

Effectiveness of Inductive Thinking Model and ICT based Teaching on Higher Mental Ability in Commerce of Class IX Students

Megha Gangwar¹ and Prof. S. N. Singh²

¹ Research Scholar, Department of Education, University of Lucknow, Lucknow

² Professor (Ret.), Department of Education, University of Lucknow, Lucknow.

¹gangwar.megha84@gmail.com

²sarnathsingh@gmail.com

Abstract :

The present study is Experimental in nature. In this study, the effectiveness of Inductive Thinking Model and ICT based teaching on Higher Mental Ability in Commerce of class IX students was investigated. The Pre-test Post-test non-equivalent group design was used for the study. The sample consisted of 153 commerce students of class IX from three purposively selected schools situated in the Bareilly district of Uttar Pradesh. Out of these 153 students, 73 students (32 male and 41 female) formed group one and taught through Inductive Thinking Model, and the other 80 students (33 male and 47 female) formed group two and were taught through ICT based Teaching. The experimentation was carried out for about 30 days. Pre-test and Post-test scores were obtained from both the groups by the administration of the Higher Mental Ability test in Commerce developed by the investigator. Both the experimental groups were compared by using the Correlated t-test and Analysis of Covariance. The finding of the study indicates that the Inductive Thinking Model and ICT Based Teaching both are effective to enhance the Higher Mental Ability in Commerce of class IX students. But, the Inductive Thinking Model was found to be significantly superior to ICT based Teaching in developing Higher Mental Ability in Commerce when both the groups were matched statistically with respect to Pre- Higher Mental Ability in Commerce score.

Keywords :

Inductive Thinking Model, ICT based Teaching, Higher Mental Ability in Commerce

I. INTRODUCTION

Education plays an important role in the building of a nation. The development of a nation in various spheres like science, technology, literature, commerce, etc. depends on an effectively planned system of education. The future of India will be fashioned in the modern classrooms. The classroom is the nucleus where influences on students learning and results from education are found. The main aim of education is to develop cognitive, affective, and psychomotor domains of the individual. There is more emphasis on the development of the cognitive domain as compared to affective and psychomotor domains. Traditional teaching methods are focused on the development of knowledge, understanding, and application level of the cognitive domain. Only Traditional teaching method is not able to accelerate the speed to develop higher mental abilities i.e. analysis, synthesis, and evaluation power of learner. It reflects on the need for a new model of teaching and use of Information Communication Technology, which can properly develop the cognitive domain of the learner.

II. REVIEW OF RELATED LITERATURE

Singh (1994) explored that Inductive Thinking Model of Teaching is more effective than the Traditional Method in teaching Economics for the XI class students of Uttar Pradesh in terms of selected Cognitive Variables.

Verma (2001) found Inductive Thinking Model of Teaching and Mastery Learning Model to be better than that of Traditional Method of teaching on pupil's achievement in Science and their Creative Thinking Abilities.

Wanjari (2005) explored that Concept Attainment Model and Inductive Thinking Model were more effective than the Traditional Method of Teaching.

Billing (2012) explored that Inductive Thinking Model of Teaching is better than that of Traditional Method of Teaching on learner's achievement in History, Civics, and Geography

Mondal (2013) explored that Advance Organizer Model and Inductive Thinking Model were more effective than the Traditional Method of Teaching for teaching Chemistry.

Kumud (2013) found that Effect of Information and Communication Technology (ICT) is more than the Traditional Methods of Teaching on the students' achievement in Mathematics at Secondary level.

III. OBJECTIVES OF THE STUDY

1. To compare mean scores of Higher Mental Ability in Commerce of class IX students tested at pre and post stage of group treated through Inductive Thinking Model.
2. To compare mean scores of Higher Mental Ability in Commerce of class IX students tested at pre and post stage of group treated through ICT based teaching.
3. To compare the adjusted mean scores of Higher Mental Ability in Commerce of class IX students of Inductive Thinking Model Group and ICT based teaching Group by considering Pre-test scores of Higher Mental Ability in Commerce as a covariate.

IV- HYPOTHESES

1. There will be no significant difference between mean scores of Higher Mental Ability in Commerce of class IX students tested at pre and post stage of group treated through Inductive Thinking Model.
2. There will be no significant difference between mean scores of Higher Mental Ability in Commerce of class IX students tested at pre and post stage of group treated through ICT based teaching.
3. The adjusted mean scores of Higher Mental ability in Commerce of class IX students taught through Inductive Thinking Model will not differ significantly from those taught through ICT based teaching when Pre-test scores of Higher Mental Ability in Commerce will be taken as a covariate.

V- METHODOLOGY

Method of Research

The present study was conducted through the Experimental Method of Research

Population

The population of the present study consisted of all IX class Commerce students of schools affiliated by Uttar Pradesh Madhyamik Shiksha Board, Allahabad

Sample

The sample of the present study comprised of 153 commerce students of class IX from three purposively selected schools situated in Bareilly district of Uttar Pradesh. In these schools syllabus prescribed by the Uttar Pradesh Madhyamik Shiksha Board, Allahabad was followed and the medium of instruction was Hindi. The students of the selected colleges were randomly assigned to the treatment. Out of these 153 students, 73 students (32 male and 41 female) constituted the Experimental Group –I. The other 80 students (33 male and 47 female) constituted the Experimental Group –II.

Design

In the present study Pre-test Post-test non-equivalent group design under Quasi Experimental Design was used.

Variables of the study

In the present study Higher Mental ability in commerce was the dependent variable. Methods of Teaching (Inductive thinking Model and ICT based Teaching) was the independent variables and Pre-test scores in Higher Mental Ability in Commerce was treated as controlled variable.

Tools used in the study

Higher Mental ability Test in Commerce developed by the investigator was used for assessing the higher mental ability in commerce of students.

VI. EXPERIMENTATION

In the present study both the experimental groups were pre-tested by administering the Higher Mental Ability Test in Commerce. After the pre-testing, Experimental Group- I was taught through Inductive Thinking Model and Experimental Group - II was taught through ICT based teaching. The various units taught from Commerce Syllabus were “Accounting, Money & Banking and Economics.” The treatment duration was 30 working days at the rate of one hour per day. At the end of the treatment, both experimental groups were post-tested with the help of the same tool as used at the pre-testing stage.

VII. RESULT AND INTERPRETATION

1. Comparison of mean scores of Higher Mental Ability in Commerce at pre and post stage of group treated through Inductive Thinking Model

The first objective of the study was “To compare mean scores of Higher Mental Ability in Commerce of class IX students tested at pre and post stage of group treated through Inductive Thinking Model.” The obtained data were analysed with the help of correlated t-Test. The results are given in Table- 1.

Table- 1: Mean, SD, and Correlated t-value of Higher Mental Ability in Commerce score of Inductive Thinking Model Group

Groups	N	Mean	SD	Correlated t-value
Pre-Test Group	73	14.91	2.87	28.547**
Post-Test Group	73	23.78	2.22	

** Significant at 0.01 level

From Table-1, it is evident that the correlated t-value is 28.547, which is significant at 0.01 level of significance with $df = 72$. It reflects that the mean scores of Higher Mental Ability in Commerce at Pre and post stage differ significantly. Thus the null hypothesis that “There will be no significant difference between mean scores of Higher Mental Ability in Commerce of class IX students tested at pre and post stage of group treated through Inductive Thinking Model.” is rejected. Further, the mean scores of Higher Mental Ability in Commerce at Post stage is 23.78 which is significantly higher than that of pre stage whose mean score of Higher Mental Ability in Commerce is 14.91. It may, therefore be said that Inductive Thinking Model was found to be effective in facilitating Higher Mental Ability in Commerce of class IX students.

2. Comparison of mean scores of Higher Mental Ability in Commerce at pre and post stage of group treated through ICT based Teaching

The second objective of the study was “To compare mean scores of Higher Mental Ability in Commerce of class IX students tested at pre and post stage of group treated through ICT based teaching.” The related data were analysed with the help of correlated t-Test. The results are given in Table- 2.

Table- 2: Mean, SD, and Correlated t-value of Higher Mental Ability in Commerce score of ICT based teaching Group

Group	N	Mean	SD	Correlated t-value
Pre-Test Group	80	15.73	3.54	9.967**
Post-Test Group	80	21.13	4.82	

** Significant at 0.01 level

From Table-2, it is evident that the correlated t-value is 9.967, which is significant at 0.01 level of significance with $df = 79$. It reflects that the mean scores of Higher Mental Ability in Commerce at Pre and post stage differ significantly. Thus the null hypothesis namely, "There will be no significant difference between mean scores of Higher Mental Ability in Commerce of class IX students tested at pre and post stage of group treated through ICT based teaching." is rejected. Further, the mean scores of Higher Mental Ability in Commerce at Post stage is 21.13 which is significantly higher than that of pre stage whose mean score of Higher Mental Ability in Commerce is 15.73. It may, therefore be said that ICT based Teaching was found to be effective in facilitating Higher Mental Ability in Commerce of class IX students.

3. Comparison of adjusted mean scores of Higher Mental Ability in Commerce of Inductive Thinking Model Group and ICT based Teaching Group by considering Pre-test score of Higher Mental Ability in Commerce as a covariate

The third objective of the study was "To compare the adjusted mean scores of Higher Mental Ability in Commerce of class IX students of Inductive Thinking Model Group and ICT based teaching Group by considering Pre-test scores of Higher Mental Ability in Commerce as a covariate." The data were analysed with the help of ANCOVA. The results are given in Table-3

Table-3 : Summary of ANCOVA of Higher Mental Ability in Commerce by considering Pre-test score of Higher Mental Ability in Commerce as a covariate

Source of Variance	Df	SSy.x	MSSy.x	Fy.x - value
Treatment (Among)	1	340.186	340.186	27.213**
Error (Within)	151	1875.118	12.501	
Total	152			

** Significant at 0.01 level

From Table-3, it is evident that the adjusted F-value is 27.213, which is significant at 0.01 level of significance with $df = 1/151$. It shows that adjusted mean score of Higher Mental Ability in Commerce of the students of Inductive Thinking Model and ICT Based Teaching Groups differ significantly when Pre-test score of Higher Mental Ability in Commerce was taken as covariate. In other words, both treatments produced significant differential effect on Higher Mental Ability in Commerce of class IX students. In the light of this, the null hypothesis, namely, "The adjusted mean scores of Higher Mental ability in Commerce of class IX students taught through Inductive Thinking Model will not differ significantly from those taught through ICT based teaching when Pre-test scores of Higher Mental Ability in Commerce will be taken as a covariate." is rejected. Further, the adjusted mean score of Higher Mental Ability in Commerce of students of Inductive Thinking Model Group is 23.97, which is significantly higher than that of ICT Based teaching Group whose adjusted mean score of Higher Mental Ability in Commerce is 20.96. It may, therefore be said that Inductive Thinking Model was found to enhance Higher Mental Ability in Commerce of class IX students significantly more than the ICT Based teaching when both the groups were matched statistically with respect to Pre-test score of Higher Mental Ability in Commerce.

VIII. FINDINGS OF THE STUDY

- Inductive Thinking Model was found to be effective in facilitating Higher Mental Ability in Commerce of class IX students.
- ICT based Teaching was also found to be effective in facilitating Higher Mental Ability in Commerce of class IX students.
- Inductive Thinking Model was found to be significantly superior in comparison to ICT based teaching in developing Higher Mental Ability in Commerce of class IX students when the groups were matched with respect to Pre-test score of Higher Mental Ability in Commerce.

IX. CONCLUSION

This study indicates that the both Inductive Thinking Model and ICT Based teaching are effective to enhance the Higher Mental Ability in Commerce of class IX students. But, Inductive Thinking Model Group and ICT Based teaching were found to be significantly different in developing Higher Mental in Commerce of class IX students when the groups were statistically

matched with respect to Pre-test score of Higher Mental Ability in Commerce. This exhibits that the students who were taught Commerce through Inductive Thinking Model have shown significant improvement in their Higher Mental Ability in Commerce in comparison to the students who were taught through ICT Based teaching. This suggests that Inductive Thinking Model contribute more in comparison of ICT based teaching in raising the Higher Mental Ability in Commerce of class IX students. Hence, Inductive Thinking Model should be used by the teacher in class-room teaching. Inductive Thinking Model plays a significant role in strengthening the cognitive structure of the students. Inductive Thinking Model provides deep understanding of the concept and opportunities for acquiring concepts, interpreting the data and applying the principles in new and differential situations.

References

- [1] Billing, H. 2012. *Effect of Inquiry Training Model and Inductive Thinking Model on Cognitive and Affective Outcomes of Ninth graders in relation to their Learning Approach*. Doctoral Thesis, Department of Education, Punjab University, Chandigarh.
- [2] Joyce, B., & Weil, M. 1985. *Model of Teaching*. New Delhi: Prentice – Hall of India Private Limited.
- [3] Kumud 2013. *Effect of Information and Communication Technology (ICT) on the Students' Achievement in Mathematics at Secondary level*. Doctoral Thesis, Department of Education, Maharshi Dayanand University, Rohtak.
- [4] Mondal, B.C. 2012. *A Comparative Study of the relative Effectiveness of Inductive Thinking Model and Advance Organizer Model in teaching Chemistry at their Higher Secondary Level under two different Boards/Councils*. Doctoral Thesis, Department of Education, University of Kalyani, West Bengal.
- [5] Singh .S.N. 1994. *Comparison of Inductive Thinking Model with Traditional Method of Teaching Economics to Class XI Students In Terms of Selected Cognitive Variables*. Doctoral Thesis, Institute of Education, Devi Ahilya Vishwavidyalaya, Indore.

[6] Verma, C.P. 2001. *A Comparative Study of the Effectiveness of Mastery Learning Model and Inductive Thinking Model on Pupils' Achievement in Science and their Creative Thinking Abilities*. Doctoral Thesis, Department of Education, Maharshi Dayanand University, Rohtak.

[7] Wanjari, S.S. 2005. *Effectiveness of Concept Attainment Model and Inductive Thinking Model of Teaching on Students' Achievement in Science, Scientific Creativity and Attitude towards Science*. Doctoral Thesis, Faculty of Education, Sant Gadge Baba Amravati University, Amravati.