A COMPARATIVE STUDY OF EFFECTIVENESS OF CONCEPT ATTAINMENT MODEL AND INDUCTIVE THINKING MODEL FOR TEACHING ENGLISH GRAMMAR TO IX CLASS STUDENTS

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1) **Background of the Research Study**

Life in today's social situations is a very complex endeavor. To meet such a complex situation, education is necessary. Education is the invention of mankind. It begins at birth and ends at his / her death. The aims of education are multiple, but the primary aim of education is to make an individual. It is a process of growth in which the individual is helped to develop his talents, powers, interests and ambitions. This growth is an integrated and harmonious process. Education is a process of socialization. It provides the necessary skills to meet the demands of modern life. The development of democratic country depends upon teachers. The teacher is of paramount importance in every system of education. The whole system of education revolves around the teacher.

In ancient India, the teacher was rated equal to God. The teacher is also called, 'the architect of nation', 'the maker of man', 'the maker of history', 'pillar of the nation' etc. It is a widely recognized fact that the teacher is the ultimate key to educational change and school improvement. The quality of any educational system depends upon the quality of a teacher. The teacher is the key to any educational reconstruction. Effective teachers are lifelong learners. Teaching is such a social process which aims at maximizing learning. Some individuals are born teachers and do not need much training for learning skills of teaching. It is said that 'where there is teaching, there is learning, but where there is learning, it isn't the result of any teaching'. This learning may be due to any other factor. These are days of self-directed learning, active learning and lifelong learning. Active and constructivist modalities of learning are evolving around in the field of education. 'Learning to learn' is one of the main purposes of teaching and learning. Efficient learning process does not depend on teaching alone, it depends on learning procedures and learning techniques as well. This is the reason that learning theories have been proved to be unsuccessful in solving
teaching problems. As a result, teaching theories are all the time needed to solve teaching problems.

The students of education have given the knowledge of learning principles in the process of education. It is the experience that no teaching problem can be solved by acquiring the knowledge of learning principles. The focus of educational psychology has been on 'learning', but now there is a shift from learning to teaching. It is because learning theories cannot solve the problems of teaching. The efforts are being made to develop theories of teaching. As a result of which some teaching models have been developed. A teaching model is a model which provides suitable guidelines to the teachers for creating a proper interactive environment for teaching-learning. The process of teaching-learning has great importance in the educational field. It is assumed that good teaching results in good learning. This is the central theme of much of the thinking about education. The only progress in this regard is that many teaching models have been developed so far. These models have been propounded by keeping learning theories as base. Hence, they can't be substitute of teaching theory.

Models of teaching may be described as some sort of guidelines, plans, techniques or strategies designed to achieve specific educational objectives. They differ from general teaching techniques and strategies in the sense that they are designed to meet specific objectives. They help a teacher in his task in the same way as a constructed model or blueprint helps an engineer in his project. Model of teaching is just a blueprint designed in advance for providing necessary structure and direction to the teacher for realizing the stipulated objectives. Models of teaching act as hypotheses for teaching theories. Models of teaching help a teacher to develop his capacity to teach more students and create conducive environment for the students in various subjects. English subject is one of them.

English language has exercised a great influence over the past two centuries in shaping the political, social, economic, educational and cultural life. It serves as a dynamic instrument of social change. English is today one of the foremost international languages in the world. It provides easy access to the world's rich literature, science and technology. A quick spread of western
literature and science became possible through the English language. As the
language of administration and justice, English helps in perfecting the art of
governance, democratic debate and discussion. Its rich literature helps to
develop creative talent. English is not only the associate official language of the
country rather it is the language of communication among states and also with
the central government. It is the only language which is understood by an
educated person throughout the country. It has been proved to be the most
valuable and unifying factor among the people of different states. We are
foreigners within our own country if we do not know English. It is also taught as a
library language. The controversy whether English should be taught as a
compulsory subject or not solved by ‘Three Language Formula’ proposed by the
Central Advisory Board of Education and upheld by Indian Education
Commission (1964-66). The commission emphasized compulsory study of
English as a second language up to 10th standard. The medium of instruction up
to 10th standard should be mother tongue or Hindi (where Hindi is the mother
tongue). English should be taught as a compulsory second language. All the
states have adopted this ‘Three Language Formula’ with necessary changes.
English should be the most useful literary language in higher education and one
of the most significant windows to the world. English subject has variety of
aspects such as prose, poetry, vocabulary, grammar etc. Grammar occupies an
important place in the syllabus of English subject.

Grammar is one of the aspects of English language. Grammar of a
language deals with general laws on which the whole structure of the language
rests. It describes the general framework of expression and helps us to know the
nature of the language. English grammar as it came down to us was mostly
based on Latin as well as Greek. All these classical languages were studied and
analyzed in great detail by scholars. English grammar consisted of elaborate
rules, definitions and exceptions about the structure of the language. It deals
mainly with physical form of words, word endings, word groups and sentences
and not their total meaning as a piece of communication or conversation. Over
the years, teachers had a fancy to teach grammar, particularly the rules and
exceptions followed by examples as seen in any grammar book. It was also very
easy to do that, they set apart separate periods for grammar. Only rules and
examples were recited by teacher and students. There was no action, no practice no linking of words and meaning. Students became dull and boredom while learning grammar. Everything appeared easy and time saving but the students did not learn anything finally because there was no practical demonstration or practice of the pattern. Models of teaching especially concept attainment model and inductive thinking model help effectively at secondary school level to teach grammar. The models of teaching break the monotony in the classroom and teaching becomes more interesting. It lays emphasis on the teaching of functional grammar. To develop students interest in learning grammar becomes a challenge for a teacher, especially for English language teacher. The conventional methods do not add more interest in learning grammar. So the responsibility of using innovative ideas, devices goes to the innovative teachers.

The researcher’s study is based on that the models of teaching are more helpful to create interest in learning grammar. Grammar is the soul of language. The models of teaching help to bring success by generating desirable classroom environment. Models of teaching develop the understanding of grammar in a scientific and logical way. Models of teaching help both the teacher and the students how to respond to the activities of each other. Models of teaching show the way to the teacher to teach English grammar scientifically to scientists (students) in science age. The present syllabus of teacher education i.e. B.Ed. course also included with models of teaching. There is close relationship between teacher education institutions and secondary schools. The IX standard new syllabus (with effect from June 2012) is also based on constructivism approach. The models of teaching are the way of teaching with constructivism approach. The present CET and TET examinations are also based on English grammar. We can’t reject and neglect the very importance of English grammar in today’s situations. As a result, the researcher decided to create desirable classroom learning environment in class IX students to teach English grammar by using concept attainment model and inductive thinking models. The class IX students are on the threshold of the age of new changes. So the present research study is very effective for IX class students. The present research work provides a new design to generate desirable learning environment in the
constructivism era which is very useful to the both teachers and students and also in the field of education.

2) **Need and Significance of the Research Study**
   The researcher explained the need and significance of the present research study as respectively.

2.1 **Need of the Research Study**
   1) Language is one of the unique possessions of man. Language helps a person in the development of his personality. The present research study helps to achieve mastery over language scientifically and systematically.
   2) English language is taught with a view to enable the students to understand, to speak, to read and to write English i.e. to use English and to respond to it. All these communicative activities require use of acceptable English which results from the knowledge of grammar. The present research work makes the IX class students able to study English language.
   3) Generally, English subject teacher doesn't will to teach grammar systematically. He only emphasizes on rules. The present research study helps to teach English grammar with the process of specifying and producing particular instructional designs.
   4) In order to achieve the objectives of English subject, the teacher must adopt the appropriate methods, approaches, devices, techniques etc. For teaching the models of teaching are the strategies to generate desirable learning environment.
   5) The teacher must plan the lesson of grammar with appropriate planning and designing so that the learning becomes effective. So is the need of the present research.
   6) At the secondary school level English subject teacher must adopt modern and recent techniques and devices for the fruitful of teaching and learning. The present research study assists to use the novel devices and techniques.
7) The IX class students are interested in acquiring basic skills of language. They ignore grammar aspect. They have to study grammar. The teacher must adopt appropriate teaching strategies i.e. models of teaching to generate interest in learning English grammar.

8) The present research study aims to help in selecting such stimulating situations which causes the desirable changes in the behavior of the IX class students at secondary school level.

9) Simply learning of rules is not enough for language learning. Learning depends upon practice and habit formation. The instructional designs such as models of teaching pave the way for it.

2.2 Significance of the Research Study

The significance of the present research study …

1) For the IX class students to study language in an interactive way.

2) For the IX class students to bring about changes in teaching-learning English grammar at secondary school level.

3) For the IX class students at secondary school level to develop interest in learning English grammar in a very different and effective way.

4) For the IX class students to learn English grammar interestingly and minutely.

5) For the teachers to modify the traditional education system at secondary school level in a very modern way.

6) For the teachers to achieve the aims and objectives of teaching-learning English grammar at secondary school level in an effective manner.

7) For the teachers to instruct English grammar in a scientific logical way.

8) For the teachers to bring success by using effective models of teaching to teach English grammar to IX class students.
9) For the teachers to select, to design and to implement an effective model of teaching to achieve the aims and objectives of teaching English grammar at secondary school level.

10) For the teachers to suggest the effective model of teaching for teaching English grammar to IX class students.

11) To maintain interactive roles and relationships of both the teacher and the student.

12) For the members of curriculum design and policy makers to suggest and to include models of teaching to teach English grammar.

13) For the experts, researchers, scholars, learners and interesting personalities to study English grammar.

3) Statement of the Research Problem
The researcher has stated the problem as follows:
A Comparative Study of Effectiveness of Concept Attainment Model and Inductive Thinking Model for Teaching English Grammar to IX Class Students

3.1 Operational Definitions of Important Terms
The researcher elaborated the conceptual and operational definitions of important words of the research problem as follows:

1) Comparative
   a) Conceptual Definition
      i) Connected with studying things to find out how similar or different they are.
      ii) Measured or judged by how similar or different it is to something else.

   b) Operational Definition
      The term comparative means the planning, comparison, execution and evaluation of a system of instruction both concept attainment model and inductive thinking model.
2) Study
   a) Conceptual Definition
      Activity of learning or gaining knowledge, either, from books or by
      examining things in the world.
   b) Operational Definition
      The word study is used here as to do research by scientific method
      or to find out which model is more effective for teaching English
      grammar. The nature of study is to find out, to criticize, to review, to
      analyze, to see results, to find relations, to find reasons and to
      focus on conditions after conducting experiment.

3) Effectiveness
   a) Conceptual Definition
      i) Producing the result that is wanted or intended.
      ii) Producing a successful result.
   b) Operational Definition
      The achievement of the students through scores after
      conducting concept attainment model and inductive thinking model.

4) Concept Attainment Model
   a) Conceptual Definition
      Concept attainment model means a system of instruction which
      includes the strategies i.e. examples, attributes, value and
      generalization of a concept.
   b) Operational Definition
      The prepared lesson plan of selected grammatical items based
      on the syntax of concept attainment model.

5) Inducting Thinking Model
   a) Conceptual Definition
      Inductive thinking model means a system of instruction which
      includes the strategies i.e. concept formation, interpretation and
      application of rules.
   b) Operational Definition
      The prepared lesson plan of selected grammatical items based on
      the syntax of inductive thinking model.
6) Teaching
a) Conceptual Definition
Teaching is a system of actions involving an agent, an end in view and a situation including two sets of factors those over which the agent has no control (class size, size of classroom, physical characteristics of pupils, etc.) and those that he can modify (ways of asking questions about instruction and ways of structuring information or ideas gleaned). –B.O.Smith

b) Operational Definition
Teaching is a work of teacher which is the prepared lesson plan based on concept attainment model and inductive thinking model.

7) English
a) Conceptual Definition
English is an international language, the language of Britishers, a foreign language which is based on Greek and Latin words.

b) Operational Definition
English is a subject which is taught as a third language in Marathi medium schools in Maharashtra.

8) Grammar
a) Conceptual Definition
i) The rules in a language for changing the form of words and joining them into sentences: the basic rule of grammar.

ii) Grammar means the scientific and systematic study of a language.

b) Operational Definition
The selected grammatical items included in the textbook of the IX standard for second semester.

9) Class IX
a) Conceptual Definition
A group of students who are taught together in IX standard.

b) Operational Definition
Class IX means the first standard at the secondary school level.
10) Student
   a) Conceptual Definition
      A person who is studying at a school, college, university etc.
   b) Operational Definition
      The IX class students studying at the Marathi medium secondary school.

4) Objectives of the Research Study
The researcher has undertaken the present research study with the following objectives as given below.
   1) To study the effectiveness of concept attainment model for teaching English grammar to IX Class students.
   2) To study the effectiveness of inductive thinking model for teaching English grammar to IX Class students.
   3) To compare the effectiveness of concept attainment model and inductive thinking model for teaching English grammar to IX Class students.
   4) To suggest the appropriate model of teaching in terms of its effectiveness for teaching English grammar to IX Class students.

5) Assumptions of the Research Study
The assumptions of the present research study are given below.
   1 The models of teaching are more effective for the teaching-learning process than conventional instruction.
   2 The models of teaching are effective for the teaching-learning process of IX class students at the secondary school level.
   3 The models of teaching are effective for the teaching-learning process of English grammar to the IX class students at the secondary school level.

6) Hypotheses of the Research Study
6.1 Research Hypotheses
   1) The concept attainment model is effective for teaching-learning process of English grammar to IX class students.
2) The inductive thinking model is effective for teaching-learning process of English grammar to IX class students.

6.2 Null Hypotheses

1) There is no significant difference between the achievements of IX class students from control group and experimental group in pre-test.
2) There is no significant difference between the achievements of IX class students from control group and experimental group in post-test.
3) There is no significant difference between the achievements of IX class students from control group in pre over post-test.
4) There is no significant difference between the achievements of IX class students from experimental group in pre over post-test.
5) There is no significant difference between the achievements of IX class students from control and experimental group in retention test.

7) Scope and Delimitations of the Research Study

The scope and delimitations of the present research study are as follows.

7.1 Scope of the Research Study

The scope of the present research study is given below.

1. The present research study is related to Barshi town.
2. It is related to English subject.
3. It is related to Grammar aspect in English subject.
4. It is related to the secondary school level students.
5. It is related to the teaching strategy i.e. models of teaching.

7.2 Delimitations of the Research Study

The delimitations of the present research study are given below.

1. The present research study is delimited to two Marathi medium secondary schools in Barshi town.
2. It is delimited to IX class students at secondary school level.
3. It is delimited to present and past participle, negative statement, 
degrees of comparison, prepositions, noun, verb, adjective and 
adverb items in English grammar.
4. It is delimited to only two models of teaching i.e. concept 
attainment model and inductive thinking model.
5. It is delimited to the academic year 2012-13.

8) **Review of Related Literature and Research**

8.1 **Review of Related Literature**

1. A New Approach to Teaching of English in India by M.S. Sachdeva  
2. Educational Technology, A.R. Sharma  
4. English Language Education by Talpir Dattatraya.  
5. English, Y.C.M.O. University, Nashik.  
9. Methods of Teaching English by K. Venugopal Rao  
13. Practical Perspective: Information Processing Models of Teaching by Kamlesh Chaudhary, Pratibha Veerkar  
15. Research Methodology, G. R. Basotia, K. K. Sharma  
16. Teaching Aspects of English Language by Gurav H. K. The  
17. Teaching English Language by Pawar N. G.  
18. Teaching of English by Tiwari S. R.
20. Technological Foundation of Education, R.A. Sharma

8.2 Review of Related Research

- **Third Survey of Research in Education (1978-1983), M.B. Buch**
The researcher studied four related researches from the third survey of Research in Education. They are stated in brief as follows.

   Evaluating Differential Effectiveness of Ausubel and Bruner Strategies for Acquisition of Concept in Mathematics.

   Evolving a Strategy for Teaching English Grammar at High School Level.

   ‘To Prepare Programmed Learning Material in Hindi Grammar and to Investigate into its Effectiveness’.

4) Sushma (Ph.D., Edu., BHU., 1987)
   Effectiveness of Concept Attainment Model and Biological Science Inquiry Model for Teaching Biological Sciences to Class VIII Students.

The researcher studied three related researches from the fourth survey of Research in Education. They are stated in brief as follows.

   ‘Development and Comparison of Instructional Material Developed by Using Advance Organizer Model and Operant Conditioning Model for Teaching Educational Psychology to B.Ed. Students’.

6) Passi, B.K., Singh, L.C. and Sansanwal, D.N. (NCERT, New Delhi, 1985)
   ‘Models of Teaching - Developing Training Strategy’.

   ‘Effectiveness of Advance Organizer and Inquiry Training Models for Teaching Social Studies in Class VIII students’.
The researcher studied sixteen related researches from the fifth survey of Research in Education. They are stated in brief as follows.

8) Agarwal R. and Misra, K. S.
   (Indian Educational Review, Vol. 23 (2), 130-36, ERIC Funded).
   Effectiveness of Reception Concept Attainment Model of Teaching for Enhancing Attainment of Science Concepts.

9) Bhaveja, Bharti (Ph.D. Edu., Univ. of Delhi, 1989)
   An Experimental Study of Information Processing Models of Teaching in Schools of India.

10) Bhaveja, Bharti
    Information-Processing Models of Teaching in the Indian Classroom.

    Teaching of Concepts through the Concept Attainment Model and Facts through Traditional Teaching: Competency in Teaching Skills of Pre-service Teachers.

12) Gupta, Suman (Ph.D., Edu., Agra Univ., 1991)
    Effectiveness of the Advance Organizer Model of Ausubel in Developing the Teaching Competence of Student-teachers, and their Attitude towards Teaching: An Experiment.

13) Jaimini, Nirupama (Ph.D., Edu., Univ. of Delhi, 1991)
    Effect of Teaching Strategies on Conceptual-Learning Efficiency and Retention in Relation to Divergent Thinking.

    Effectiveness of the Bruner and the Ausubel Models of Teaching of Concepts in Economics in High and Low Achieving Students across Creativity Levels.

    The Long-term Effect of Advance Organizers upon Achievement of Biology in Relation to Reading Ability, Intelligence and Scientific Attitude.

16) Khan, Mohd. Sharif and Siddiqui, Mujibul Hassan
    Effectiveness of Concept Attainment Strategies: A Review of Research.
A comparative Study of the Effectiveness of Two Models of Teaching, viz. Bruner's Concept Attainment Model and Ausubel's Advance Organizer Model, on the Teaching Abilities of Student-Teachers and an Achievement of Students in Various Schools.

18) Manocha, Vineeta (Ph.D., Edu., Devi Ahilya Vishwavidyalaya, 1991)
Development of Textual Material in Biology for Class IX Using Bruner's Concept Attainment Model of Teaching.


20) Passi, B. K., Singh, L. C. and Sansnwal, D. N.
Models of Teaching: Report of the Three-Phase Study of CAM and ITM.

A Study of the Effectiveness of Concept Attainment Model for Teaching Concepts of the English Language.

22) Singh, Daljeet K. (Ph.D., Edu., Kumaun Univ., 1990)
Effectiveness of Inquiry Training Model and Concept Attainment Model over Traditional Teaching Methods for Teaching Physical Science.

Effectiveness of Different Models of Teaching on Achievement in Mathematical Concepts and Attitude in Relation to Intelligence and Cognitive Style.

9) Research Procedure
The research procedure is as given below.

9.1 Research Methodology
There are three methods of research in education i.e. Historical method, Survey method and Experimental method. Experimental research provides a systematic and logical method for answering the question. As it
is the most powerful method for discovering and developing a body of knowledge about the prediction and control of events. It provides a precise answer after manipulating certain influences or variables and observes how the condition or behavior of the subject is affected or changed. As a result, the researcher decided to select and conduct the Experimental Research Method in the present research study.

9.2 Research Design

1) The selection of a particular design is based on the purposes of the experiment, the type of variables to be manipulated and the conditions or limiting factors under which it is conducted. The design deals with such practical problems as how subjects are to be assigned to experimental and control groups, the way variables are to be manipulated and controlled, the way extraneous variables are to be controlled, how observations are to be made, and the type of statistical analysis to be employed in interpreting data relationships.

2) The experimental design is the blueprint of the procedures. It enables the researcher to test hypotheses by reaching valid conclusions about relationships between independent and dependent variables.

3) The present research study is based on the experimental design.

4) Pre-experimental design, True experimental design and Quasi-experimental design are the three categories of experimental designs.

5) The researcher has selected True Experimental Design in the present study.

6) Randomization was used to select students as on primary basis. Pre-test was provided for the control of the equivalence of groups and exposure to treatment. It is called the Pre-test Post-test Equivalent Group Design.

The experimental design is explained below.

\[
\begin{align*}
R & \quad O_1 \rightarrow X \rightarrow O_2 \\
R & \quad O_3 \rightarrow C \rightarrow O_4
\end{align*}
\]
R - Random assignment of subjects to groups / treatments.

O₁ O₃ - Pre-tests.

O₂ O₄ - Post-tests.

X - Exposure of a group to the experimental.

C - Exposure of a group to the control.

1) The pre-test was administered before the application of the control and experimental treatments.

2) Two equivalent groups were made with the help of odd-even method on the basis of the score obtained in pre-test.

3) The IX class students were assigned to two groups i.e. control group and experimental group.

4) A group was treated as the control group (C) on which there was the implementation of Concept Attainment Model (CAM) for teaching English grammar to IX class students for both male and female.

5) Another group was treated as the experimental group (X) on which there was the implementation of Inductive Thinking Model (ITM) for teaching English grammar to IX class students for both male and female.

6) Both control group (C) and experimental group (X) received a post-test.

### 9.3 Research Procedure

1) The researcher decided to conduct a pilot study. It is a small scale preliminary study conducted in order to evaluate feasibility, time, cost, adverse events, and effect size (statistical variability) in an attempt to predict an appropriate sample size and improve upon the study design prior to performance of a main study research project.

2) The researcher selected pre-post two groups research design for the pilot study. It was conducted in two secondary schools i.e. Maharashtra Vidyalaya, Barshi and Jijamata Kanya Prashala, Barshi. There were total 40 male and female IX class students
selected as randomly. The pre-test based on two grammatical items i.e. Articles and Different forms of words was implemented and two equivalent groups were made. There were four groups from two schools. A group including male IX class students was divided into control group of 10 students and experimental group of 10 students. Another group including female IX class students was divided into control group of 10 students and experimental group of 10 students.

3) The control group of 20 students in IX class from two schools both male and female was treated with concept attainment model. On the other hand the experimental group of 20 students in IX class from two schools both male and female was treated with inductive thinking model. Articles and different forms of words i.e. noun, verb, adjective and adverb in first semester were the grammatical items. The researcher prepared lesson plan based on two selected models of teaching and conducted research.

4) The researcher prepared an achievement test of 20 marks and implemented as a post-test. The analysis and interpretation of data from pilot study i.e. small scale try out sample is explained in detail in the Chapter No.IV.

5) After conducting pilot study related to the present research work, the researcher decided to conduct experiment on large scale sample of IX class students. The researcher selected two secondary schools in Barshi town i.e. Maharashtra Vidyalaya, Barshi and Jijamata Kanya Prashala, Barshi.

6) The researcher selected pre-post two groups research design for the study. It was conducted in two secondary schools i.e. Maharashtra Vidyalaya, Barshi and Jijamata Kanya Prashala, Barshi. Total 100 male and female IX class students were selected randomly. The pre-test based on five grammatical items i.e. Present and past participle, Degrees of comparison, Negative sentences, Prepositions and Different forms of words was implemented and two equivalent groups were made. There were four groups from two schools. A group including male IX class
students was divided into control group of 25 students and experimental group of 25 students. Another group including female IX class students was divided into control group of 25 students and experimental group of 25 students.

7) The control group of 50 students in IX class from two schools both male and female was treated with concept attainment model. On the other hand the experimental group of 50 students in IX class from two schools both male and female was treated with inductive thinking model. Present and past participle, Degrees of comparison, Negative sentences, Prepositions and different forms of words i.e. noun, verb, adjective and adverb in second semester was the grammatical items. The researcher prepared lesson plan based on two selected models of teaching and conducted research.

8) The researcher prepared an achievement test of 50 marks and implemented as a post-test. The analysis and interpretation of data from main study sample is explained in detail in the Chapter No.IV.

9) The researcher prepared an achievement test of 50 marks and implemented post-test as a retention test after 3 months of period. The analysis and interpretation of data from retention test is explained in detail in the Chapter No.IV.

9.4 Variables

Variables are the conditions or characteristics. The researcher manipulated, controlled or observed the variables. The variables in the present research study are given below.

1) Concept Attainment Model and Inducting Thinking Model were the independent variables in the present research study.

2) The dependent variable in the present research study was the achievement test of the students in terms of scores.

3) Socio-economic status, intelligence, ability, last year performance, school atmosphere, facilities of instruction, time and period of exposure to a particular condition, reward and punishment during evaluation procedure were the extraneous variables of the present research study.
9.5 Sampling
The sampling of the present study is explained below.

- The researcher selected the area Barshi town in the district of Solapur in Maharashtra state through purposive sampling method of non-probability sampling method for the present research study.
- In Barshi town there are 10 Marathi medium secondary schools. The researcher selected two Marathi medium secondary schools in Barshi town through the Lottery method in the simple Random sample of the Probability method of sampling. The name of the schools were Maharashtra Vidyalaya, Barshi and Jijamata Kanya Prashala, Barshi.
- Hundred students in the IX class of two schools in Barshi town were selected randomly by using random number of probability method of sampling.
- The researcher selected two models of teaching through purposive sampling method of non-probability sampling method as mentioned in the statement of the problem i.e. concept attainment model and inductive thinking model.
- In IX standard English textbook there are eighteen grammatical items as ten items for First Semester and eight items for Second Semester. The researcher selected total five grammatical items in Second Semester such as present and past participle, negative sentences, forms of degrees, prepositions and different forms of words (Noun, Verb, Adjective and Adverb) through the lottery method of simple random sample for the present research study.
- The researcher selected five secondary schools English subject teachers and five teacher-educators of English Methodology through purposive sampling method of non-probability sampling method on the basis of more than three years teaching experience for the standardization of the achievement test.

9.6 Tools and Techniques
The research tools and techniques of the present research study are stated below.
1) The researcher prepared instructional material i.e. preparation of lesson plans based on concept attainment model and Inductive thinking model to teach English grammar to IX class students.

2) The researcher prepared achievement tests (Pre test, Post test and Retention test) for the IX class students. The achievement test for English grammar is constructed and administered on sample under study. The pre test, post test and retention test are constructed by the researcher and standardized by the ten experts in the education field i.e. teachers of English subject at secondary school level and teacher-educators of English Methodology.

9.7 Analysis and Interpretation of Data
The collected data was analyzed with the help of the statistical measures i.e. Mean, Standard Deviation, 't' score to test the hypotheses.

10) CONCLUSIONS

10.1 Introduction
The purpose of the present study was to conduct Models of Teaching on English Grammar for the IX class students and to see their effectiveness on the performance of the IX class students. Models of Teaching i.e. Concept Attainment Model and Inductive Thinking Model with lesson plan were used and tested on both groups. The different issues pertaining to the design of lesson plan based on Models of Teaching, procedure and design of the study and analysis and interpretation of data have been discussed in the earlier chapters. It is therefore, high time to discuss the results, draw conclusions and make suggestions based on the analysis of the data collected. This is explained in the following paragraphs.

10.2 Discussion of Results and Conclusions:
The data was analyzed and interpreted in chapter IV (data during the preparation of a lesson plan based on Models of Teaching and the data after the experimentation of the lesson plan ). The hypotheses are either accepted or rejected, the details are as follows.
The researcher collected the information about the present setting of English grammar with the help of achievement test to test the following research hypotheses (RH.1 and RH.2).

- **RH.1**: The Concept Attainment Model is effective for teaching-learning process of English grammar to the IX class students.
- **RH.2**: The Inductive Thinking Model is effective for teaching-learning process of English grammar to the IX class students.

From the above research hypotheses the following conclusions are drawn.

- **Conclusion 1**  
*The research hypothesis no.1 is rejected.* The Concept Attainment Model was less effective as compared to inductive thinking model for the teaching-learning of English grammar at the secondary school level to the IX class students.

- **Conclusion 2**  
*The research hypothesis no.2 is accepted.* The Inductive Thinking Model was more effective than concept attainment model for the teaching-learning process of English grammar at the secondary school to the IX class students.

- **The Conclusion 1 and Conclusion 2 are based on the following interpretation of the data.**  
The analysis and interpretation of the data obtained (Table IV 22 to IV 27) in post testing indicate that the male and female IX class students from control group are equally good in the achievement; the male and female IX class students from experimental groups are also equally good in the achievement in post test. There is no significant difference between the achievement of the male and female IX class students from any group. When the achievement of the female IX class students from control group was compared with the female IX class students from experimental group, the female IX class students from experimental group significantly
achieved more. It is true with male IX class students from experimental group than in control group. When the achievement of the total (50) IX class students from control group was compared with the performance of (50) IX class students from experimental group, the experimental group significantly achieved more. The null hypothesis Ho 2 is rejected which means that the Inductive Thinking Model became helpful for the male, female and all (50) IX class students in achieving better than the IX class students from control group. The differences between the S.D.s were found to be significant w.r.t. male, female and total IX class students which means that the treatments affected the achievements in terms of S.D.s.

The analysis and interpretation of the data obtained (Table IV.29 to IV.31) in pre over post testing for the control group indicate that when the achievement in pre and post test of the female IX class students from the control group was compared, the female IX class students significantly achieved more in post test. Same is true with the male IX class students from the control group. When the achievement in pre and post test of the total (50) IX class students from control group was compared, the total (50) IX class students from control group significantly achieved more in post test. So the null hypothesis Ho.3 is rejected which indicates that the Concept Attainment Model became helpful for the female IX class students, male IX class students and all (50) IX class students from control group in achieving better in pre over post test. The differences between S.D.s were found to be significant for female IX class students, male IX class students and total IX class students which means that the treatments affected the achievements in terms of S.D.s for female, male and total IX class students.

The analysis and interpretation of the data obtained (Table IV.32 to IV.34) in pre over post testing for the experimental group indicates that when the achievement in pre and post test of the female IX class students from experimental group was compared, the female IX class students significantly achieved more in post test. Same is true with the male IX class students from the experimental group. When the achievement in pre and post test of the total (50) IX class students from experimental group
was compared, the total (50) IX class students from experimental group achieved more in post test. So **the null hypothesis Ho.4 is rejected** which indicates that **Inductive Thinking Model** became helpful for the female IX class students and all (50) IX class students from experimental group in achieving better in pre over post test. The difference between S.D.s were found to be significant for female, male and total IX class students which means that treatments affected the performances in terms of S.D.s.

It seems that the t values w.r.t. Means for the experimental group are higher than those for control group which indicates that the IX class students from experimental group achieved more than the IX class students from control group.

The analysis and interpretation of the data obtained in retention testing indicate that the male and female IX class students from control group are equally good in the performance; the male and female IX class students from experimental groups are also equally good in the performance in retention test. There is no significant difference between the achievement of the male and female IX class students from any group. When the achievement of the female IX class students from control group was compared with the female IX class students from experimental group, the female IX class students from experimental group significantly achieved more. It is true with male IX class students from experimental group than in control group. When the achievement of the total (50) IX class students from control group was compared with the achievement of (50) IX class students from experimental group, the experimental group significantly achieved more. The null hypothesis Ho 5 is rejected which means that the Inductive Thinking Model became helpful for the male, female and all (50) IX class students in achieving better than the IX class students from control group. The differences between the S.D.s were found to be significant w.r.t. male, female and total IX class students which means that the treatments affected the achievements in terms of S.D.s.

**From the above results the research hypothesis No. 1 is rejected and research hypothesis No. 2 is accepted.**
The following are the null hypotheses of the study.

- **Ho.1**: There is no significant difference between the achievements of the IX class students from control and experimental group in pre test.
- **Ho.2**: There is no significant between the achievements of the IX class students from control and experimental group in post test.
- **Ho.3**: There is no significant difference between the achievements of the IX class students from control group in pre over post test.
- **Ho.4**: There is no significant difference between the achievements of the IX class students from experimental group in pre over post test.
- **Ho.5**: There is no significant difference between the achievements of the IX class students from control and experimental group in retention test.

The following are some of the results obtained after the treatment of Models of Teaching.

- **Conclusion 3**
  - **Ho.1**: There is no significant difference between the achievements of the IX class students from control and experimental group in pre test.

The **Ho.1** is analyzed and explained through Ho. 1.1 to Ho. 1.5 as follows -

- **Ho 1.1**: There is no significant difference between the Means in achievement of the male and female IX class students from the control group in pre test.
- **Ho 1.2**: There is no significant difference between the Means in achievement of the male and female IX class students from the experimental group in pre test.

The differences between the Means of male and female IX class students from control and experimental groups in pre test scores were 0.12 and 0.24 and found to be non-significant at 0.05 and 0.01 levels of
significance because the t-values are less than 2.00 and 2.66 for df 48. Hence the hypothesis Ho 1.1 and Ho 1.2 are accepted. It means that male and female IX class students from any group do not differ in their achievement in the pre-test.

**Ho 1.3:** There is no significant difference between the Means in achievement of the female IX class students from control and experimental group in pre-test.

The difference between the Means of females IX class students from control and experimental groups in pretest scores was 0.12 and found to be non-significant at 0.05 and 0.01 levels of significance because the t-value is less than 2.00 and 2.66 for df 48. Hence the null hypothesis is accepted. It means that the female IX class students from control and experimental groups do not differ in their achievement in the pre-test.

**Ho 1.4:** There is no significant difference between the Means in achievement of the male IX class students from control and experimental group in pre-test.

The difference between the Means of male IX class students from control and experimental in pre-test scores was 0 and found to be non-significant at 0.05 and 0.01 levels of significance because the t-value is less than 2.00 and 2.66 for df 48. Hence the hypothesis is accepted. It means that the male IX class students from control and experimental groups do not differ in their achievement in the pre-test.

**Ho 1.5:** There is no significant difference between the Means in achievement of the total IX class students from control and experimental group in pre-test.

The difference between the Means of IX class students from control and experimental groups in pre-test scores was 0.06 and found to be non-significant at 0.05 and 0.01 levels of significance because the t-value is less than 2.00 and 2.66 for df 48. Hence the null hypothesis
is accepted. It means that the IX class students from control and experimental groups do not differ in their achievement in the pre test.

From the above results the null hypothesis Ho.1 is accepted.

• Conclusion 4

• Ho.2: There is no significant difference between the achievement of the IX class students from control and experimental group in post test.

The Ho.2 is analyzed and explained through Ho. 2.1 to Ho. 2.5 as follows:

Ho. 2.1: There is no significant difference between the Means of the male and female IX class students from the control group in post-test scores.

Ho. 2.2: There is no significant difference between the Means of the male and female IX class students from the experimental group in post-test scores.

The differences between the Means of male and female IX class students from control and experimental groups in pre test scores were 0 and 0.6 and found to be non-significant at 0.05 and 0.01 levels of significance because the t-values are less than 2.00 and 2.66 for df 48. So the null hypotheses are accepted. It means that male and female IX class students from any group do not differ in their achievement in the post test.

Ho. 2.3: There is no significant difference between the Means of the female IX class students from the control and experimental group in post-test scores.

The difference between the Means of females IX class students from control and experimental groups in post test scores was 8.04 and found to be significant at 0.05 and 0.01 levels of significance because the t-value is greater than 2.00 and 2.66 for df 48. Hence the null hypothesis Ho 2.3 is rejected which means that the female IX class
students from control and experimental groups differ in their achievement as compared with the female IX class students from the control group in the post test. It means the Inductive Thinking Model used in the experimental group favored the female IX class students treated with Concept Attainment Model in the control group.

**Ho. 2.4:** There is no significant difference between the Means of the male IX class students from the control and experimental group in post-test scores.

The difference between the Means of male IX class students from control and experimental in post test scores was 7.44 and found to be significant at 0.05 and 0.01 levels of significance because the t-value is greater than 2.00 and 2.66 for df. 48. Hence the null hypothesis Ho. 2.4 is rejected. It means that the male IX class students from control and experimental groups differ in their achievement as compared with the male IX class students from control group in post test. It means the Inductive Thinking Model used in the experimental group favored the male IX class students treated with Concept Attainment Model in the control group.

**Ho. 2.5:** There is no significant difference between the Means of the total IX class students from the control and experimental group in post-test scores.

The difference between the Means of total IX class students from control and experimental in post-test scores was 7.74 and found to be significant at 0.05 and 0.01 levels of significance because the t-value is greater than 2.00 and 2.66 for df 48. Hence the null hypothesis 2.5 is rejected. It means that the IX class students from control and experimental groups differ in their achievement as compared with the total IX class students from the control group in the post test. It means the Inductive Thinking Model used in the experimental group favored the total IX class students treated than the total IX class students treated with Concept Attainment Model in the control group. From the above results the null hypothesis Ho.2 is rejected.
• Conclusion 5

• Ho.3: There is no significant difference between the achievements of the IX class students from control group in pre over post test.

The Ho.3 is analyzed and explained through Ho. 3.1 to Ho. 3.3 as follows -

Ho. 3.1: There is no significant difference between the Means in achievement of the female IX class students from control group in pre over post testing.

The difference between the Means of female IX class students from control group in pre and post test scores was 31.28 and found to be significant at 0.05 and 0.01 levels of significance because the t-value is greater than 2.00 and 2.66 for df. 48. Hence the null hypothesis 3.1 is rejected which means that female IX class students from the control group at pre testing differ in their achievement as compared with the achievement in the post test. It means that the Concept Attainment Model used in the control group favored the female IX class students in that group. The female IX class students achieved more in the post test.

Ho. 3.2: There is no significant difference between the Means in achievement of the male IX class students from control group in pre over post testing.

The difference between the Means of male IX class students from control group in pre and post test scores was 31.4 and found to be significant at 0.05 and 0.01 levels of significance because the t-value is greater than 2.00 and 2.66 for df. 48. Hence the null hypothesis 3.2 is rejected which means that male IX class students from the control group at pre testing differ in their achievement as compared with the achievement in the post test. It means that the Concept Attainment Model used in the control group favored the male IX class students in that group. The male IX class students achieved more in the post test.
Ho. 3.3: There is no significant difference between the Means in achievement of the total IX class students from control group in pre over post testing.

The difference between the Means of total IX class students from control group in pre and post test scores was 31.34 and found to be significant at 0.05 and 0.01 levels of significance because the t-value is greater than 2.00 and 2.66 for df. 48. Hence the null hypothesis 3.3 is rejected which means that total IX class students from the control group at pre testing differ in their achievement as compared with the achievement in the post test. It means that the Concept Attainment Model used in the control group favored the total IX class students in that group. The IX class students achieved more in the post test.

From the above results the null hypothesis Ho.3 is rejected.

- Conclusion 6
  - Ho.4: There is no significant difference between the achievements of the IX class students from experimental group in pre over post test.

The Ho.4 is analyzed and explained through Ho. 4.1 to Ho. 4.3 as follows -

Ho. 4.1: There is no significant difference between the Means in achievement of the female IX class students from experimental group in pre over post testing.

The difference between the Means of female IX class students from experimental group in pre and post test scores was 39.2 and found to be significant at 0.05 and 0.01 levels of significance because the t-value is greater than 2.00 and 2.66 for df. 48. Hence the null hypothesis 4.1 is rejected. It means that female IX class students from the experimental group at pre testing differ in their achievement as compared with the achievement in the post test. It means that the Inductive Thinking Model used in the experimental group favored the female IX class students in that group. The female IX class students achieved more in the post test.
Ho. 4.2: There is no significant difference between the Means in achievement of the male IX class students from experimental group in pre over post testing.

The difference between the Means of male IX class students from experimental group in pre and post test scores was 38.84 and found to be significant at 0.05 and 0.01 levels of significance because the t value is greater than 2.00 and 2.66 for df. 48. Hence the null hypothesis 4.2 is rejected. It means that male IX class students from the experimental group at pre testing differ in their achievement as compared with the achievement in the post test. It means that the Inductive Thinking Model used in the experimental group favored the male IX class students in that group. The male IX class students achieved more in the post test.

Ho. 4.3: There is no significant difference between the Means in achievement of the total IX class students from experimental group in pre over post testing.

The difference between the Means of total IX class students from experimental group in pre and post test scores was 39.02 and found to be significant at 0.05 and 0.01 levels of significance because the t value is greater than 2.00 and 2.66 for df. 48. Hence the null hypothesis 4.3 is rejected which means that total IX class students from the experimental group at pre testing differ in their achievement as compared with the achievement in the post test. It means that the Inductive Thinking Model used in the experimental group favored the male IX class students in that group. The male IX class students achieved more in the post test.

From the above results the null hypothesis Ho.4 is rejected.

• Conclusion 7
  • Ho.5: There is no significant difference between the achievements of the IX class students from control and experimental group in retention test.
The Ho.5 is analyzed and explained through Ho. 5.1 to Ho. 5.5 as follows -

**Ho. 5.1:** There is no significant difference between the Means of the male and female IX class students from the control group in retention-test scores.

**Ho. 5.2:** There is no significant difference between the Means of the male and female IX class students from the experimental group in retention-test scores.

The differences between the Means of male and female IX class students from control and experimental groups in pre-test scores were 0.12 and 0.48 and found to be non-significant at 0.05 and 0.01 levels of significance because the t-values are less than 2.00 and 2.66 for df 48. So the null hypotheses (Ho. 5.1 and Ho. 5.2) are accepted. It means that male and female IX class students from any group do not differ in their achievement in the retention test.

**Ho. 5.3:** There is no significant difference between the Means of the female IX class students from the control and experimental group in retention-test scores.

The difference between the Means of females IX class students from control and experimental groups in retention test scores was 7.44 and found to be significant at 0.05 and 0.01 levels of significance because the t-value is greater than 2.00 and 2.66 for df 48. Hence the null hypothesis Ho 5.3 is rejected which means that the female IX class students from control and experimental groups differ in their achievement as compared with the female IX class students from the control group in the retention test. It means the Inductive Thinking Model used in the experimental group favored the female IX class students treated with Concept Attainment Model in the control group.

**Ho. 5.4:** There is no significant difference between the Means of the male IX class students from the control and experimental group in retention-test scores.
The difference between the Means of male IX class students from control and experimental in retention test scores was 6.84 and found to be significant at 0.05 and 0.01 levels of significance because the t-value is greater than 2.00 and 2.66 for df 48. Hence the null hypothesis Ho. 5.4 is rejected. It means that the male IX class students from control and experimental groups differ in their performance as compared with the male IX class students from control group in retention test. It means the Inductive Thinking Model used in the experimental group favored the male IX class students treated with Concept Attainment Model in the control group.

Ho. 5.5: There is no significant difference between the Means of the total IX class students from the control and experimental group in retention-test scores.

The difference between the Means of total IX class students from control and experimental in retention-test scores was 7.14 and found to be significant at 0.05 and 0.01 levels of significance because the t-value is greater than 2.00 and 2.66 for df 48. Hence the null hypothesis 5.5 is rejected. It means that the IX class students from control and experimental groups differ in their achievement as compared with the total IX class students from the control group in the post test. It means the Inductive Thinking Model used in the experimental group favored the total IX class students treated than the total IX class students treated with Concept Attainment Model in the control group.

From the above results the null hypothesis Ho.5 is rejected.
RECOMMENDATIONS

The researcher has stated the following recommendations based on the analysis and interpretation of the present research study data:

A) Recommendations For Teachers:

1. The teachers should have knowledge and understanding of the concept, nature and syntax of Models of Teaching i.e. Concept Attainment Model and Inductive Thinking Model for teaching-learning process of English Grammar to IX class students.

2. The teachers of English at secondary school level should have complete understanding of the subject. Without proper understanding of the subject one cannot explain Models of Teaching approach.

3. The teachers should know that models of teaching are the way of teaching as constructive teaching approach

4. The teachers should try to prepare and present lesson plan based on models of teaching for teaching of English Grammar.

5. The teachers should know that inductive thinking model helps to develop inductive mental process and theory building.

6. The teachers should know that the inductive thinking model helps teachers to realize personal and social goals of students.

7. The teachers have to present examples in the classroom in such a way that the attributes should be clear and that they are indeed both positive and negative examples of the concept.

8. The teacher should try to prompt the students to re-examine given data and persuade them to form new hypotheses to the given concept.

9. The teacher should try to remain supportive of the students hypotheses, maintain record by keeping track of the hypotheses, remain supportive for turning the students attention and encourage analysis of the merits of various strategies in day to day classroom situations.

10. The teacher should try to be cooperative, initiator and controller.
B) Recommendations For IX Class Students:

1. The students should know that the models of teaching are more helpful for the intellectual growth.
2. The students should try to acquire concepts with which they are unfamiliar.
3. The students should have ample freedom for carrying out their own thinking in the classroom as well as in social life.
4. The students should try to formulate their own hypotheses and test these in the light of the available data with the help of teacher in the classroom.
5. The students should always try to solve problems, emphasize thinking and general intellectual ability.
6. The students should try to develop the ability to compare attributes in positive and negative examples, generate and test hypotheses, state definitions etc.
7. The students should try to describe thoughts and the thought-process in classroom as well as in family and in society.
8. The students should have the knowledge about Inductive processes that introduces creative processing of information and convergent use of information to solve problems.
9. The students should know that inductive thinking nurtures attention to logic, to language and the meaning of words and to the nature of knowledge.
10. The students should try to organize data and analyze the given data.

12) SUGGESTIONS FOR FURTHER RESEARCH

The researcher has conducted the present research study minutely and in detail. The present research study is based on teaching strategies i.e. Models of Teaching. The researcher has used the selected two models of teaching i.e. concept attainment model and inductive thinking model on English grammar at secondary school level. While conducting the present research work, the researcher came across some problems that he feels needed further elaborate exploration through research.
These problems were not directly related to the problem under investigation, and hence the researcher has not explored them any further. However, for the benefit of the researchers in this field as well as for the better understanding of the present research, the researcher has enumerated them here below.

1) The present research work was related to IX class students. The researcher feels that such type of study at primary and higher secondary school level education be conducted.

2) The researcher feels that such type of studies can be conducted for various aspects of English subject.

3) In this study the treatment was given to the IX class students in Maharashtra Vidyalaya, Barshi and Jijamata Kanya Prashala, Barshi. The researcher feels that the models of teaching may be implemented in various secondary schools on a large scale and the effectiveness of the teaching can be tested.

4) The researcher selected five grammatical items from IX standard English textbook and he feels that the remaining grammatical items can be covered and the preparation of lesson plan and teaching can be modified.

5) Different types of programs can be developed for teaching English grammar to IX class students. English grammar of IX class may be improved by involving models of teaching and can be tested accordingly.


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