid. Example:

Some students are lazy.

Aisha is a student.

So, Aisha is lazy.

The underlined phrase in the major premise is the main idea in the argument. So for the argument to have a valid syllogism the idea in the supporting premise must be related to the central idea. Hence, Aisha is first identified as a student before the predicate term *lazy*. Furthermore, for the syllogism to be valid the introduced term/supporting idea "Aisha" must be distributed in the minor premise first before it is considered in the conclusion.

Rule three: For a syllogism to be valid there should be non-inclusion of an undistributed term in the conclusion. This implies that the conclusion should be implied by the premises. Thus, a new idea or term should not be incorporated in the conclusion which has not been presented by the argument.

Example:

Some hardworking people are successful.

Some students are hardworking people.

Therefore, some lecturers are successful.

The term *lecturer* is an undistributed term; it should not have appeared in the argument and hence the syllogism is invalid.

Rule four: A syllogism is valid only if the number of negative premises is equal to the number of negative conclusions. This means that no syllogism is valid with negative unrelated terms. For Example:

No stone is mortal.

No university lecturer is a politician.

The above premises are unrelated and each is denying something about the subject term. Hence, there is no conclusion intended to complete the syllogism.

Rule five: If an argument has all true premises, it must have a true conclusion otherwise the syllogism must be invalid. For example:

All Nigerians ^{P} / are Africans^{Q}

Some women^{R}/ are Nigerians^{P}

Therefore, some women^{R} are Africans^{Q}

The above arguments show how the fifth rule of syllogism is applicable; it indicates that from two affirmed propositions the resulting conclusion must be affirmed but if it is false, then the structure is invalid. Example:

All Nigerians are Africans.

All Cameroonians are Africans.

Therefore, all Cameroonians are Nigerians.

The reason for the false conclusion is that the above argument has violated the second rule of syllogism. The argument lacks strong link between the premises and their conclusion.

Summary

In study session 1.5, you have learned that:

Syllogism defines the structure of an argument.

a. The formula that determines a valid syllogism is

All P's are Q's

R is p

Therefore R is Q

b. a syllogism has three terms major and minor premises and a conclusion which are used in the same sense. Also the supporting idea is distributed in the major and

minor premises; no new term is introduced in the conclusion and the premises must be linked such that if they are affirmed the conclusion must also be affirmed.

1.6 CRITICAL THINKING

Critical thinking involves reading, writing, speaking, and listening. These are the essential fundamentals of communication. Critical thinking also plays a significant role in social change. Any institution draws its existence based on particular assumptions about the way things should be done. Before the institution can change, those assumptions need to be reappraised. Critical thinking as the act of careful judgment or cogent reasoning helps to uncover preconception and narrow-mindedness. This is a first step towards interacting with people of other backgrounds. Critical thinking involves one person alone and the analysis is done with the mind not the heart because the heart weighs advantages and disadvantages while the heart goes for what it wants (Hamby, 2007).

Critical thinking is a path to freedom from misinformation and dishonesty. One has the ability to question what he sees, hears and reads. Acquiring this ability is one of the main aims of a moderate education.

Creative students are methodical thinkers. They differentiate between subjective and objective terms. They ask great questions. They make in-depth appraisal of issues. They analyze situations, expose assumptions and define their terms. They make assertions carefully basing them on sound logic and concrete evidence. Almost everything that we call knowledge is a result of these activities. This means that critical thinking and learning are closely linked.

As a critical thinker, you should always ask yourself why you criticize people's opinions and where necessary be assertive in your criticism. Update your knowledge via the use of internet, for instance, to find out more on the topic you are concerned with. Finally you

should be liberal because your objective is not to criticize the personally of the one in question but rather the proposal he puts forward.

Ways to Improve Critical Thinking

For one to be an objective thinker there are certain things he needs to avoid in order to have good sense of judgment devoid of prejudice. The following should be avoided:

Serendipity: Walpole (1754) cited in Clark (1977) refers to serendipity as a "lucky coincidence" or "pleasant surprise". In his letter to a friend, he explained an unanticipated discovery he had made by reference to a Persian fairy tale, “The Three Princes of Serendip”. The princes, he told his correspondent, were “always making discoveries, by accidents and sagacity, of things which they were not in quest of”. Serendipity is neither a matter of coincidence nor a pleasant event happening by accident, "finding out things without being searching for them", or "a pleasant surprise". Thus, a critical thinker should avoid reasoning based on serendipity/probability /chance but on facts.

Intuition: is a Latin word “*intueri”* to consider a phenomenon of the mind. It involves the ability to acquire knowledge without inference or the use of reason is often misunderstood and misinterpreted as instinct, truth, belief, meaning and other subjects. The right brain is popularly associated with intuitive processes such as artistic or generally creative abilities. Some scientists have argued that intuition is associated with innovation in scientific discovery. However, intuition based on philosophical perspective is reasoning based on mere assumption or feelings and therefore should not be a yardstick for inferring an argument.

Intellectual honesty: For one to improve his critical evaluation he must be an intellectually honest person. Intellectual honesty involves the ability to solve problems by being unbiased and to have an honest attitude, which can be established in different ways.

In solving a problem, one's personal beliefs should not interfere with the search for the truth. Relevant facts and information should not be intentionally omitted even when such things may contradict one's hypothesis. Facts should also be presented in an unbiased manner and not in a twisted or a misleading way.

A critical thinker is supposed to be honest intellectually and not an academically dishonest person. Academic dishonesty implies many things. (Bushway and Nash, 1977) opined that some of the acts of academic dishonesty are:

Plagiarism: This involves copying someone's original creations such as film, music or writing without proper acknowledgment.

Fabrication: This is the fabrication of data, information, or citations in any formal academic exercise.

Deception: This involves an attempt to deceive your lecturer/teacher/instructor by presenting a false excuse in relation to an academic exercise e.g., giving a false excuse for missing a continuous assessment (CA) or missing a deadline for submission of an assignment.

Cheating: Any attempt to give or obtain assistance in a formal academic exercise (like an examination) without due acknowledgment. This is because it is an exercise that requires one to work alone without any communication or sharing of ideas. If caught the person is guilty of academic dishonesty.

Bribery: It is a paid service where by money is given to a lecturer to pass you or pay your classmate to do your assignment for you etc.

Sabotage: Acting to stop others from implementation their work. This includes cutting pages out of library books or disobediently disrupting the experiments of others etc.

Professorial misconduct: Professorial misconduct involves the act upgrading students' results based on selective passing, coming to the office at late hours and closing early, missing lectures etc.

Impersonation: Is an act of assuming your fellow student's identity with the intention of gaining an advantage to the student. Example writing exam for your fellow student/friend, signing classroom attendance for him etc.

Summary

In study session 1.6, you have learned that:

Critical thinking is an in-depth analysis of an issue. It is improved if:

a. prejudices in terms of social commitment (serendipity) and emotional attachment (intuition) that lack bases are avoided.

b. a person is academically honest

1.7 Problem Solving:

A logical/critical thinker is faced with decisions or problems everyday as part of human nature. Decisions taken every day are called "routine decisions", for instance decision on what to eat, wear etc. Sometime it is an "impulsive decision" which happens at the last minute, while at other times, it is "reasoned decision" which involves lifelong decision. All these types of decisions need to be appraised based on some steps in order to reach a logical conclusion.

Steps Involve in Problem Solving

1. **Identify/specify the problem:** The first step in problem solving is to identify the problem. To be very specific as to what the problem is all about. Try to identify the

current stage and its difference with the goal stage. For example, you are feeling headache; you should try to find out if you are stressed up, hungry etc.

2. Analyze the problem: In this stage, you are expected to learn more about the problem by looking beyond the surface situation to be more creative for options. This is only possible if you are flexible in your analyses by seeking other perspective. Brainstorming is necessary and also researching for other options and seeking other peoples' opinions.

3. Formulate possible solution: This stage involves identification of numerous possible solutions. This is only possible if one is being creative, allows time for ideas to consolidate and involves others one has had similar problems to guide one.

4. Evaluate possible solution: This step involves the weighing of the brainstormed solutions based on pros and cons. It is expected that a critical thinker will scratch his mind to list out all possible outcomes of each solution in order to arrive at a concrete conclusion.

5. Choosing a solution: This final stage involves the solution selection stage. In choosing a solution, a critical thinker is expected to choose a solution with less risk, more compatible with his priority and more practical.

Finally, in solving a problem, there are certain guidelines one needs to consider throughout the five steps above before choosing a solution. A critical thinker is expected to talk to himself throughout the steps (think aloud), hearing himself will help facilitate the process. For instance, sometimes one can imagine things that are not possible but once one hears it, it makes to one snap out of it in order to seek for a better perspective. Furthermore, it is important not to take hasty decisions especially if it involves long time commitment, for example marriage or investing a huge sum of money to buy a car, house or business. In addition to "time", you can involve other people who have had similar experiences or problems to help or guide you because two heads are better than one. So, a concrete solution is expected when the idea is discussed by an experienced person.

Summary

In study session 1.7, you have learned that:

Problem solving is an act of distinguishing right from wrong based on five steps and keys:

a. identification of the problem, analysis of the problem, solutions formulations, evaluations of the solutions and choosing a solution.

b. The keys in solving problem are to: think loud, talk to others and avoid hasty decision.

1.8 Logical Fallacies

The term fallacy is derived from Latin word *falor* meaning "I am deceived". It is therefore errors in reasoning that are committed intentionally or unintentionally in the process of reasoning that deceive one into believing in the conclusion of an argument when in fact it is not established by the argument. Fallacy in logic also refers to any form of deceptive and untrue reasoning. The first stage of analyzing a fallacy is to get out of the habit of judging the soundness of an argument based on conclusion; rather it should be on its form then premises. Otakpo (2000) classifies fallacy into two major forms - formal and informal fallacies.

Formal Fallacy: Occurs when an argument violates the structural form of logic. Validity in logical argument is a matter of formal rule rather than a question of content. Hence, emphasis is placed on structure of an argument not content. For example

All men^{P}/ are mortal.^{Q}

Dayo^{R}/ is mortal.^{Q}

Therefore, Dayo /is a man.^{P}

This argument is a fallacy based on formal structure because it violates the rule of formal logic given as:

All p's are q's,

r is p,

Therefore, r is q.

Informal Fallacy: Is committed willingly or unwillingly in the course of language usage or lack of clarity of statement such as in speeches, writing etc. Informal fallacy comes in many forms.

1. Fallacy of Ambiguity: This occurs when a word with more than one meaning is used in a sentence. For example:

a. I like flying planes. (Do you like to fly planes as a pilot or you like airplanes?)

b. She killed the man with the knife. (Did she kill the man using a knife or she killed the man that was holding a knife?)

c. I am going to the bank. (Is it a river bank or a financial institution?)

2. Fallacy of Incompatibility: This type of fallacy occurs when a tautology is committed in a sentence or when incompatible words are used in a sentence. For example:

a. I will rather kill myself than to commit suicide. (Committing suicide is to kill oneself)

b. The children that lost their parents have become widows. (They have become *orphans*.)

c. Colourless green

3. Fallacy of Composition: It arises when one concludes to the same for the whole. Thus, it is an inference from the particular to the general. For example:

Toyin likes *amala*. Therefore all Yoruba like *amala*.

Jonathan is black. So all Nigerians are black.

4. Fallacy of Division: Is the opposite of composition. It arises when one specifies based on general notion. Thus, is an inference from the general to the particular. For example:

All Yoruba are educated. Therefore, Rotimi is educated.

All students are lazy. Therefore, Aisha is lazy.

5. Fallacy of Accent: This type of fallacy arises when there is shift in meaning due to change in emphasis. For example:

a. She is looking cute.

This is a complement but if it says *she is looking cute "today"* it will seem more like an insult.

b. Quoting out of context as in the case of titles or headings in a newspapers falls under this category.

6. Fallacy of Suppressed Evidence or Existential Fallacy: This type of error does not occur because the premises and conclusion are false. In fact, they may appear to be all true because original information is suppressed. For example:

A group of friends - Aisha, Zainab, Joy and Mary - planned to throw a surprise birthday party to their friend Toyin. Unfortunately the information was leaked. Aisha is closer to Toyin and therefore, she leaked it. However, Bilkisu had attended the meeting and is known to be talkative and has record of leaking out secrets, but this is suppressed by the writer. Hence, he is guilty of this fallacy.

7. Fallacy of Balkanization Theory: This type of fallacy arises when there is a conclusion that since one nation has broken into two it will unavoidably make other nations in the same geographical region to break. Example: Since Sudan in Africa has broken into two countries, Nigeria will inevitability break.

8. Fallacy of Small Sample: This type of error occurs in science and social science researches where it involves the use of sample. The minimum required sample size is thirty and above (≥). So the larger the population the more the sample size and the more the result represents the true population. So, if a researcher uses sample sizes less than what is required, then he is guilty of fallacy of small sample.

9. Fallacy of Biased Statistics: This also occurs in a social science research methodology. It involves the methods of data collection. There are probability and non-probability methods. The probability methods give equal change for all the population elements to be selected while the non-probability does not give a chance for all the elements of the population to be represented. Examples of probability sampling method are random, systematic, stratified and cluster, while the non-probability sampling methods are purposive, accidental, snowball etc. Thus, if a researcher uses non-probability sampling method where the probability method is feasible, he is guilty of this fallacy.

10. Fallacy of Domino Theory or Affirming the Consequent: This type of fallacy assumes that things are always presented in a logical order. 3>2>1 or to assume that Aisha, Suleiman and John are potential first class, second class upper and second class lower candidates respectively, therefore they will get A, B and C in GST 112 according to their logical order.

11. Mistaken Analogy: This type of error occurs when a conclusion is drawn based on the premises that there is similarity between two things, therefore they will be similar in another respect. For example, Aisha is petty, Bilkisu is Aisha's daughter. Therefore Bilkisu is certainly pretty.

12. Fallacy of Appeal to Force: This occurs when one is compelled to do something against ones' will. Assuming a kidnapper abducts one of your family members and asks you to do his biddings if you succumb to it, you are guilty of fallacy of appeal to force.

13. Fallacy of Too Personal (Ad Hominen or Ad Feminem or Straw Man): This type of fallacy occurs when the individuality of the holder of an idea is attacked instead of the idea he presents. For example: Assuming two football lovers (*La Liga* fans*)* are arguing over which *La Liga* team is the best, Mr. A argues that Real Madrid is while Mr. B. claims Barcelona. Then Mr. B claims that his idea is superior, since he is from an urban area and is richer. Thus, Mr. B is guilty of error of ad hominem.

14. Fallacy of Ignorance (Ad Ignorantiam): This type of fallacy occurs when the conclusion of an argument is accepted because no one has proved otherwise. For example, prior to May 28, 2015, some Nigerians believed that it would be impossible to defeat an incumbent leader seeking for re-election. However, that has become a history with the outcomes of the general elections.

15. Fallacy of Appeal to Pity (Ad misericordiam): This fallacy is mostly committed by lawyers in order to prove their clients innocent while in fact they are guilty. For example: A man killed his wife and then admits to been guilty but in confidence to his lawyer. However, the lawyer tries to prove his innocence before the court just because he regrets it etc.

Summary

In study session 1.8, you have learned that:

Fallacy is an error in reasoning which is either formal based on syllogism formula or informal.

Self-Assessment Questions (SAQs) for Study Session 1

It is assumed that since you have completed this study session 1, you should be able to answer the following questions.

SAQ 1.1 (testing learning outcomes 1.1)

- What do you understand by the term logic?

SAQ 1.2 (testing learning outcomes 1.2)

- What is an argument?

SAQ 1.3 (testing learning outcomes 1.3.1, 1.3.2.1.3.3, 1.3.4 & 1.3.5)

- Is proposition the same thing as a sentence?
- Ali is a boy. Which term of a proposition represents the word *boy*?
- All girls are lazy. Which term of a proposition represents the verb underlined?
- All men are mortal. Which standard form of proposition represents this argument?
- Zainab is not beautiful. Which standard form of proposition represents this argument?

SAQ 1.4 (testing learning outcomes 1.4)

- Generate an argument and distinguish between major and minor premise.

SAQ 1.5 (testing learning outcomes 1.5.1, 1.5.2, and 1.5.3)

- What do you understand by the term syllogism?
- What is the formula governing a valid syllogism?
- Appraise this argument as valid or invalid syllogism:

  All Nigerians are musicians.

  Dan Maraya Jos is Nigerian.

  Therefore, Dan Maraya Jos is a musician.

SAQ 1.6 (testing learning outcomes 1.6.1, 1.6.2, 1.6.3 and 1.6.4)

- What do you understand by the term critical thinking?
- Reasoning with the heart may not give a sound outcome, why?
- Critical thinker is a creative thinker discuss.

SAQ 1.7 (testing learning outcomes 1.7.1, 1.7.2 and 1.7.3)

- What are the steps involve in critical thinking?
- What are the keys to problem solving?
- How many types of decisions do we have and what are their names?

SAQ 1.8 (testing learning outcomes 1.8.1, 1.8.2 and 1.8.3)

- What do you understand by the term fallacy?
- What is formal fallacy?
- How is an informal fallacy committed?
- What is the difference between fallacy of division and fallacy of composition?
- What is the difference between fallacy of small sample and fallacy of biased statistics?
- What is the difference between fallacy of appeal to force and appeal to pity?

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STUDY SESSION 2: NATURE OF ARGUMENT AND REASONING METHODS

Introduction

In logic, the method of inference matters a great deal because it is the best way to recognize the flaws in one's reasoning. Reasoning methods are of two types: deductive and inductive. These methods operate from two opposite directions. Deductive reasoning infers argument from general to specific while inductive infers from particular to general. However, deductive and inductive are not synonymous with valid and invalid arguments. Deductive and inductive reasoning are based on the idea (the quantifier) used in the argument, whether it is universal or particular proposition. On the other hand, validity or invalidly depends on formal structure of an argument.

Learning Outcomes for Study Section 2

At the end of the study session 2: you should be able to:

2.1 explain deductive reasoning,

2.2 explain inductive reasoning,

2.3 explain the term analogy,

2.4 link generalization with argument appraisal and

2.5 understand the importance of explanation in a reasoning process

2.1 Deductive Reasoning

This is the type of reasoning in which the premises logically imply the conclusion. That is, the relationship between the premises and conclusion is such that it would be inconsistent or self-contradictory to assert the premises but deny the conclusion. In this argument, the truth of the conclusion relays on the truth of the premises. In a narrow sense, deductive reasoning is an inference based on general knowledge about things or

propositions which are generally true. Deductive reasoning infers from general to general, general to particular and particular to particular.

Deductive Inference from General to General:

All human beings are mortal.

All men are human beings.

Therefore, all men are mortal.

All Nigerians are Africans.

All Lagosians are Nigerians.

Therefore, all Lagosions are Africans.

Deductive Inference from General to Particular:

All men are mortal.

Mr. John is a man.

Therefore, Mr. John is mortal.

All lecturers are academics.

Some doctors are lecturers.

So, some doctors are academics.

Deductive Inference from Particular to Particular:

Some politicians are corrupt.

Some northerners are politicians.

Therefore, some northerners are corrupt.

Four is greater than two.

Six is greater than four.

So, six is greater than two.

The above deductive arguments are inferred using the quantifier "all" or are based on general ideas/known facts. Moreover, the major premises have provided sound support to their conclusions.

Summary

In study session 2, you have learnt that:

Reasoning method is not synonymous with validity.

a. Deductive arguments are based on universal ideas.

b. Most deductive arguments provide a sound support to their conclusions.

2.2 Inductive Reasoning

This is the type of reasoning in which the relationship between the premises and conclusion is such that the premises do not give a conclusive evidence or information for the establishment of conclusion. It only renders some support for it. Therefore, inductive reasoning is an argument whose premises do not necessitate but provide only probable conclusion.

Inductive Inference from Particular to General:

Most sciences have hardworking students.

All engineering departments are sciences.

Therefore, all engineering departments have hardworking students.

Inductive Inference from Particular to Particular:

Some students are lazy.

Your class representative is a student.

Therefore, your class representative is lazy.

The two examples above give probable conclusions because the information provided in the premises do not give a sound support to their conclusions. In a narrow sense, inductive reasoning is an inference from particular to general or from particular to particular. Thus, a knowledge based on few known facts are used to conclude the arguments. In inductive reasoning, we can accept the premises but not necessarily the conclusion without any formal contradiction. The problem is justification because there is a high degree of insufficient grounds for the conclusion.

Summary

In study session 2.2, you have learned that:

Inductive arguments are

a. based on few known facts and

b. their premises provide only some support to their conclusions.

c. Inferences are from particular to general or

d, inferences are from particular to particular.

2.3 Analogy

Analogy compares elements, objects or systems based on similarities. Analogical reasoning is any type of thinking that relies upon an analogy. An analogical argument is an unambiguous representation of a form of analogical reasoning that cites accepted similarities between two systems to support the conclusion that some further similarity exists. Analogy is the name given to an inductive form of argument; their conclusions do not follow with certainty but are only supported with varying degrees of strength. Here, 'inductive reasoning' is used in a broad sense that includes all inferential processes that "develop knowledge in the face of uncertainty" (Holland *et al.*, 1986). Thus, analogy plays a significant role in problem solving, decision making, perception, memory, face perception etc.

Madam Aisha is light in complexion and very pretty.

Bilkisu is Madam Aisha's daughter.

Therefore, Bilkisu will certainly be light in complexion and very pretty.

Summary

In study session 2.3, you have learned that:

Analogy is

a. another form of inductive reasoning

b. based on similarity

c. is used for facial perception etc.

2.4 Generalization

Generalization is the process of inferring an argument based on a single or specific idea and applying it on a broader scale. Generalization is one of the steps in the scientific methods of reasoning where having followed the steps in scientific reason the outcome of the analysis is generalization. Scientific generalizations are based on research such that

the more data are used, the more accurate the generalization. It is a generalization to say "All Hausa are illiterates".

Summary

Generalization is the process of applying an idea to a broader range of things.

2.5 Explanations

An explanation is a set of propositions constructed to describe a set of facts which clarifies the causes, circumstances and consequences of those facts. It is a way to uncover new knowledge and to report relationships among different aspects of studied phenomena. In scientific research, explanation is one of several "purposes" for empirical research which have a varied explanatory power. Furthermore, explanation attempts to answer the question "why?". It may also set rules and elucidate the existing ones in relation to any phenomena appraised. Thus, explanation is subjected to interpretation and discussion.

Explanation is the process of clarifying or discussing an idea.

Self-Assessment Questions (SAQs) for Study Session 2

This session requires you to examine yourself based on what you have read and understood under study session 2.

SAQ 2.1 (testing learning outcomes 2.1.1, 2.1.2, 2.1.3 & 2.1.4)

- What do you understand by the term reasoning method?
- What is deductive reasoning?
- How is deductive reasoning identified?
- Generate a deductive argument.

SAQ 2.2 (testing learning outcomes 2.2.1, 2.2.2, 2.2.3 & 2.2.4)

- What is inductive reasoning?
- How is inductive reasoning identified?

- What is the difference between inductive and deductive reasoning?
- Generate an inductive argument?

SAQ 2.3 (testing learning outcomes 2.3.1, 2.3.2, 2.3.3 & 2.3.4)

- What is inductive analogy?
- How is inductive analogy identified?
- Is there difference between inductive analogy and inductive reasoning?

SAQ 2.4 (testing learning outcomes 2.4.1 & 2.4.2)

- What is generalization?
- What is the importance of generalization in the inference process?

SAQ 2.5 (testing learning outcomes 2.5)

- What role does a statement play in argument appraisal?

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STUDY SESSION 3: VALIDITY AND SOUNDNESS OF ARGUMENT

Introduction

Logic is formal science and its subject matter is validity. The terms validity or invalidity do not signify truthfulness or falsity of the propositions that constitute an argument. Thus, this session sheds more light on this concept.

Learning Outcomes for Study Section 3

At the end of study session 3, you should be able to:

3.1 explain the relationship between truthfulness of premises and validity of an argument,

3.2 define the concept of validity and understand what determines validity or invalidity and

3.3 define the concept of soundness and what determines it.

3.1 Factual/Truth

Our evaluations of propositions show that logic is concerned with declarative statements or sentences only. In analysing a statement, the two possible outcomes are true or false not valid or invalid while for an argument the two inherent properties are valid or invalid not true or false. The relationship between the truth of premises and validity of an argument is a complex one because validity of an argument deals with logical structure of an argument irrespective of truthfulness or falsity of premises and conclusion. The relationship is a complex one because a valid argument can have false premises and false conclusion while an invalid argument can contain true premises and true conclusion. So, validity of an argument is independent of truthfulness of premises likewise truthfulness of premises is independent of validity.

Summary

In study session 3:1, you have learned that:

There is no relationship between truthfulness of premises and validity of an argument.

3.2 Validity

When two or more propositions are presented in an argument, assessing their formal structures becomes of paramount importance. The logical relationship between premises and conclusion is said to be valid by virtue of its form, irrespective of the truthfulness or falsity of the propositions that constitute it. Validity deals with formal structure of an argument, hence it is a formal science and the subject matter is validity. Validity studies forms of arguments in order to classify them as mutually exclusive or exhaustive divisions, one for valid arguments and the other for invalid arguments.

For an argument to be valid, the syllogism which contains three elements must be valid irrespective of the substitution for the elements. The elements are major and minor premises and a conclusion. The structure must comply with the formula below.

All Ps are Qs.

R is P.

Therefore, R is Q.

For clear understanding of validity, various examples under different categorizations are given below for both valid and invalid arguments.

Valid Arguments with True Premises and True Conclusion

All mammals ^{P} give birth to their young ones.^{Q}

All human beings ^{R} are mammals.^{P}

Therefore, all human beings ^{R} give birth to their young ones.^{Q}

Some politicians^{P}/ are corrupt.^{Q}

Some northerners[R]/ are politicians.[P]

Therefore, some northerners[R]/ are corrupt.[Q]

From the above examples, it can be seen that the two arguments comply with the structural rule (syllogism formula). Thus, the arguments are valid with true premises because all the statements are correct together with their conclusions.

Valid Arguments with True Premises and False Conclusions

Some animals[P]/ have fur.[Q]

Crocodiles[R]/ are an animals.[P]

Therefore, crocodiles[P]/ have furs.[Q]

Some celebrities[P] /are musicians.[Q]

Oprah Winfrey[R]/ is a celebrity.[P]

Therefore, Oprah Winfrey[R] is a musician.[Q]

The above arguments have true premises but false conclusion. However, the arguments are valid. This is to show that truthfulness or falsehood of the conclusion does not determine the validity of an argument.

Valid Arguments with False Premises and True Conclusion

1. All black complexioned people[P]/ are Africans.[Q]

Nigerians[R]/ are all black complexioned people.[P]

Therefore, Nigerians[R] are Africans.[Q]

2. All stones[P]/ are mortal.[Q]

Frank[R]/ is a stone.[P]

Frank^{R}/ is a mortal.^{Q}

Since validity deals with formal structure or the syllogism formula, therefore it is possible for an argument to have false premises and true conclusion but valid.

Valid Arguments with False Premises and False Conclusion

1. All beautiful girls^{P}/ are arrogant.^{Q}

   All Shuwa Arab girls^{R}/ are beautiful.^{P}

   Therefore, all Shuwa Arabs girls^{R} are arrogant.^{Q}

2. All hardworking people^{P}/ are successful.^{Q}

   All rich people^{R}/ are hard working.^{P}

   Therefore, all rich people^{R} are successful.^{Q}

The above arguments have wrong premises and wrong conclusions but are valid.

Invalid Arguments

Validity deals with logical structure irrespective of truthfulness of assertions. Thus, an argument can have true premises and true conclusion and yet be invalid because of an error in the application of the syllogism formula.

Invalid Arguments with True Premises and True Conclusion

1. All humans^{P}/ are mortal.^{Q}

   All men^{R}/ are mortal.^{Q}

   Therefore, all men^{R}/ are human.^{P}

2. All Nigerians^{P} are Africans.^{Q}

   Some women^{R} are Africans.^{Q}

   Therefore, some women^{R} are Nigerians.^{P}

The premises in the above arguments are all true. Although they have true conclusions, they are not well established by their premises. Hence, the syllogisms are invalid.

Invalid Arguments with True Premises and False Conclusion

1. All Ghanaians[P] are Africans.[Q]

   All Nigerians[R] are Africans.[Q]

   Therefore, all Nigerians[R] are Ghanaians.[P]

2. All humans[P]/ are mortal.[Q]

   Samuel[R]/ is mortal.[Q]

   Therefore, Samuel[R] is human.[P]

Invalid Arguments with True Premises and False Conclusion

1. All men[P] /are dogs.[Q]

   Adam[R]/ is a dog.[Q]

   Adam[R]/ is a man.[P]

2. All cows[P]/are mammals.[Q]

   All women[R]/ are mammals.[Q]

   Therefore, all women[P]/ are cows.[P]

Invalid Arguments with False Premises and False Conclusion

1. All immortals can fly.

   All plants can fly.

   Therefore, all plants are immortal.

2. All stones[P]/ are mortal.[Q]

   All tables[R]/ are mortal.[Q]

Therefore, all tables^{R}/ are stones.^{P}

In all cases of invalid arguments, there are abundant lack of correlations between the premises and conclusions. The premises do not provide sufficient and deductive grounds for their conclusions. Thus, validity deals with argument's form not the content of the statements.

Summary

In study session 3:2, you have learned that:

A valid argument:

a. is acceptable structurally

b. can have true or false premises

c. can have true or false conclusion

3.3 Soundness of Argument

An argument is said to be sound if the propositions or the premises and the conclusion as well as the logical structure that holds between the premises and conclusion (the form) are all acceptable. Soundness combines interest in validity of an argument and truthfulness of premises and of conclusion. It is only when an argument is valid that one begins to ask for its soundness. Thus, **soundness = valid structure + true major premise + true minor premise + true conclusion**. An argument can be valid but unsound because validity is about logical structure only. An argument can have true premises and true conclusion but still be unsound because it is invalid. So, out of the categorizations we considered under valid and invalid arguments, only the first group, "valid argument with true premises", is sound while all the other groups are unsound either based on wrong form, false premises, false conclusion or both.

Validity is the necessary condition for soundness while truthfulness of premises and conclusion satisfy the sufficient condition. In assessing soundness validity should be the first to be considered followed by truthfulness of premises and conclusion (Minimah and Inoka, 1997).

soundness = validly (40%) + true major premise (20%) + true minor premises (20%) + true conclusion (20%).

Unsound Argument

Some celebrities^{P} /are musicians.^{Q}

Oprah Winfrey^{R}/ is a celebrity.^{P}

Therefore, Oprah Winfrey^{R} is a musician.^{Q}

The above argument is valid with true premises but unsound because the conclusion is false.

Unsound Argument

All black complexioned people^{P}/ are Africans.^{Q}

Nigerians^{R}/ are all black complexioned people.^{P}

Therefore, Nigerians^{R} are Africans.^{Q}

The above argument is valid with true conclusion but unsound because it has false premises.

Unsound Argument

All hardworking people^{P}/ are successful.^{Q}

All rich people^{R}/ are hard working.^{P}

Therefore, all rich people^{R} are successful.^{Q}

This argument is valid but unsound because it has all false premises.

Unsound Argument

All humans[P]/ are mortal.[Q]

All men[R]/ are mortal.[Q]

Therefore, all men[R]/ are human.[P]

The above argument is unsound because it is invalid.

Sound Argument

All mammals[p]/ give birth to their young ones.[Q]

All human beings[R] /are mammals.[P]

Therefore, all human beings [R]/ give birth to their young ones.[Q]

Some politicians[P]/ are corrupt.[Q]

Some northerners[R]/ are politicians.[P]

Therefore, some northerners[R]/ are corrupt[Q]

The two arguments above are sound because they are both valid and have all true premises and true conclusions.

Summary

In study session 3:3, you have learned that:

3. A sound argument:

a. is valid

b. has all true premises

c. has a true conclusion

Self-Assessment Questions (SAQs) for Study Session 2

It is assumed that after you have completed this study session 3, you should be able to answer the following questions.

SAQ 3.1 (testing learning outcomes 3.1 & 3.2)

- Truth of premises does not determine validity. Why?
- Falsehood of premises does not determine invalidity. Why?

SAQ 3.2 (testing learning outcomes 3.2.1 & 3.2.2)

- What formula determines validity?
- An invalid argument can have true premises. Discuss.
- A valid argument can have false premises. Discuss.

SAQ 3.3 (testing learning outcomes 3.3.1 & 3.3.2)

- An argument can be valid unsound. Discuss.
- A sound argument cannot have false premises and a false conclusion. Discuss.

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STUDY SESSION 4: TECHNIQUES FOR EVALUATING THE SOURCE OF AN ARGUMENT

Introduction

In analysing an argument one needs to know the source of the argument in order to determine its authenticity. An argument can be inferred based on subjective or objective idea. Subjective idea is a mere opinion asserted by an individual that is usually based on self-interest that has not been established as a fact. On the other hand, an objective idea is an assertion that is universally acceptable or has been proven to be true.

Learning Outcomes for Study Section 4

At the end of the study session 4, you should be able to:

4.1 Explain the concept of value judgement.

4.2 Explain the concept of observed and inferred facts.

4.3 Explain the concept of historical facts.

4.4 Explain the concept of statistical facts.

4.1 Value Judgement

Value judgment as the name suggests is subjective reasoning based on one's beliefs. It is usually argument inferred based on self-interest without the actual truth to stand on. It is also subjective because true objectivity is impossible since even the most rigorous analyses are based on some set of values. Hence, what is true or right for Mr. A may be wrong for Mr. B (Michael, 1974). Examples of arguments based on value judgment:

All Yoruba are educated. (source)

Olusegun Obasanjo is Yoruba. (target}

Therefore, Olusegun Obasanjo is educated. (conclusion)

All northerners are politicians. (source)

General Buhari is a northerner. (target)

Therefore, General Buhari is a politician. (conclusion)

The source of the above arguments is value judgment because even though Olusegun Obasanjo is Yoruba and educated, it is wrong to generalize that all Yoruba are educated. Similarly, the fact that General Buhari is a northerner and a politician is wrong to say all northerners are politicians because some northerners are not even participating in politics. Thus, the above arguments are inferred based on self-interest.

Summary

In study session 4.1, you have learned that:

Value judgement:

a. is based on prejudices

b. has a false major premise

4.2: Observed and Inferred Facts

Observation is the way of gathering information from a primary source. Observation in philosophical terms is the way of processing information through the thought process. Input is received via hearing, sight, smell, taste or touch and then analyzed through either rational or irrational thought. Deductions about what behaviours are good or bad may be based in no way on preferences about building relationships or study of the consequences resulting from the observed behaviour. With the passage of time, impressions stored in the consciousness about many related observations, together with the resulting relationships and consequences, permit the individual to build a construct about the moral implications of behaviour. Thus, an argument can be inferred based on this.

Example of arguments based on observation:

All humans are mortal. (source)

All women are humans. (target)

Therefore, all women are mortal. (conclusion)

Most hip-hop artistes are African Americans. (source)

Lil Wayan is a hip-hop artiste. (target)

Therefore, Lil Wayan is an African American. (conclusion)

The above arguments are inferred based on observations because they are products of victual reasoning.

Summary

In study session 4.2, you have learned that:

Observed and inferred fact

a. is based on objective ideas

b. is inferred based on the things we see with our eyes

4.3: Historical Facts

History is the study of the past, particularly how it relates to past events as well as the memory and discovery of information about these events. Thus, historical facts are past things or events written in records based on examination and analyses of sequences of past events to objectively determine the patterns of cause and effect that determine them. Thus, an argument can be inferred based on a past event. Arguments from this source are usually objective. Example of historical facts:

Any independent nation is ruled by its citizens.

Nigeria is an independent nation.

Therefore, Nigeria is ruled by its citizens.

‘Naija sings’ is a seasonal competition for selecting talented singers.

John was the winner of ‘Naija sings’ competition, season one.

Therefore, John is a talented singer.

Summary

In study session 4.3, you have learned that:

Historical fact is based on:

a) objective ideas

b) past events

4.4: Statistical Facts

Statistics is concerned with planning, organising, collecting, analysing and interpreting data/facts to facilitate the attainment of goal at minimum expense and maximum accuracy and precision. Statistical inference is the process of deducing properties of an underlying distribution by analysis of data. Inferential statistical analysis infers properties about a population which include testing hypotheses and deriving estimates. The population is assumed larger than the observed data set; in other words, the observed data is assumed to be sampled from a larger population. Statistical records can serve as a ground on which a source of an argument is inferred using the most efficient method of data collection. Examples of arguments based on statistical facts:

Most industrialized nations are developing rapidly.

China is an industrialized nation.

Therefore, China is developing rapidly.

The world cup highest goal scorer is German.

Klose is the highest world cup goal scorer (16 goals).

Therefore, Klose is German.

Summary

In study session 4.4, you have learned that:

Statistical facts are based on:

a) objective ideas

b) the method of collecting and arranging statistical representation of ideas.

Self-Assessment Questions (SAQs) for Study Session 5

It is assumed that since you have completed this study session 4, you should be able to answer the following questions.

SAQ 4.1 (testing learning outcomes 4.1)

- Discuss why value judgment is based on subject term.

SAQ 4.2 (testing learning outcomes 4.2)

- What is the difference between value judgment and observed and inferred facts?

SAQ 4.3 (testing learning outcomes 4.3)

- Distinguish between historical facts and statistical facts.

Reference:

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Study Session 5: Discourse

Introduction

The term discourse describes a formal way of thinking that can be expressed through language. It is also a social boundary that defines what can be said about a specific topic.

Discourses are seen to affect our views on all things. Hence, it is not possible to avoid discourse. As a critical thinker engaged in discourse, you should try as much as possible to base your opinions on fact. Furthermore, the use of emotionally tuned words should be avoided because there is difference between the expression of facts and that of emotional attitude. Similarly, fallacy and propaganda should be avoided or minimized.

Learning Outcomes for Study Section 5

At the end of the study session 5, you should be able to:

5.1 explain the concept of propaganda

5.2 know the different types of propaganda techniques

5.3 explain the concept of literary discourse

5.4 explain the concept of scientific discourse

5.1 Propaganda

In discourse analysis, the major instrument used to spread ideas and to pursue one's readers' or listeners' emotions into believing in one or to act the way one wants them to is called propaganda. The main aim of propaganda is to manipulate peoples' thoughts to make them believe in one's ideas.

Summary

In study session 5.1, you have learned that:

Discourse is an advanced form of an argument that deals with formal way of thinking, while propaganda is an instrument used in discourse.

5.2 Types of Propaganda Techniques

1. Name Calling Propaganda: This type of propaganda attaches a negative label towards something or someone. It is mainly used to tarnish the image of a person or to

discourage people from believing in him. For example, in political discourse, during the campaigns of the recently concluded Nigerian general elections, one of the opposition candidates portrayed one of their opponents as a "religious bigot"; that if voted into office he would Islamise the country by forcing non-Muslims to embrace Islam etc. As a critical thinker you should ask yourself whether under a democratic dispensation it is possible for a president to single-handedly formulate and implement laws without involving the three tiers of government, namely the legislative, executive and judiciary. These tiers are well represented by all the six geo-political zones and the two major religions. So, how possible is it for him to achieve the said propaganda? Another name calling propaganda comes under economic discourse. For example, the comment made by a known militant in the Niger-delta region about northerners as "Parasites"; according to him, Niger-delta contributes more to the Nigeria's foreign earnings than the northern region. However, he has forgotten that prior to the discovery of crude oil in Nigeria the major foreign earnings came from agriculture sector and northern Nigeria contributed the largest share. However, lack of commitment by the government towards improvement in mechanised farming practises etc. led to the decline of the sector. This is because the government believes that the oil sector is more important in terms of income generation than the agricultural sector. Another example of name calling propaganda comes under religious discourse where Islamic states in Syria (ISIS) has the notion that any Muslim who is not part of them or does not believe in their ideology is a "Kafir" (non believer) and therefore is either forced to join them or be killed in the name of jihad.

2. Glittering Generality Propaganda: This is the opposite of name calling propaganda. It is characterised by using pleasing words or positivity towards something or someone that has no real meaning. It is used with the sole aim of making the thing or person acceptable to the people. The words used in this technique to describe a person or thing has no real meaning. A good example of glittering generality can be found in the recently concluded campaigns where president Jonathan of Nigeria was described as "the best president". This is indeed glittering generality propaganda although his administration

has made some positive achievements but there were other presidents that had performed better.

3. Transfer Propaganda: This type of propaganda transfers the prestige of a positive symbol to a person or an idea. The purpose of this technique is to transfer the acceptability of a particular idea to something.

4. Testimonial Propaganda: This technique is commonly used in advertisement where a "big name" is used to endorse a product. Usually popular faces or celebrities such as film actors, musicians etc. are used for this purpose to influence your decision. What you should ask yourself as a critical thinker is, does the advertisement equate the benefit you gain from using the product? How much do the celebrities stand to gain by advertising the product etc? Thus, if the big name does not give you the satisfaction it claims, then it is propaganda.

5. False Analogy: In this technique, two things that may or may not really be similar are portrayed as being similar. As critical thinker, what you should do here is to weigh the similarities and the dissimilarities. Thus, in most false analogies, there is simply not enough evidence available to support the comparison.

6. Bandwagon Propaganda: This type of propaganda is done by most people. It tries to influence one's decision to do something because it is the *reigning thing*. A good example is when one disposes his sophisticated handset (which has all the latest features) to buy a new one just because it is the latest one etc. If you are joining a group not because it is necessary but because you do not want to be left out, than you are guilty of bandwagon propaganda.

7. Plain Folks Propaganda: This technique uses folksy method to convince people to support you. In plain folks technique, the person dresses with ordinary clothes to void sending 'flashy' messages, uses simple words, simple grammar and in some cases communicates in the language of the people he wants to influence by sending the "I'm an

ordinary person, just like you" message. However, after getting what he needs, he turns his back on them.

8. Card Stacking Propaganda: The name is derived from card game. Card stacking is a propaganda technique that seeks to manipulate peoples' perception of an issue by emphasizing one side and repressing the other. Such emphasis is achieved through media bias, the use of one-sided testimonials or by simply censoring the voices of critics. The technique is commonly used in persuasive speeches by political candidates to discredit their opponents and to make them seem more worthy. A good example is how one of the parties used some of the television stations in Nigeria to discredit one of their opponents.

9. Cause and Effect Propaganda: This technique suggests that because B follows A, A must cause B. Remember, just because two events or two sets of data are related does not necessarily mean that one caused the other to happen. It is important to evaluate data carefully before jumping to a wrong conclusion. In order to determine that a fallacy has been committed, it must be shown that the underlying conclusion has not been adequately supported and that the person committing the fallacy has confused the actual cause with the effect. Showing that the fallacy has been committed will typically involve determining the actual cause and the actual effect.

The above-mentioned propaganda techniques and many others not included here are what one should avoid when engaged in discourse or what to assess in peoples' discourses. However, apart from propaganda techniques, there are others things one should observe in literary and scientific discourses.

Summary

In study session 5.2, you have learned the types of propaganda and that:

a. Name calling uses negative words to discredit something while glittering generality uses pleasing words to promote it.

b. Testimonial comes in advertisement of products while card stacking is the use of media to discredit someone.

c. Bandwagon is doing something because you do not want to be left out while transfer is transferring the position of an acceptable act or idea to something else.

d. False analogy is wrong comparison of two or more things on similarities while plain folk is convincing people based on simplicity.

5.3 Literary Discourse

The word “literary” means a style of writing suitable for or typical of a work of literature. Writers adopt a style in their writing to appeal to their readers. Thus, it is all about extracting the linguistic phenomenon that is bound to convert in their text which comes in the form of logical arguments. In analysing literary discourse, the following should be assessed:

1. The source of the material: The first step in literary discourse is to know the source of the materials. This is because some sources are much more reliable and trustworthy than others. Knowledge of the source will help you judge the materials.

2. Author’s credentials: What are the qualifications of the writer? You must assess whether the material you are reading is written by an expert in the field. Is he knowledgeable enough to discuss the topic or not?

3. Reason for writing the material: You must assess why the material is written. You should identify the primary purpose; is it to persuade you to believe in him or not? If yes then you should check the evidences presented if they have provided solid ground for the conclusion to be accepted.

4. Is the author biased? Does the author display some sort of bias, partiality, preference or prejudice for or against a person, object or idea?

5. Does the author make an assumption based on subjective idea and accept it as true or false and make no effort to prove or substantiate it?

6. Argument: Does the author present an argument that leads to the establishment of a result or conclusion?

7. Intentional fallacy: As a critical thinker, do not use some part of the material to generalise the whole write up.

8. Evidential Fallacy: As a writer, avoid evidential fallacy. Do not suppress the truth from your readers by presenting wrong information. No important information should be suppressed; both intrinsic and extrinsic evidences should be included.

Summary

In study session 5.3, you have learned that:

Literary discourse is a written way of appealing to readers and is accessed based on the source and content of the material and also the author's credentials.

5.4 Scientific Discourse

Science is the systematic observation and classification of natural phenomena in order to learn and bring them under general principles and laws. In analyses, scientific discourse is usually based on facts that you can prove by experiment etc. Unlike other discourses, scientific discourse is based on the following:

1. Observation: Scientists use observations to ask why things happen. For example, why does demand for JAMB form increase despite rise in price every year? Why is there high rate of corruption in Nigeria? Why is the climate changing? Why is HIV/AIDS not curable? What is the vaccine for Ebola virus etc. It tends to provide answers to these questions.

2. Testing: The second stage after things have been observed is testing. In this stage, the observed phenomenon is put into testing. In pure science, laboratory tests are conducted,

e.g. blood samples are subjected to series of tests to find, for instance, the cure for Ebola etc. However, in social science research, data is collected from a part of or an entire population depending on the size and series of questions are asked and later assessed based on descriptive or inferential statistics.

3. Hypothesis: The third stage of scientific discourse is hypothesis testing. The term 'hypothesis' is from the Greek word *hypotithenai* which means to "put under" or "to suppose". It offers a proposed explanation for phenomenon which contains two elements – true or false. In this stage, relationships between dependent and independent variables are appraised; if the outcome is true, then it may become part of a theory or grow to become a theory itself. However, if the outcome is false, more information will be collected until the real situation prevails.

4 Explanation: The outcome of a hypothesis is explained in this stage. E.g., why increase in JAMB form fee does not affect or reduce its demand (abnormal demand) - because of increased consumer taste or increased awareness on the importance of education etc.

5. Generalization: The last stage of scientific discourse is generalization; the outcome of the argument is generalised.

Summary

In study session 5.3, you have learned that:

Scientific discourse is based on the scientific methods of reasoning.

Self-Assessment Questions (SAQs) for Study Session 5

It is assumed that since you have completed this study session 5, you should be able to answer the following questions.

SAQ 5.1 (testing learning outcomes 5.1)

- What do you understand by the term discourse?

SAQ 5.2 (testing learning outcomes 5.2.1& 5.2.2)

- What is propaganda?
- Why propaganda?

SAQ 5.3 (testing learning outcomes 5.3.1, 5.3.2, 5.3.3 & 5.3.4)

- What is the difference between name-calling and glittering generality propaganda?
- Distinguish between testimonial and card stacking propaganda.
- Is bandwagon and transfer propaganda similar?
- Plain folks and false analogy is the same thing. Discuss.

SAQ 5.4 (testing learning outcomes 5.4)

- What are the qualities of a good material?

References / Further Reading

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