importance to the term value and furthermore in the unification that it has accommodated the investigation of an assortment of inquiries financial, moral good, stylish, religious, political and even logical qualities that had frequently been considered in relative segregation. In Philosophy the investigation of qualities is partitioned into two sets; Ethics and Esthetics.

b) Ethics – is the study of how people should act, and what is good and valuable, it is therefore the study of practical reasoning and the normative questions which it gives rise to. Ethics can be defined as the philosophical study of moral values. The study involves systematizing, analyzing, evaluating, applying, defending and recommending concepts of right and wrong behaviour. In general terms, morality has to do with the dos and don'ts as expected of a rational human person. In modern times, Philosophers have divided ethical theories into three general subject areas: meta-ethics, normative ethics, and applied ethics. Central questions to ethics include: i) what is the nature of the life of excellence? ii) What is the ultimate worth of the goals you seek? iii) What specific courses of conduct, in keeping with these goals, will help lead to the life of excellence?

c) Aesthetics - the study of basic philosophical questions about art and beauty, it is the study of Art and beauty. It mainly deals with beauty, art, enjoyment, sensory-emotional values, perception and matters of taste and sentiment. It includes what art consists of as well as the purpose behind it. Major aesthetical questions are: Does art consist of music, literature, and painting? Or does it include a good engineering solution or a beautiful sunset? What is beauty? These are some of the questions aimed at in Aesthetics. It also studies methods of evaluating art and criteria of judgements of art. It attempts to answer questions such as: What is beauty? What is the relation of the beautiful to the true and the good? Are there criteria by means of which we can judge a work of art in an objective sense? What is the art itself? Is it a reproduction of a vision into ultimate reality? To what extent does the sense of appreciation of beauty contribute to the enrichment of human life? Is art or beauty in the eye of the beholder? Does anything that appeals to you fit to be considere art? Or does it have a specific nature? Does it accomplish a goal?

d) Epistemology - the study of knowledge, and how and what we know. The term "epistemology" is derived from the ancient Greek word '*episteme'* meaning 'knowledg'. The word in this way signifies the philosophical investigation of knowledge its avocation and of the group of ideas that are engaged with our investigation cases to information or supported beliefs. As a theory of knowledge, epistemology tries to set up the way towards claiming to know and on what sureness premise are such cases established. In its broadest sense, epistemology is the investigation of the technique for getting and handling information. It addresses the inquiry, "How would I realize that I comprehend what I guarantee to know?", "How would we legitimize our insight claims?" "What are the wellsprings of our knowledge claims?", It is concerned about how we recognize what we

since it opens up international markets and improves the economic standards of the recipient nations. Often, however, the "effort" does not measure the quality of life of the people, and *when this is so*, effort is irrelevant to their appropriate well-being.

- *Depth:* How does your answer address the complexities in the question? How are you taking into account the problems in the question? Is that dealing with the most significant factors?- A statement can be clear, accurate, precise, and relevant, but superficial (that is, lack depth). For example, the statement "Just say No" which is often used to discourage children and teens from using drugs, is clear, accurate, precise, and relevant. Nevertheless, it lacks depth because it treats an extremely complex issue, the pervasive problem of drug use among young people, superficially. It fails to deal with the complexities of the issue.
- *Breadth:* Do we need to consider another point of view? Is there another way to look at this question? What would this look like from a conservative standpoint? What would this look like from the point of view of...? - A line of reasoning may be clear, accurate, precise, relevant, and deep, but lack breadth (as in an argument from either the conservative or liberal standpoint which gets deeply into an issue, but only recognizes the insights of one side of the question.)
- *Logic:* Does this really make sense? Does that follow from what you said? How does that follow? But before you implied this and now you are saying that; how can both be true?

When we think, we bring a variety of thoughts together into some order. When the combination of thoughts is mutually supporting and makes sense in combination, the thinking is "logical." When the combination is not mutually supporting, is contradictory in some sense, or does not "make sense," the combination is not logical; it is flawed.

3.2.3. Critical Thinking Tools of Transformation

Critical thinking tools of Transformation are also referred to as Valuable intellectual traits. These are transformational traits exhibited by those individuals that embrace criticality and creativity. They are virtue traits that define maturity in reason, objectivity in thought, rationality in deliberations and sobriety save to mention consistency in the thinker. The tools of evaluation include**:** Intellectual Humility**,** Intellectual Courage**,** Intellectual Empathy**,** Intellectual Integrity**,** Intellectual Perseverance**,** Faith in Reason**,** Fair-mindedness**.**

- *Intellectual Humility*: Having the knowledge of the limits of one's knowledge, including sensitivity to circumstances in which one's native egocentrism is likely to function self-deceptively; sensitivity to bias, prejudice and limitations of one's viewpoint. Intellectual humility depends on recognizing that one should not claim more than one actually knows. It does not imply spinelessness or submissiveness. It implies the lack of intellectual pretentiousness, boastfulness, or conceit, combined with insight into the logical foundations, or lack of such foundations, of one's beliefs.
- *Intellectual Courage**:*** Having the knowledge of the need to face and fairly address ideas, beliefs or viewpoints toward which we have strong negative emotions and to which we have not given a serious hearing. This courage is connected with the recognition that ideas considered dangerous or absurd are sometimes rationally justified (in whole or in part) and

that conclusions and beliefs inculcated in us are sometimes false or misleading. To determine for ourselves which is which, we must not passively and uncritically “accept" what we have “learned." Intellectual courage comes into play here, because inevitably we will come to see some truth in some ideas considered dangerous and absurd, and distortion or falsity in some ideas strongly held in our social group. We need courage to be true to our own thinking in such circumstances. The penalties for non-conformity can be severe.

- *Intellectual Empathy:* Having the knowledge of the need to imaginatively put oneself in the place of others in order to genuinely understand them, this requires the consciousness of our egocentric tendency to identify truth with our immediate perceptions of long-standing thought or belief. This trait correlates with the ability to reconstruct accurately the viewpoints and reasoning of others and to reason from premises, assumptions, and ideas other than our own. This trait also correlates with the willingness to remember occasions when we were wrong in the past despite an intense conviction that we were right, and with the ability to imagine our being similarly deceived in a case-at-hand.
- *Intellectual Integrity:* Recognition of the need to be true to one's own thinking; to be consistent in the intellectual standards one applies; to hold one's self to the same rigorous standards of evidence and proof to which one holds one's antagonists; to practice what one advocates for others; and to honestly admit discrepancies and inconsistencies in one's own thought and action.
- *Intellectual Perseverance:* Having the knowledge of the need to use intellectual insights and truths in spite of difficulties, obstacles, and frustrations; firm adherence to rational principles despite the irrational opposition of others; a sense of the need to struggle with confusion and unsettled questions over an extended period of time to achieve deeper understanding or insight.
- *Faith in Reason:* Confidence that, in the long run, one's own higher interests and those of humankind at large will be best served by giving the freest play to reason, by encouraging people to come to their own conclusions by developing their own rational faculties; faith that, with proper encouragement and cultivation, people can learn to think for themselves, to form rational viewpoints, draw reasonable conclusions, think coherently and logically, persuade each other by reason and become reasonable persons, despite the deep-seated obstacles in the native character of the human mind and in society as we know it.
- *Fairmindedness:* Having the knowledge of the need to treat all viewpoints alike, without reference to one's own feelings or vested interests, or the feelings or vested interests of one's friends, community or nation; implies adherence to intellectual standards without reference to one's own advantage or the advantage of one's group.

Both the intellectual traits of mind and the universal standards are relevant and necessary in any activity aimed at enhancing critical thought.

LESSON 4: LOGIC

INTRODUCTION

In this lesson we investigate the role of logic in criticality and problem solving. As a critical thinker, if you want to better separate truth from falsehood and evaluate the various claims, ideas, and arguments you encounter, you need to equip yourself with a better understanding of logic. Logic is basically defined as the art or the study of proper reasoning. This lesson therefore, will introduce you to; the meaning of logic and its basic concepts (inferences, propositions, premises and conclusion) and to argument analysis and evaluation.

LEARNING OUTCOMES

By the end of this lesson you will be able to;

5.1.1 Explain the meaning of logic and its basic concepts.

5.1.2 Analyse and evaluate arguments.

5.2.1 The meaning of Logic and its basic concepts

Logic is the science or study of correct processes of thinking or reasoning. It is derived from the Greek "logos" which has a variety of meanings, ranging from word, discourse, thought, idea, argument, account, reason or principle. It is also defined as the study of the principles and criteria of valid inference and demonstration; or, the study of the methods and principles used to distinguish good (correct) from bad (incorrect) reasoning. In its broadest sense, it is the study of evidential link between premises and conclusions.

logic researches and review the structure of proclamations and argumnets, both through the investigation of formal frameworks of derivation and through the investigation of contentions in normal language (informal). It manages proposition (declarative sentences, used to make an affirmation, rather than questions, orders, or sentences communicating wishes) that are equipped for being valid and invalid. It isn't concerned about the mental processes associated with thought, or with feelings, pictures and so forth.

The distinction between correct and incorrect reasoning is the central problem that logic deals with. Despite the fact that there are different definitions of logic – indicating that logicians are not in agreement as to how it should be defined, we can appreciate the focus of logic as having to do with the articulation of the methods distinguishing good reasoning from bad and to present formal criteria for evaluating inferences and arguments as well as techniques and procedures for applying these criteria to concrete cases. The following are some of the basic concepts in logic; Propositions, Argument, inference, premise and conclusion.

5.2.2 Analysis and Evaluation of arguments

All arguments may be placed in two basic forms; ***"those in which the premises really do support the conclusion and those in which they do not, even though they are claimed to.*** The former are said to be good arguments (at least to that extent) and the latter are said to be bad arguments.

Syllogism is a type of logical argument using deductive reasoning.

While syllogism is a weird word, it's quite simple to understand. Syllogism derives from the Greek word *syllogismos* meaning conclusion or inference. A simple syllogism definition is that it's a form of deductive reasoning where you arrive at a specific conclusion by examining premises or ideas.

In logic, a *syllogism* is a form of deductive reasoning consisting of a major premise, a minor premise, and a conclusion. Adjective: *syllogistic*. Also known as a *categorical argument* or a *standard categorical syllogism*. The term syllogism is from the Greek, "to infer, count, reckon"

A syllogism is a deductive argument that has exactly two premises and a conclusion. A categorical syllogism is constructed entirely out of categorical propositions. It contains three different terms, each of which is used two times. The major term is the predicate of the conclusion of a categorical syllogism. The minor term is the subject of the conclusion of a categorical syllogism. The middle term is the term that occurs only in the premises of a categorical syllogism.

Following the structure and naming conventions of categorical terms, the major premise is the first premise of a categorical syllogism. The major premise contains the major term. The minor premise the second premise of a categorical syllogism contains the minor term.

Here is an example of a valid categorical syllogism:

Major premise: All mammals are warm-blooded.
Minor premise: All black dogs are mammals.
Conclusion: Therefore, all black dogs are warm-blooded.

Major Premise, Minor Premise, and Conclusion

"The process of deduction has traditionally been illustrated with a syllogism, a three-part set of statements or propositions that includes a major premise, a minor premise, and a conclusion.

Major premise: All books from that store are new.
Minor premise: These books are from that store.
Conclusion: Therefore, these books are new.

Presumably everyone agrees that decent housing for all the people is desirable (even for those who will pretend to agree but do not really think so). The question is: will this particular measure provide it, and if so, will it provide it better than any practical alternative? The speaker's argument is fallacious, for it commits the *fallacy of irrelevant conclusion.*

An argument commits this fallacy if its premises are directed towards a conclusion different from the one that is supposed to be established by them.

Fallacy of Complex Question

It is obvious that there is something "funny" about questions like "have you given up your evil ways?" or "have you stopped beating your wife?" these are not simple questions to which a straightforward "yes" or "no" answer is appropriate. Such questions presuppose that a definitive answer has already been given to a prior question that was not even asked. This is a *complex question.*

Complex questions are not confined to obvious jokes like those above. In cross-examination a lawyer may ask complex questions of a witness to confuse or even to incriminate him. He may ask, *"Where did you hide the evidence? Or why did you steal from him?"* or the like.

In such cases the intelligent procedure is to treat the complex question not as a simple one, but to analyse it into its component parts. Other kinds of complex questions - *a mother may ask her youngster if he wants to be a good boy and go to bed.* There are two questions involved; one does not presuppose a particular answer to the other. What is wrong here is the suggestion that one and the same answer must be given to both of the questions; and this is the folly, a *fallacy of complex question* has been committed

Fallacy of Accident

The fallacy of accident consists in applying a general rule to a particular case whose "accidental" circumstances render the rule inapplicable. In Plato's *Republic*, for example, an exception is found to the general rule that one should pay one's debt:

Example: "suppose that a friend when in his right mind has deposited weapons with me and he ask for them when he is not in his right mind, ought I to give them back to him? No one would say that I ought or that I should be right in doing so…"what is true, "in general" may not be true universally and without qualification, because circumstances alter cases.

Many generalizations known or suspected to have exceptions are stated without qualification, either because the exact conditions restricting their applicability are not known or because the accidental circumstances that render them inapplicable occur so seldom as to be practically negligible. When such a generalization is appealed to in arguing about a particular case whose accidental circumstances prevent the general proposition from applying, the argument is said to commit the *fallacy of accident.*

7.2.1 Discuss origin of the Socratic Method.

7.2.2 Explain the nature and relevance of the Socratic Questioning Method.

7.2.1 The Origin of the Socratic Method

The Socratic Method is named after Greek philosopher Socrates who taught students by asking question after question. His actual method was an extended public dialogue/debate between teacher and student. Socrates lived somewhere in the range of 469 and 399 BC. He was a classical Greek thinker who has been credited as one of the originators of the Western ways of thinking. He is a baffling figure known mainly through the records of later classical scholars, particularly the compositions of his understudies Plato and Xenophon, and the plays of his contemporary Aristophanes. He composed nothing and potentially Plato's dialogues are the most far-reaching records of him that have made survived from days of yore.

Through his depiction in Plato's dialogues, Socrates became renowned for his contribution to various fields through his concepts of the Socratic Method also known as the Socratic questioning. This remains a commonly used tool in a wide range of discussions, and is a type of training in which a series of questions are asked not only to draw individual answers, but also to encourage fundamental insight into the issue at hand. It informed the rise of critical thinking as a subject or field of study.

7.2.2 The nature and relevance of the Socratic Questioning Method

In addressing the fundamental issues and challenges facing education in the 21st century, the concept of critical thinking ought to be methodically dissected along with the Socratic questioning method. The Socratic method of inquiry uses a dynamic approach of questioning and intellectual analysis in order to explore the essential nature of concepts. It provides an opportunity for teachers and students to embark the quest for knowledge so as to assist develop the student's critical thinking skills that are greatly needed in this century. As a teaching methodology that uses probing questions to guide about a dialogue about a text or concept, it emphasizes on dialectical exchange among learners or between the teacher and the student.

LESSON 7: THINKING FOR ONESELF – A RENE DESCARTES

7.1 Introduction

This lesson will introduce you to the thought patterns of Rene Descartes and its impact on the subject of critical thinking and problem solving. Rene Descartes, the father of modern philosophy is widely remembered in philosophy for his systemic thinking and his method of elucidating

Once a problem has been recognized, it should be carefully defined. Failure to attain a clear definition of a problem will always result in obtaining unsuccessful solutions or you may end up solving "some" problem but not the one that you were trying to solve.

In many situations, defining the problem will be the most difficult phase in decision-making. But once you have correctly defined the problem, the rest will be relatively easy.

There are three rules that must be followed in defining the problem: First, *the definition should not be too general* - This is so because if the definition is too broad, the guidelines for a solution will be too broad, and the investigation may flounder. Large problems can be very real, but their solution usually require breaking them down into smaller, clearly defined segments in order to solve them one at a time; second, *the definition should not be too specific* - a definition of a problem is said to be too specific when it unnecessarily restricts alternative solutions. When the definition of the problem is too specific, it will always lead to temporary solutions because it will have ignored other significant aspects that led to its emergence and which might be critical to its solution; third, *the definition should not in itself constitute a "solution" to the problem* - Suppose that in each year, there is a problem of mass drop-out of Masters Students in the School of Humanities and Social Sciences at Kenyatta university in Kenya, and the Dean of School defines the problem as due to lack of scholarships and/or financial limitations on the part of students. The Dean's definition would in itself have contained a "possible solution" that more scholarships and financial grants be extended to masters' program students. This would rule out other solutions for consideration and possibly skew the thinking and barricade the solution to the problem. .

These three are necessary to observe because quite often, there is temptation to quickly jump into figuring out solutions without understanding the nature and magnitude of the problem. If a problem is not well understood, the solutions might not be effective and valuable time and effort would have been unnecessarily wasted.

Establishing Causal factors

The second phase to problem solving entails *finding out what caused the problem/gathering information or conducting research.* The leading question here is: *what caused the problem?* Once you have identified and clearly defined the current problem, the next step is to dig a little deeper to find out the root cause or background of the problem. Some questions to ask at this stage include the following: When and where did the difficulty, obstacle or complication occur? Why did the problem happen? How did it happen? What led to the problem? How real or practical is the problem? Was it caused by one thing or many things? Was it accidental or intentionally caused? What information is missing? Where can you find more information? What could have prevented the problem? What is known about similar problems? What solutions have been tried before?

Problem Impact analysis

Phase three of problem solving and decision-making entails *analyzing the impact of the problem*. The principle question at this stage is: *Who or what is affected by the problem?* It is important that at this stage one makes efforts to determine how widespread the problem is and its devastating effects. Major guiding questions at this stage include: Is it affecting one person or many; and how is it affecting them? How long has the problem been going on? Are there any trends? Is this a re-occurring problem or a completely new one? What would happen if the problem is not resolved?

If the problem cuts across social divide or is affecting a multitude or an institution, talk to different people to get first-hand accounts of the impact of the problem, its possible source and their views on how best to mitigate it. Establish if it is severe, mild or manageable.

Formation of Tentative Solutions

The fourth phase to problem solving is *brainstorming and formation of possible solutions.* The guide question to this phase is: *What are the potential solutions?* This phase calls for a reasonable and bias-free multifaceted critical approach. Identify as many possible solutions to the problem through brainstorming.

In a case where the problem affects many people who are also involved in your search for a solution, state the problem in agreeable terms then request everyone involved to independently write down their own individual possible solution which will, together with others be used to inform and form a solution. Thereafter, list down all the answers proposed and invite others to further build upon and refine the suggested solutions or you go further to propose and share other additional solutions that might not have been captured by your respondents and share them out before reaching a definite solution.

For a brainstorming session to be successful, the problem needs to be clearly defined, enough time needs to be scheduled, participants should take time to think through the problem and generate solutions, and solutions should not be judged during the brainstorming session. If the problem is collective and impacting on many people or an institution, it is advisable to use a good facilitator to listen attentively to participants, encourage input by all and drive the discussion before you subject their opinions to the scrutiny of analytical reason.

Evaluation of Tentative Solutions

Phase five entails *evaluation of alternatives/solutions*. The key question to this phase is: *How do you select the best alternative/solution?* Once a good number of options have been gathered, the next step is to go through the alternatives and narrow down the ones that are most viable. It is possible that at this stage, the top choices would be a merger between one or more other alternative choices. In the process of synchronizing alternatives it's important to identify the advantages and disadvantages of each of the top choices. In addition, also take a step back and write down the desired results, when they should be achieved as well as how the results will be measured i.e. what is expected after the problem has been eliminated or handled- imagine how it would be like when

believe that the problem will fizzle out or solve itself; not having the authority to decide which solution should be implemented; procrastinating or inertia to resolve a problem because it could take a long time to figure out solutions especially for complex problems; thinking that the problem is more difficult than it really is; thinking that you have to figure it all out on your own; lack of self-confidence in dealing with and solving problems; naivety as not to ask for help; unwilling to take other people's opinions; fear that implementation could be difficult and frustrating; and fear of failure.

Other challenges and barriers include: resource constraints; insufficient resources such as manpower and finances to properly address large scale problems; too many problems at the same time or difficulty in prioritizing problems; resistance to change or new ways of doing things; not following through on solutions after the brainstorming stage; mental fatigue and giving up too soon when it takes long to solve a problem; inability to measuring progress; abrupt change in external factors causing the need to rethink or revise solutions; inexperience in handling and solving problems; and, not wanting to deal with uncertainty.

LESSON 10: CRITICAL THINKING, EDUCATION AND LEADERSHIP

11.1. Introduction

In this lesson, we are going to look at the role of critical thinking in shaping and giving value to education for good and quality leadership. The importance of education in nurturing well-polished and visionary leadership has been underscored by various writers. Leaders, for example, require displaying a rich and an outstanding moral and professional etiquette, eloquence in communication and ingenuity in thought and action. They need to embrace and display, in their actions and deeds, a complex set of skills, dispositions and attitudes, which together describe a virtue which has both intellectual and moral component. Through value creating education critical thinking becomes an instrumental for the cultivation of the kind of leadership that think critically, serve indiscriminately and save the world from the fangs of destruction.

This range of skills, dispositions and attitudes serves to prevent the emergence of numerous vices, including dogmatism and prejudice in thinking. Critical thinking prepares leaders to be able to form a reasonable judgment on controversial questions in regard to which they are likely to have to act

11.2. Lesson Learning Outcomes

By the end of this lesson, you will be able to:
11.2.1. Discuss the meaning, qualities and main aspects of leadership

11.2.2. Explain the Value Creating Education Skills for Leadership