



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

**Dr. Rajwinder Kaur\***

Assistant Professor Dev Samaj College of Education for women Ferozepur City

\*Corresponding Author

**ABSTRACT** This study was conducted to study effectiveness of inductive and deductive method of teaching on achievement in mathematics 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 mathematics of secondary school students. There was a significant difference between deductive method and traditional method on achievement in mathematics of secondary school students.. There exists no significant difference in achievement in mathematics of secondary school students when taught with inductive method and deductive method.

**KEYWORDS :** Inductive Method, Deductive method, Achievement ,Mathematics

### INTRODUCTION

Mathematics is playing a promising role in the age of science and technology and we cannot think of being able to explore the outer space and planning to land in mars without mathematics.

The indispensable role of mathematics in modern age has enabled it to occupy a vital place in world and a sage position in the school curriculum too. It has been compulsory subject for a long time in almost all the countries of the world. However, during the past it was included in the curriculum from discipline point of view. It effect has also been taken into account. Various Commissions and Committees have considered and realized deep impact of mathematics on modern age. Etymologically, the word mathematics has its origin from the root word "Mathaneen" which implies to learn. Generally the word 'Mathematics' has been used in two distinct and different senses i.e. one as a method used to solve the problems of quantity, space, order etc. and the second as a set of laws or generalizations of truths that are discovered.

### INDUCTIVE METHOD

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

**Rangaraj and Subramanian Bala (1998)** found that that CAIS is more effective when compared to lecture method in enhancing the retention of cognition in physics at all the levels viz knowledge, understanding and application. **Dhamija (2000)** found that achievement of students was highest when taught through radio-vision approach as compared to conventional, radio-vision and modular approach. **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.

### EMERGENCE OF THE PROBLEM

According to W.F.Mackey. "A method determines what and how much

is taught (selection), the order in which it is taught (gradation), how the meaning and form are conveyed( presentation) and what is done to make the use of the subject matter unconscious (repetition)". The method that the teacher adopts in any particular school or class will depend upon many factors- his interests and abilities and also on the intelligence and interest of pupils, the resources of the laboratory, the facilities for efficient mathematics etc. No teacher can afford to rely for ever and in all circumstances only on one method, however good that may be even the best of the methods may not succeed in certain conditions. A teacher should not become a slave of one method; rather he should try to imbibe the good qualities of all the methods. This best method will be his own individualized and personalized method, which is the result of his rich and varied experience. It is observed that most of the students in 9<sup>th</sup> and 10<sup>th</sup> class take less interest in the mathematics because mathematics is degenerated into a dull and dry subject if knowledge about facts is imported to the students in traditional way. In this study it is attempted to investigate the usefulness of the two different method of teaching the same topic in the same class and the effect of these methods on the achievement of students in solving polynomial equation.

### OBJECTIVES OF THE STUDY

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

### HYPOTHESES OF THE STUDY

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

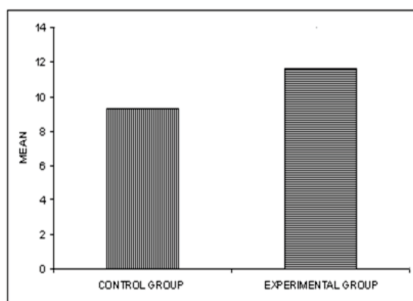
- i. Group Test of Intelligence by S.S. Jalota.
- ii. Achievement test was used both as pre test and post test (Prepared by investigator).

**RESULTS AND DISCUSSION**

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

CATEGORY	N	MEAN	SD	't' value	INFERENCE
Control Group (Traditional Method)	100	9.34	3.97	3.84	Significant at both 0.05 and 0.01 level
Experimental Group (Inductive method)	100	11.65	4.52		

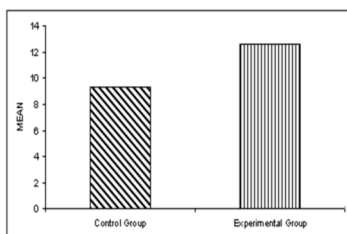
It is obvious from the result given in the table 4.1 that mean score of control group is 9.34 and S.D. is 3.97 and mean score of experimental group is 11.65 and S.D. is 4.52 and 't' value obtained is 3.84. The obtained value of 't' is more than the table value i.e. 1.98 at 0.05 level and 2.63 at 0.01 level which is significant at both the levels. It indicates that there is significant difference in achievement in mathematics on inductive method and traditional method. Hence hypothesis-I which states that "There exists significant difference in achievement in mathematics 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 MATHEMATICS OF CONTROL GROUP AND EXPERIMENTAL GROUP

CATEGORY	N	MEAN	SD	't' value	INFERENCE
Control Group (Traditional Method)	100	9.34	3.97	4.79	Significant at both 0.05 and 0.01 level
Experimental Group (Deductive method)	100	12.60	5.55		

It is obvious from the result given in the table 4.2 that mean score of control group is 9.34 and S.D. is 3.97 and mean score of experimental group is 12.60 and S.D. is 5.55 and 't' value obtained is 4.79. 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 mathematics of secondary school students taught by deductive method and traditional method. Hence hypothesis-2 which states that "There exists significant difference and achievement in mathematics of secondary school students taught with deductive method (experimental group) and traditional method (Control Group) is accepted.

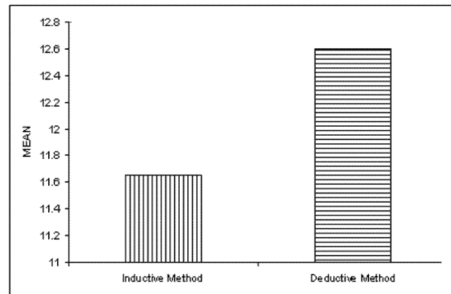


**TABLE 3** SHOWING DIFFERENCE IN THE MEAN SCORE OF ACHIEVEMENT IN MATHEMATICS OF INDUCTIVE METHOD AND DEDUCTIVE METHOD

CATEGORY	N	MEAN	SD	't' value	INFERENCE
Inductive Method	100	11.65	4.52	1.32	Significant at both 0.05 and 0.01 level
Deductive Method	100	12.60	5.55		

It is obvious from the result given in the table 4.3 that mean score of students taught with inductive method is 11.65 and S.D is 4.52 and mean score of students taught with deductive method is 12.60 and SD is 5.55 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 mathematics 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 mathematics of secondary school students when taught with inductive and deductive method is not accepted.



**CONCLUSIONS**

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 mathematics of secondary school students. Inductive method help in understanding a mathematical principle and formula. 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 mathematics of secondary school students. Deductive method is simple for the students as they get a ready made key to solve the relevant problems.
3. There exists no significant difference in achievement in mathematics of secondary school students when taught with inductive method and deductive method.

**REFERENCES**

1. Balasubramanian, N. and Yogandan, M. (2010). Effectiveness of pre-recorded Audio-cassette in teaching of English pronunciation at primary level. Journal of Educational Technology, 13, 3-4.
2. Bhardwaj, U. (2009) Effect of inductive thinking model on achievement in economics in relation to intelligence at secondary school stage. M.Ed. Dissertation, Amritsar, Guru Nanak Dev University.
3. Bindhu, C.M. (2010) Effectiveness of instructional learning strategies on Achievement and retention in Malayalam languages skills. Journal of Educational Technology, 13(1).
4. Gakhar and Aggarwal (2002) Effect of Mastery Learning on achievement in Environmental science. Educational Herold 35(1).
5. Gulhane (2008) Effectiveness of inductive, deductive and analytical method in mathematics. Journal of community guidance and research, 25(3), 307-312.
6. Jaspinder (2011) Effect of Cooperative Learning Technique on Achievement of Mathematics of IX Grade Students, Unpublished M.Ed. dissertation, Guru Nanak Dev University.
7. Kanna M. and Husain Ahsar (2008). A study of effectiveness of use of computer Technology in Teaching Science. Edutracks, 9, 27-29.
8. Navdeep (2011). Effectiveness of concept attainment Model of teaching on achievement in Chemistry. Unpublished M.Ed. Dissertation. Guru Nanak Dev University.
9. Navkiran (2008) Effect of Lecture-cum-Demonstration Method in Achievement in life Science in Relation to intelligence, unpublished M.Ed. Dissertation. Guru Nanak Dev University.
10. Nimavath V. and Gnanadevar, R. (2008) Effectiveness of Multimedia Programme in Teaching Science Edutracks, 8, 27-29
11. Rangaraj and Bala Subramanian (1998) Effectiveness of computer based instructional strategies in modifying among student's cognitive behaviour. Journal of Educational Technology 11(1).
12. Sharma (2011) Effectiveness of cooperative learning approach over conventional method in mathematics at high school level. Journal of Educational and Psychological Research, 2, (1), 12-17.
13. Kaur, K. (2013) Effect of Web based instructions on Achievement in Biology. Med. Dissertation, Panjab University, Chandigarh.