



## EFFECTIVENESS OF INDUCTIVE AND DEDUCTIVE METHOD OF TEACHING ON ACHIEVEMENT IN SCIENCE OF SECONDARY SCHOOL STUDENTS

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### ABSTRACT

Science is a dynamic, expanding body of knowledge covering ever new domains of experience. The methodology of science and its demarcation from other fields continue to be a matter of philosophical debate. Its professed value neutrality and objectivity have been subject to critical sociological analyses. This study was conducted to study effectiveness of inductive and deductive method of teaching on achievement in science of secondary school students. For this purpose a sample of 100 students was taken from schools of Ferozepur district. A self made Achievement test was used both as pre test and post test for control and experimental groups. After analyzing the data it was found that there was significant difference between inductive method, and traditional group on achievement in science of secondary school students. The inductive method allowed more effective interaction between the students and enabled the learner to participate successfully in the learning process. There was a significant difference between deductive method and traditional method on achievement in science of secondary school students. Deductive method is simple for the students as they get a readymade key to solve the relevant problems. There exists no significant difference in achievement in science of secondary school students when taught with inductive method and deductive method.

### KEYWORDS :

### INTRODUCTION

Humans have always been curious about the world around them. The inquiring and imaginative human mind has responded to the wonder and awe of nature in different ways. One kind of response from the earliest times has been to observe the physical and biological environment carefully, look for any meaningful patterns and relations, make and use new tools to interact with nature.

Science is a dynamic, expanding body of knowledge covering new domains of experience. As with many complex things in life, the scientific method perhaps more easily discerned than defined. It involves several interconnected steps: observation, looking for regularities and patterns, making hypotheses, devising qualitative or mathematical models, deducing their consequences; verification of theories through observations and controlled experiments, and thus arriving at the principles, theories and laws governing the physical world, a scientific theory, to be acceptable, must be verified by relevant observations and experiments. The laws of science are never viewed as fixed eternal truths. Even the most established and universal laws of science are always regarded as provisional, subject to modification in the light of new observations, experiments and analysis. Science is at its best in understanding simple linear systems of nature, its predictive or explanatory power is limited when it comes to dealing with non-linear complex systems of nature.

According to Ausubel, meaningful learning occurs when a learning task is related to what learner already knows. For a meaningful understanding of the science concepts the sequence of learning material should be organized in such a way that the learner could form internal associations of knowledge.

### INDUCTIVE METHOD

This method is psychological in nature. This method is based on principle of induction. Induction means to establish a universal truth by showing that if it is true by showing that if it is true for a particular case and is further true for a reasonably adequate number of cases then it is true for all such cases. In induction method, rules and formulas are not supplied by the teachers to the students. Here only various facts and examples are presented to the students and from here they have to establish a general formula.

### DEDUCTIVE METHOD

Deduction is the process by which a particular fact is derived from some general known truth. In deduction method, a pre-established rule or formula is given to the students and they are asked to solve the related problems by using the formula. Deduction teaching

secures first the learning of definition or rules then carefully explains its meaning and lastly illustrates it fully by applying to facts.

### REVIEW OF RELATED LITERATURE

**Gakhar and Agarwal (2002)** found that Mastery learning was found to be helpful in improving the achievement level of students and learning with mastery learning approach changes the aptitude and interest of students. **Bindu (2001)** found that pupils taught through co-operative learning strategy have better achievement and retention in malayalam language skills than pupils taught through conventional method of teaching. **Jaspinder (2011)** found that students do not differ significantly in their achievement when taught through cooperative learning technique and concluded males and females were benefited equally when taught with the help of cooperative learning technique.

### OBJECTIVES OF THE STUDY

1. To study the effectiveness of Inductive method of teaching on the achievement in science of secondary school students
2. To study the effectiveness of deductive method of teaching on the achievement in science of secondary school students
3. To compare the effectiveness of Inductive and deductive method of teaching in achievement on science of secondary school students

### HYPOTHESES OF THE STUDY

1. There exists no significant difference in achievement in science of secondary school students taught with inductive method (experimental group) and traditional method (control group).
2. There exists no significant difference in achievement in science of secondary school students taught with deductive method (experimental group) and traditional method (control group)
3. There exists no significant difference in achievement in science of secondary school students when taught with inductive method and deductive method

### DESIGN OF THE STUDY

Present study was experimental in nature. Experimental group was taught through inductive and deductive method and control group through traditional teaching.

### SAMPLE OF THE STUDY

A sample of 100 students of 9<sup>th</sup> class of Ferozepur was selected. The students were selected randomly from schools.

### TOOLS USED

- i. Group Test of Intelligence by S.S. Jalota.

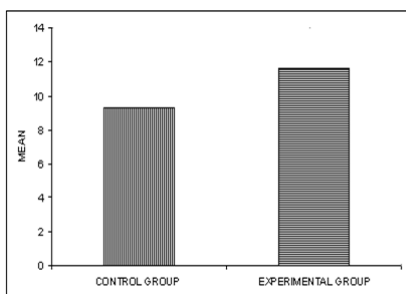
- ii. Achievement test was used both as pre test and post test (Prepared by investigator).

## RESULTS AND DISCUSSION

**TABLE 1 SHOWING DIFFERENCE IN THE MEAN SCORE OF ACHIEVEMENT IN SCIENCE OF CONTROL GROUP AND EXPERIMENTAL GROUP**

CATEGORY	N	MEAN	SD	't' value	INFERENCE
Control Group (Traditional Method)	100	9.20	3.77	3.48	Significant at both 0.05 and 0.01 level
Experimental Group (Inductive method)	100	11.25	4.25		

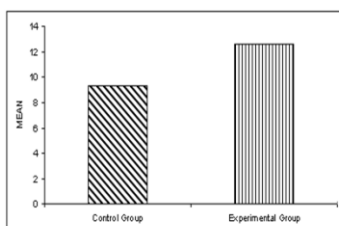
It is obvious from the result given in the table 4.1 that mean score of control group is 9.20 and S.D. is 3.77 and mean score of experimental group is 11.25 and S.D. is 4.25 and 't' value obtained is 3.48. The obtained value of 't' is more than the table value i.e. 1.98 at 0.05 level and 2.63 at 0.01 level which is significant at both the levels. It indicates that there is significant difference in achievement in science on inductive method and traditional method. Hence hypothesis-I which states that "There exists significant difference in achievement in science of secondary school students taught with inductive method (Experimental group) and traditional method (Control group) is accepted.



**TABLE 2 SHOWING DIFFERENCE IN THE MEAN SCORE OF ACHIEVEMENT IN SCIENCE OF CONTROL GROUP AND EXPERIMENTAL GROUP**

CATEGORY	N	MEAN	SD	't' value	INFERENCE
Control Group (Traditional Method)	100	9.20	3.77	4.69	Significant at both 0.05 and 0.01 level
Experimental Group (Deductive method)	100	12.30	5.44		

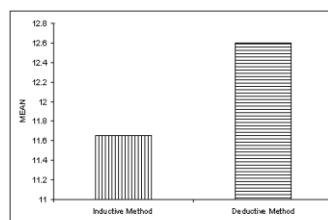
It is obvious from the result given in the table 4.2 that mean score of control group is 9.20 and S.D. is 3.77 and mean score of experimental group is 12.30 and S.D. is 5.44 and 't' value obtained is 4.69. The obtained value of 't' is more than the table value is 1.98 at 0.05 level and 2.63 at 0.01 level which is significant at both the levels. It indicates that there is significant difference in achievement in science of secondary school students taught by deductive method and traditional method. Hence hypothesis-2 which states that "There exists significant difference and achievement in science of secondary school students taught with deductive method (experimental group) and traditional method (Control Group) is accepted.



**TABLE 3 SHOWING DIFFERENCE IN THE MEAN SCORE OF ACHIEVEMENT IN SCIENCE OF INDUCTIVE METHOD AND DEDUCTIVE METHOD**

CATEGORY	N	MEAN	SD	't' value	INFERENCE
Inductive Method	100	11.25	4.25	1.32	Significant at both 0.05 and 0.01 level
Deductive Method	100	12.30	5.44		

It is obvious from the result given in the table 4.3 that mean score of students taught with inductive method is 11.25 and S.D. is 4.25 and mean score of students taught with deductive method is 12.30 and S.D. is 5.44 and 't' value obtained is 1.32. The obtained value of 't' is less than the table value i.e. 1.98 at 0.05 level and 2.63 at 0.01 level, which is insignificant at both levels it indicates that there exists no significance difference in achievement in science of secondary school students when taught with inductive method and deductive. Hence hypothesis-3 which states that, "There exists no significance difference in achievement in science of secondary school students when taught with inductive and deductive method is not accepted.



## CONCLUSION

On the basis of analysis and interpretation of results following conclusions have been drawn;

1. There was significant difference between inductive method, and traditional group on achievement in science of secondary school students. Inductive method helps in understanding a scientific principle and concepts. The inductive method allowed more effective interaction between the students and enabled the learner to participate successfully in the learning process.
2. There was a significant difference between deductive method and traditional group on achievement in science of secondary school students. Deductive method is simple for the students as they get a readymade key to solve the relevant problems.
3. There exists no significant difference in achievement in science of secondary school students when taught with inductive method and deductive method.

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