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Approaches through Inducto-Deductive Reasoning in Teaching

Abstract

The approaches through induction and deduction speaks to realize the facts, concepts, and theories that enables us to understand the phenomenon of the teaching it gives different types direct and indirect illustration to get the concepts clearly and permanently, the deductive reasoning develops syllogism which provides mean testing for the validity for particular conclusion it includes the types of categorical statements and other types of syllogism and also it is related to the inductive reasoning to determine the premises and conclusion that means searching for a knowledge and also it can be used in deductive inferences it includes the types of inductive reasoning like perfect induction, baconian induction and imperfect induction the main reason to develop an extended knowledge an drawing the conclusion for the particular facts, concepts and theories.

Keywords: Inducto, Syllogism, Baconian, Disjunctive, Affirmative.

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Introduction

Knowledge broadly speaking consists of facts and theories that enable us to understand phenomena and to solve problems. Knowledge can range from the simplest perception of an object to the most prefund understanding of a complex theory. Knowledge can be obtained from direct personal experience or from the many second hand sources that incident us constantly with rival claims of useful information.

Knowledge claims on any level of complexity or from any source may range from those that are highly reliable to those that are completely unreliable to be certified as reliable, knowledge must pass successfully certain tests and it must be supported with evidence. Acquiring reliable knowledge is not a one shot finished business; it is a complex, challenging, continuous adventure. The acquisitation and expansion of reliable knowledge is not an automatic, self-preheating process. It rests on our willingness to develop critical thinking skills and the made efforts conjures together to improve their capacity and readiness to obtain reliable knowledge.

Aim of the Study

1. To develop the habit of drawing conclusion.
2. To find the abstract concept to explore the talent.
3. To develop an aesthetic sense towords concepts of science.
4. It is to frame the inferences for the particular area of the study.
5. To develop sustainable scientific skills and scientific temperament.

Deductive Reasoning

A significant contribution towards the development of a systematic method for obtaining reliable knowledge was made by the ancient Greek philosophers like Aristotle and his followers Aristotle developed the syllogism, a deductive argument which provides a mean of testing the validity of a particular conclusion. A syllogism consists of three statements or propositions. The first two statements are called “premises”.

1. A major premise based on a self-evident truth or previously established fact or relationship.
2. A minor premise concerning a particular case to which the truth fact or relationship invariably applies.
3. A conclusion if the major and minor premises can be shown to be true then the conclusion arrived at is necessarily true.

Aristotle defined the syllogism as “a discourse in which certain things being posted something else than what is posited necessarily follows from them”.

Let us try to understand the meaning of the syllogism through the following categorical syllogism which is an example of such discoursed.

Major Premise

All mammals are mortal if all M are P, and (Middle) M (major) P

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Minor Premise

All men is mammals all S are M then (Minor) S (middle) M

Conclusion

All men are mortal all S are P (Minor) S (major) P The following can be observed from the above categorical syllogism.

1. The valid syllogism contains only 3 classes of things i.e., mortal, mammals and men.
2. Each term appears twice in the syllogism.
3. Each statement contains two terms.

Types of Categorical Statements

Depending on the nature of the categorical statements in a syllogism, there are 4 types of categorical states.

1. Universal affirmative
   Ex: All students are white
2. Universal negative
   Ex: No students are white
3. Particular affirmative
   Ex: Some students are white
4. Particular negative
   Ex: Some students are not white

Using any of the above three statements out of four statements we can develop the categorical syllogism. By varying the types of statements 256 arguments can be developed but most of them are invalid and from any 2 negative premises or from two particular premises, no conclusion can be inferred.

Other Types of Syllogism

1. Hypothetical syllogism
2. Alternative syllogism
3. Disjunctive syllogism

The method of syllogism or deduction however useful has the following limitations

1. The conclusion of a syllogism is always derived from the content of the premises. Therefore if the premises are unrelated or if one of the premises is essential the conclusion arrived at will not be valid.
2. Another serious limitation of the deductive reasoning is its dependence upon verbal symbolism.
3. Deductive reasoning can systematize what is already known and can identify new relation. Ships as one proceeds from known to unknown. But it cannot be relied upon as a self sufficient method for securing reliable knowledge.

Inductive Reasoning

As we know that the conclusions drawn by deductive reasoning are true only if they are based upon true premises. To determine whether the premises are true, man has devised inductive reasoning to complement deductive reasoning as a means of searching for knowledge.

In inductive reasoning we initiate our inquiry by observing particular instances or facts later examining these facts and finally establishing a general conclusion above the whole class to which these particular instances belong. The conclusions that have been arrived from induction can be used as major premises for deductive inferences.

Types of Inductive Reasoning

Perfect Induction

Complete enumeration is done in this type of induction in this form of induction one simply counts all the instances in a given class and announced his result in a general conclusion. Though perfect induction obtains reliable information this type of enumeration cannot be employed as a method of investigation in the solution of most problems because we do not have an opportunity to examine all the instances which helps in drawing the conclusion.

Baconian Induction

Francis Bacon (1561-1626) stressed the need for basing general conclusions upon specific facts gathered through direct observation. This is what is known as inductive reasoning that is going from particular to the general. Rather than accepting premiseslaid down by authorised as absolute truths, Bacon advised man to observe nature closely to experiment to tabulated all the facts to study these facts in order to reach minor generalization and then to proceed from minor generalization to greater ones He, however, cautioned against formulating any hypothesis or any probable solution to a problem until all the facts had been gathered. His demand that the investigator first has to search the facts was justified but the exhaustive collections of facts that are required are beyond the human capacity.

Imperfect Induction

This type of induction is mostly utilized by the investigators or the research workers when examining all the instances of a class under consideration is not practical, the investigator arrives at a generalisation by observing an adequate and representative sample from the entire class.

Although imperfect induction does not help man to arrive at infallible conclusions, it can provide is reliable knowledge upon which we make reasonable decisions.

Conclusion

Both inductive and deductive methods have advantages and limitations if premises are true, deductive reasoning helps us to arrive at absolutely true conclusions. These, conclusions however do not probe beyond that, which is already known already present at least implicitly in the premises in an imperfect induction argument, the conclusions

Contains information that is not present even implicitly in one of the instances or premises. This type of argument is absolutely necessary to extend the knowledge. If the premises are true the conclusions arrived are of varying degrees.

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