Chapter-2

Review of Related Literature
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2.0 Introduction

The review of related literature and researches is inevitable for the researcher to find out updated knowledge and knowledge in the field. Review of related literature becomes important in each and every type of research. Until the researcher does not review the related literature, the direction of the research as well as methodology of the research does not become clear. Thus, the chapter becomes the foundation or base of the research.

Before pursuing or undertaking the research work in any field of knowledge, it is important for the research to study the present condition of the knowledge, current trends of the research as well as current tradition of the research. The attempts made in the present field by the researcher should be studied by the researcher to trace the current condition of the knowledge as well as necessity of adding new knowledge. The review of related literature helps the researcher to know and study the research gap and current ways to fulfill the path.

Thus, the review of related literature encourages the researcher to undertake the research in the specific field. The review of related literature helps and guides the researcher to select the objectives of the research, methods of the research, tools of the data collection and statistical techniques for the data analysis. J. W. Best emphasizing the review of related literature mentions:

“It helps to eliminate t duplication of what has been done and provides useful hypotheses and helpful suggestions for significant investigation”

The review of related literature presents the scenario of the present trends of the researches. When the researcher reviews the related literature with the reference to specific problem of the research, the condition of the problem in the future, the effective aspects of the research in the past and the present becomes clear. The review of related literature also specifies the method of the research. The researcher can take all the decisions of the research by the review of related literature. Thus it becomes the path on which new study or research takes place. The new researcher can get much important information about the research problem on reviewing the related literature.
Thus, it can be said that the review of related literature shows the researcher the way or direction to undertake the research. In the present chapter, the researcher had presented theoretical principles of teaching models with the reference to review of related literature. The review of related literature has been presented in two phases. Firstly, the theoretical principles of teaching models have been given. In the second phase, the preceding researches undertaken on the concept attainment model have been presented by the researcher.

2.1 Importance of Review of Related Literature

The review of related literature helps the researcher following way.

1. On the basis of the review of related literature, the researcher can get the gist of the researches done in the past. Thus, the researcher can become aware of the work done in the specific era and what next should be added in the field. As a result of it, the repetition of the same research can be avoided.
2. The review of related literature helps the researcher to select the apt and appropriate research problem of interest.
3. The review of related literature helps the researcher to get skill and aptitude of research field and academic knowledge.
4. It creates the foundation for the research which the researcher wants to convey. It also becomes the foundation on which the building of the research work can be constructed effectively.
5. The review of related literature helps the researcher to achieve the clarity of the principles and theories, to construct the objectives of the research,
construction of the hypotheses, methods of the research, tools of the data collection and statistical techniques of the data collection.

6. It helps to save the time, strength and money on researcher’s part. The review of related literature also helps the researcher to develop the research skill and ability to undertake the future steps for the research.

2.2 Theoretical Foundation of Study

In the present section of the research, the concept of teaching model has been given. Moreover, the theoretical understand of concept attainment model has also been presented by the researcher.

2.2.1 Meaning and Definitions of Model

In the modern era, many techniques have been developed for the teaching. The prime reason behind it is the education should not have mono method, way or technique of teaching. Various methods, ways or techniques should be employed to fulfill the objectives of teaching-learning process. The teacher should select and execute the most appropriate technique of teaching to make effective the education process as well as to fulfill the educational aims. Teaching models can become important and effective to achieve and fulfill the educational goals those were constructed by the teacher or system.

According to Cronback’s statement, the principles of teaching should be decided, founded and executed as according the principles of learning. Teaching principles should be given an equal importance as we give the importance to the principles of learning. Teaching models can become helpful for those psychologists and educationalist who are striving undertaken the researches in the field of the principles of teaching. The development in the principles of teaching model has its foundations in the principles of learning principles.

According to H. C. Whyld

“To confirm in behavior, action and to direct one’s own action according to some particular design”\(^1\)
According to Bruce R. Joyce

“Teaching models are just instructional design. They describes the process of specifying and producing particular environment situations which cause the student to interact in such a way that specific change occurs in his behavior.”

“It’s a way of interacting about the education in which the organization, classification and interpretation of the facts occur.”

According to Cronback and Gagne

“The teaching models have been developed as according to the learning principles and theories. So, by using it, the learning principles can be classified. Thus, the teaching models are the first step to classify the learning principles.”

Each and every teaching model and teaching technique provides an effective climate to fulfill the academic goals in the educational process. It helps to create that type of interactions between the students which guarantees the expected behavioral change in the students.

1. To give the practical framework to the learning output.
2. To select an appropriate learning stimulating situation so that the student reacts as according to the expectation.
3. To specify the situations which can help to observe the behavioral response.
4. To prepare the norms which helps to observe the learning output of the students.
5. To prepare the norms which helps to evaluate the learning outputs of the students.
6. To specify the further techniques of the learning for the achievement of the desired goals of the education.
7. To improve or change the teaching technique if no change observed in the expected behavioral change in the learners.

Thus, with the help of the teaching models, the learning outputs of the learners can be classified in the proper framework. Each and every goal of the learning can be
achieved by creating special learning climate. So, teaching models have been most important for the teachers. Teaching model is the synonym of the academic skills, but it supplements to the academic skills.

### 2.2.2 Characteristics of Teaching Model

1. Teaching models provides the appropriate educational experiences to both the learner and teacher.
2. Each and every teaching model has some output hypotheses. The teaching model has been developed on the basis of the hypotheses. For example, to prepare and provide an appropriate environment to the learners, interaction between the learners and teacher and taught, to develop and apply an appropriate teaching technique and method.
3. Teaching models give answer of every basic question related with the teacher-taught practices.
4. In the teaching models, the educational system has been considered the foundation base with the reference to education.
5. The teaching model has been constructed keeping in mind the individual differences between the students.
6. When the teaching model has been constructed, the interest of the students on whom it would be decided to apply has been considered.
7. While using the teaching model, the qualitative aspects of the teacher has been magnified as well as glorified.
8. The teaching model has been based on the individual viewpoint, reflection of the teacher and values of education.
9. Each and every teaching model has been based on certain pattern of philosophical foundations.
10. Teaching model is always based on philosophical foundations and principles of psychology.
11. The teaching model can be developed after constant study, experience, reflection of the researcher and experiment.
12. Teaching model is the practical side of the education by using of it the personality of the teacher can be developed.
13. The teaching model put emphasis on the fulfillment of the social needs of the students which shows the effect of the humanism philosophy that asserts the social needs of the students.

Moreover, the teaching models can be described as under.

i. **Some Assumptions**

Each and every teaching model has some foundation aspects. The teaching model has been constructed on the basis of those foundation aspects. The foundation aspects and hypotheses of teaching model are as under.

- To create an appropriate environment for learning.
- To interact between the students and teacher-taught.
- To use and apply the techniques and methods for making the teaching simple, effective, graspable and certain.

ii. **Presenting Appropriate Experiences**

The second characteristic of the teaching model is that it provides and presents the appropriate experiences to both the teacher and students. The prime problem of the education is to select the content of the teaching and to present the selected content to the students. This problem can be overcome by selecting and using an appropriate teaching model and applying the model to the students.

iii. **Answer of Fundamental Questions**

The next characteristic of the teaching model is that it gives answer of probably all the fundamental questions of the educational process. For example:

- Which type of practice is the teacher undertaking?
- Why the teacher is doing so?
- Which types of the effect the teacher can possible create on the students by undertaking the particular practice?

In short, ever possible answer of fundamental questions can be solved with the reference to practice of both the teacher and the students.
iv. **Based on Individual Differences**

The construction of the teaching model has been done with the reference to the hypotheses of the individual difference. Thus, the teaching model can be applied conveniently keeping in mind the individual differences between the students.

v. **Use of Students’ Interest**

While constructing the teaching model, the interest of the students have been kept in mind by the constructor of the teaching model.

vi. **Maxims of Teaching**

If the students have been taught with the reference to maxims of teaching, the teaching can be more meaningful, effective and fruitful. The maxims of the teaching become foundations of the entire teaching model.

vii. **Teaching as an Art**

The feature of the teaching model is that the teaching has been considered as an art for the teacher as well as for the students.

viii. **Qualitative Development of Teaching Personality**

The major characteristic of the teaching model is that it emphasizes the qualitative development of the teaching personality.

Further, the characteristics of the teaching models can be mentioned briefly and to the point as given under.

- Teaching model is based on the educational independence, reflection and values of education.
- Each and every teaching model has been constructed on the foundation of philosophy of thinking.
- Teaching model put emphasize on the fulfillment of the social needs as suggested by the theory of humanism.
- Teaching model becomes helpful in the development aptitude both for the teacher and the students.
• Teaching model has been constructed on the foundation of psychological principles and theories.
• Each teaching model has been constructed and developed after the constant thinking, reflection and research.

2.2.3 Applicability of Teaching Model

The prime objective of the teaching model is to bring the expected change in the behavior of the student. The frame of the teaching model has been constructed in the way that effective environment can be created to achieve the goals, objectives and aims of the educational process. It shows the importance and applicability of the teaching model with the reference to teaching model. The further importance and applicability of the teaching model can be mentioned as under.

1. Teaching model has been important for the achievement of the short term goal and objectives.
2. The teaching model has been considered in practical frame so that learning outputs can be achieved easily.
3. Teaching model helps the teacher to make the teaching more effective, meaningful and fruitful.
4. Teaching model applies that type of techniques and tactics that it becomes helpful to bring the change in the behavior of the students.
5. It evaluates the practices adopted by the students. Moreover, it gives the norms to evaluate it.
6. Teaching model becomes an effective handful in the teaching of the special subject related content.
7. Teaching model becomes helpful in the achievement of all the objectives, goals and aims of educational process. The teaching model can be developed for the domain of individual, social, cognitive and practical aspects of the education.
8. Teaching model puts an emphasize more on the objectives of education than on the textbook. Thus, it becomes more appropriate for the educational i.e. teaching-learning process.
9. It provides the wide scope in the research with the reference to educational field of the research.
10. Teaching model helps to bring improvement or development in the field of education and teaching.

11. In the teaching methodology, more importance has been given to textbooks while in the teaching model, more importance has been given to the aims, goals and objectives of education process. Thus, the teaching models make the educational process more important, fruitful and meaningful.

12. On the basis of these teaching models, more teaching models can be constructed for the teaching with the reference to Indian teaching culture.

13. Teaching models are till now on the piloting level in India. Teaching theories and principles can be brought out on the basis of it.

14. Specialization in the area of teaching field and education can be brought out by the researches in the field of teaching model.

15. Long-term effect with the reference to education can be observed on the students when they are taught by following certain teaching model. Moreover, the students cultivate the vision of effective and meaningful learning in the future once they are taught with the teaching model.

16. The students can learn many useful things like how to remember the information, how to discover the information, how to construct and check the hypotheses, how to carry the meaning from the lectures and presentations, how to analyze the values by the application of teaching model in the teaching-learning process.

17. Teaching models can be useful in the field of psycho-motor, aerotics and performing arts. It also helps to cultivate the mathematical and social training skills. It also helps to mould the self of the students.

18. The teaching model can be useful and helpful in with the reference to many aspects of teaching-learning process; for example, how to make the writing of the student creative, how to plan the individual study of the student and how to learn with peer etc.
2.2.4 Aspects of Teaching Model

With the reference to any teaching model, the aspects given under should be taken into the consideration.

1. Goals
2. Theoretical Hypotheses
3. Steps
4. Social System
5. Theories of Response
6. Supportive System
7. Educational Implications
8. Direct or Related Effects

2.2.5 Fundamental Elements of Teaching Model

In any teaching model, four elements which are given under should be taken into the consideration. They are also called the steps of the teaching model. As we choose the teaching method by asking three fundamental questions: what to teach, to whom to teach, and how to teach; and it leads to the effective selection of the teaching method. The same way, when the researcher construct of the teaching model, four prime and fundamental questions should be kept in the mind.

1. What is the goal of the teaching model?
2. Which situation will be created to achieve the goal?
3. Which type of interaction will take place during the use of the teaching model?
4. Which type of evaluation technique will be adopted to observe the success of the teaching model?

The brief description of the steps has been mentioned and presented as given under.

1. **Goal (Focus)**

In the presentation of goal, which behavioral change does the researcher want to bring in the students should be stated here by the researcher. The statement of the
goal or focus of the teaching model should be presented here in the simple terms by the researcher. Every teaching model has been focused in the terms. For example, the focus of developmental teaching model is students’ cognitive development, the focus of concept attainment teaching model is students’ inductive reasoning development, and the focus of creative teaching model is students’ creative ability development. Thus, every teaching model has been constructed keeping in mind certain goals to be achieved by the researcher.

2. Syntax

For the achievement of the goal; which type of method, technique or way should be applied is called the syntax of the teaching model. The syntax of the teaching model should be followed by the steps of the construction. In the simple terms, as we consider the steps as educational process in the teaching-learning, it is considered here syntax in the teaching model. One point should be noted here is that the syntax of teaching model should be distributed here in certain steps from beginning to end. As a result, anyone can use and apply the same model will get the same result by following the particular teaching model. Thus, the situation is created by the researcher by the goals of the education can be fulfilled.

3. Social System

If a teacher or lecturer applies the lecture teaching method blended with questionnaire method in the teaching, which type of interaction will take place between them and in the classroom has been affected by many factors. The salient characteristic of the teaching model is that it accelerates the interaction between the students and teacher-student. The nature of interaction and nature of questions have been specified in the teaching model. When to present which information has also been specified in the teaching model. Thus, which type of interaction and social system will take place between the teacher and students has been specified in the teaching model. This way, the social system has been specified in the teaching model according to focus of the teaching model.

4. Supportive System

The word ‘evaluation’ has broader meaning with the reference to fields in which it has been used. But with the reference to teaching model, it is the last step to
check the effectiveness of the teaching model with the concern to the success of the teaching-learning. Evaluation has been done with the reference to the achievement of the focus or goals constructed for the specific teaching model. As the teaching model differs, the evaluation process and technique differs from each other.

Every teaching model has been prepared by keeping in mind the above given steps for the construction of the teaching model.

2.2.6 Classification of Teaching Model

Teaching models can be classified in four broader categories.

1. Social origin
2. Information Processing Origin
3. Individual Origin
4. Behavior System Origin

Salient characteristics, name of models and details of their presenters have given with the reference to all teaching models that come under four origins.

1. Social Origin

From four origins of the teaching model, it is the first type of teaching model that put emphasize on the relationship of person to the person or the society and visa versa. These types of teaching models have been founded or focused on the goals like the improvement in the relationship between the person or the society. This category of teaching models put emphasize on how to interact with each other with the reference to student to student, how to cultivate the social skills, how to solve the problems related with public policies etc. The teaching models related with these category has been mentioned in the Table – 2.1
Table – 2.1

Teaching Models of Social Origin

<table>
<thead>
<tr>
<th>No</th>
<th>Teaching Model</th>
<th>Presenter</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Participation in Learning Model</td>
<td>Herbert Thalen</td>
<td>1960</td>
</tr>
<tr>
<td></td>
<td>Role Play Model</td>
<td>Fanny and George Sheftel</td>
<td>1982</td>
</tr>
<tr>
<td>3</td>
<td>Ethical Inquiry Model</td>
<td>Donald Oliver and James Raber</td>
<td>1966, 1971</td>
</tr>
</tbody>
</table>

2. Information Processing Origin

The second group of teaching models deals to motivate the students with the information processing ability of the students and the system to develop that ability. This teaching model deals with information processing aspects: like to collect the information from the nearby environment, to distribute and organize the information, to understand the problem, to solve the problem etc. Some teaching models of this group impart the learner’s information and concepts. This group of teaching model puts emphasize on construction of concepts and checking of hypotheses. Some of the models also develop the creativity in the students. Some of the models have been constructed to develop the cognitive abilities of the students. Teaching models that fall under this section have been mentioned in the table no. 2.2

Table – 2.2

Teaching models of Information Processing Origin

<table>
<thead>
<tr>
<th>No</th>
<th>Teaching Model</th>
<th>Presenter</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inductive Thinking Model</td>
<td>Hilda Taba</td>
<td>1966</td>
</tr>
<tr>
<td>2</td>
<td>Concept Attainment Model</td>
<td>Gerome Bruner</td>
<td>1967</td>
</tr>
<tr>
<td>3</td>
<td>Memory Development Model</td>
<td>Lorene and Lucas</td>
<td>1974</td>
</tr>
<tr>
<td>4</td>
<td>Advance Organizer Model</td>
<td>David Ausubel</td>
<td>1963</td>
</tr>
<tr>
<td>5</td>
<td>Inquiry Training Model</td>
<td>Richard Himen</td>
<td>1962</td>
</tr>
<tr>
<td>6</td>
<td>Senectics Model</td>
<td>William Gordon</td>
<td>1961</td>
</tr>
<tr>
<td>7</td>
<td>Cognitive Model</td>
<td>Jean Piget</td>
<td>1952</td>
</tr>
</tbody>
</table>
3. **Individual Origin**

The teaching models of this origin put emphasize on the development of individual. This type of teaching model presents the methods and techniques by which an individual can create or construct the facts of the self and organize it. This type of teaching models teaches the individual to interact with the nearby environment as a stimulus and to see the self as a powerful being. The advantage of this type of teaching model is that the individuals can create the interrelationship with each other and thus they can be able to process the information more fluently than ever. This type of teaching models puts more attention on the individual scenario and motivates the productive independence of the individual. The teaching models fall under this section have been mentioned in the table no. 2.3.

**Table - 2.3**

<table>
<thead>
<tr>
<th>No</th>
<th>Teaching Model</th>
<th>Presenter</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Non-Directive Model</td>
<td>Carl Rogers</td>
<td>1952, 1982</td>
</tr>
<tr>
<td>2</td>
<td>Self-Concept Model</td>
<td>Abraham Maslow</td>
<td>1962</td>
</tr>
</tbody>
</table>

4. **Behavior System Origin**

In this type of teaching model, the principle of operational conditioning is focused. This type of teaching models is known as the model of behavior improvement because it emphasize on the visual and observable behaviors which can be changed. In this type of teaching models many important behaviors can be changed or taught like: to decrease the imaginative fear, to teach reading and computing, to teach social and physical skills, to decrease anxiety etc. The teaching models which fall under this section has been given in the table no. 2.4.
Table – 2.4
Teaching Models of Behavior System Origin

<table>
<thead>
<tr>
<th>No</th>
<th>Teaching Model</th>
<th>Presenter</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Self – Regulation Model</td>
<td>B. F. Skinner</td>
<td>1957</td>
</tr>
<tr>
<td>2</td>
<td>Learning for Expertise Model</td>
<td>Benjamin Bloom</td>
<td>1971</td>
</tr>
<tr>
<td>4</td>
<td>Stress Free Model</td>
<td>Rees and Masters</td>
<td>1974</td>
</tr>
</tbody>
</table>

In the present research, concept attainment model has been studied by the researcher which has been included in the information processing origin.

2.2.7 Concept Attainment Model

The students have been imparted with information and knowledge of the subjects by the teaching-learning process in the school. Knowledge of any subjects can be distributed broadly into three categories: facts, concepts and principles. To understand the knowledge of the subject, certain concepts of the subject, concerned related concepts and self-concepts becomes very important. The concepts cannot be clarified by only reading or understanding the definition of the concerned subject or term. If the individual wants to understand whole the information or to present it to someone, the related terms and concepts should be clarified by the individual. For this, an individual should follow certain thinking process. So, Bruner, Gudnove and Austin (1967) had identified the principles by their study on individual’s process and pattern of thinking. On the basis of this principle, concepts can be taught. The model based on these principles has been known as concept attainment model.

In the year 1920, Mrs. Stern Rostern, a teacher in Texas asked the students of 8th standard that which is fourteen largest cities of America? She advised and recommended the students that these largest fourteen cities should be considered with the reference to urban area, population, industrialization and size. The students gave the name of the largest cities with the reference to map. Thus, they presented the concept of the word city. As a result the teacher collected and selected the data regarding the largest cities of America.
In the year 1960, Academic Reform Movement Institution presented the application of concept for the clever students.

If an individual wants to understand or grasp any information perfectly or to present any information, the concept and related concepts of the information should be understood. For this, an individual should apply certain process of thinking. So, Bruner, Gudnove and Austine (1976) had identified the principles by their study on individual’s process and pattern of thinking. Having used the principles given above in the field of education, the education of concepts can be imparted. The teaching model based on these principles is known as concept attainment teaching model.

In short, Bruner, Gudnove and Austin (1976) developed and constructed a technique, method or process based on their study and experiments on the thinking process and pattern which is known concept attainment teaching model.

In the present chapter, various elements and aspects of concept attainment teaching model has been discussed in detail. The detail has been presented here which help to understand the research carefully. First of all, the meaning and definition of the word concept has been given here.

### 2.2.7.1 Meaning of Concepts

“Concept mentions the collective of similar aspects and features by which difference can be traced in group.”

- Carter V. Good

“Concept is a process which mentions the representatives of different things, situations or incidents.”

- Man

“After cramming the concept of things, evidences or situation, if the students can differentiate between the examples and non-examples of the evidences or situation, it can be said that the students knows the concept of that evidence, facts, thing or situation. Thus concept attainment has been comprised of the ability of classification.”

- Motibhai M. Patel.
Thus, the concept is person’s mental image which is there in the mind of the learner framed after studying an evidence, fact or situation. The concept of the thing, evidence or situation has always been formed in the mind of the students.

In each and every concept, a reader can observe two types of features. These are:

1. **Rationale Characteristics**

Rationale characteristics are those characteristics of thing or situation in absent of any one or more characteristics; no example can become the characteristics of that concept. Thus, there are some characteristics which are compulsorily important or those are mandatory characteristics are called the rationale characteristics of the concept.

E. G. the concept ‘Table’ has two rationale characteristics.

(1) It has four legs and (2) One can keep things on it or it has a appropriate seat on which the things can be put.

If the thing lacks all or any of one characteristic, it will not be called. Thus, that becomes the rationale characteristics of the concept ‘table’

2. **Variable Characteristics**

One concept can be presented or understood by many examples. Each example can carry certain or different characteristic of that concept. The examples vary from each other, but that works for the same concept. Those are called the variable characteristics of the concept. For example: material used in the making of the table, number of legs of the table, shape of the seat, size of the table. These are called the variable characteristics of the concept ‘table’.

2.2.7.2 **Characteristics of Concept**

The characteristics of the concept can be described as under.

- The concept has more than one example. It means that concept can be presented with many examples. For example, an instrument for seating is a concept. The examples of it are table, chair, cot, sofa etc.
• The examples of different concepts contain similar characteristics. For example, chair, sofa, table contains the same characteristic that all these are used for to seat on yet these are the different concepts.

• With the increase in the knowledge, scientific discoveries and research, new concepts have been constructed and added. For example, mobile, laptop, computers etc. are the new concepts.

• The constructed concepts can be accepted. It means that the constructed concepts can be explained as well as understood.

• The concepts always represent the group or community. For example, flower does not mean any specific flower i.e. rose, but it represents and addresses the community of flowers.

• The examples of the concepts can be both positive and negative.

• The concepts may have motor or emotional symbols.

• The concepts can be presented by more than one example. It means that it has more than one example.

• All the examples of the single concept must have something or some characteristic common.

• In the different society, community or places, the same concepts might be represented with different names. For example the word ‘nation’ can also be represented by the word ‘country’.

• Different concepts may also have some similar characteristics. It means that the different concepts may have some similar or same factors. For example, ‘pen’ and ‘pencil’ are two different concepts, but both of them have one characteristic common and that’s both of them are used to write.

• The concepts can be seen in all the subjects of knowledge and at all the levels it can be used.

2.2.7.3 Kind of Concepts

According to Bruner, the concepts can be widely divided into three categories. The information of which has been given below.
1. **Conjunctive Concept**

   In the conjunctive concept, the characteristic or factor of the concept has been attached with one word. Attitude and creativity have been the concepts because one or more factors or characteristics have been included. Until these factors have been presented as a whole, the concepts cannot be constructed or created. Thus, the conjunctive concepts can be created presenting all the factors or characteristics as a whole.

2. **Dis-Conjunctive Concept**

   When the concept has been constructed with the presence or absence of some characteristics or factors, it is called the dis-conjunctive concepts. The characteristics and factors of the present concepts have been joined with the word ‘or’. For example, ‘citizen’, the meaning of citizen is the person who born in the nation or person who permanently resided in the nation.

3. **Relational Concept**

   The relational concepts mean the concepts which have been constructed by organizing relationship between things, individuals, factors, characteristics etc. For example, husband-wife; According to Joyce and Well, all the relations of the society has been the examples of relational concepts.

   The concepts mentioned above can be described as given below.

   (A) **On the Basis of Nature**
• **Concrete Concept**

  The concepts which can be observed by the senses are called the concrete concepts.

• **Abstract Concept**

  The concepts which cannot be observed by the senses are called the abstract concepts.

(B) **On the Basis of Validity**

![Diagram showing the relationship between Concept, Syntax Concept, and Flexible Concept]

• **Syntax concept**

  The concept whose understanding or meaning is the same for all the readers is called the syntax concept. For example, electron, proton etc.

• **Flexible concept**

  The concept whose meaning or understanding changes between person to person is called the flexible concept. For example, citizenship.

The concepts can be divided or classified as primary concept and secondary concept also.

• **Primary Concept**

  Primary concept is that concept which is not depended on other concepts. The example of it is ‘cell’.
• Secondary Concept

Secondary concept is that concept which is depended on other related concept. The example of it is ‘tissue’

2.2.7.4 Elements of Concept

According to Bruner, the concept can be divided into three elements.

![Diagram of Concept Elements]

1. Factor

Each and every concept has some fundamental characteristics of factors. The concepts have been identified on the basis of the characteristics of factors. The peculiarities of the concepts have been called the characteristics of factors of the concept. The characteristics or factors have been presented with the medium of the examples. Each and every example of the concept has been presented with the inclusion of one or more characteristics or factors. For example, ‘tree’ is the concept. Basic or fundamental characteristics of the present concept have been given as under.

- Root
- Stem
- Leaf

2. Factor Value

The positive and negative examples of each and every concept have been identified on the basis of the characteristics or factors of the concept and factor value of the concept. For example, if we consider the concept of fruit ‘mango’, the factors or characteristics of the concept are color, shape, figure, price, weight and taste of mango. If we consider color as a factor or characteristic of the concept, its color
(yellow or green) will become the factor value of the present concept of the fruit ‘mango’.

3. Example

According to Bruner, the factors or characteristics have been identified by presenting the positive and negative examples of the concept. By presenting the examples, the teacher simplifies the process of concept attainment to the students. The examples of the concept can be understood by the factors, characteristics or range of factors by the teacher. It means that the example has the factor or characteristics of explaining the concept. These factors or characteristics are called the mandatory factors or characteristics of the concept. The examples which have these mandatory factors or characteristics are called the positive examples of the concept. The examples which do not contain the mandatory factors or characteristics are called the negative examples of the concept. For example, if we consider ‘tree’ as a concept, neem tree, banyan tree, Pipal tree etc are called the positive examples while Tulsi, Mint, coriander etc are called the negative examples of the concept ‘tree’.

2.2.7.5 Objectives of Concept Attainment Teaching Model

The objectives of concept attainment teaching model have been given as below.

1) To understand the concept totally.
2) To develop the inductive reasoning skill.
3) To develop the language skill.
4) To learn the special terms and concepts.

2.2.7.6 Concept Formation and Concept Attainment

Generally, concept formation and concept attainment have been believed to be the same process. But actually, both the processes have been different from each other. Concept formation is a process in which new concepts have been formatted with the reference to discoveries and contexts. Moreover, it can be said that new concepts have been derived from new concepts. For example, mobile, e-mail, laptops are the new concepts which were unknown or not existed before near past.
According to Bruner, concept formation is the pre-stage of concept attainment stage. With the reference to concept attainment, the person first learns the formatted concept. In other words, the person attempts to understand the factors or characteristics of the concept.

Bruner divides or classifies the concept attainment into four steps. These steps have been given as under.

1) **Recognition or Identification**

When a person gives the meaning of the word given in the dictionary or told by another person, it can be said that that concept is on the level of recognition or identification level. The person has no dispute in the mind with the reference to the meaning of the word at this level of understanding of the concept. For example, if the students has been learn the concept of adjective that the adjective is the word that bring peculiarity to the noun, and when that students has been asked the definition of the adjective and responds the same understanding, it can be said that the students is on the identification or recognition level of the concept.

With the reference to recognition or identification process of the concept attainment, the student knows the factor or characteristics of the concept. But when the students have been given the examples of the concept, they begin to analyze the concept with the examples and try to know further with the reference to concept that the examples is related with the concept or not. For example, if the parents explain the students the factors or characteristics of the birds and animals, children tries to remember or memorize that. When they visit the zoo and get an opportunity to watch the birds and animals, they try to recognize or identify the birds and animals based on their pre-knowledge of the factors or characteristics told to them explained and told by their parents in the past and try to tell their names.

2) **Classification**

Many examples have been put to the students and they are told by the teacher to classify the examples with the reference to concepts. The students try to classify the examples with the reference to concepts they have learnt. It is called the process of classification. If the students successfully attempts and can classify the different
examples with the reference to concepts they have learnt. It can be said that the students have learnt or attained the concept at the classification level.

For example, the students have been presented the pictures of animals like cow, buffalo, goat, lion, tiger, and camel. They are instructed to classify the examples of the wild animals and if they classify lion and tiger as wild animal. It can be said that the students who have classified the content are on the classification level of the concept attainment.

3) Definition

When the students present various important factors or characteristics with the help of definite words, it can be said that students are on the definition level of concept attainment. With the reference to example given above, if the students can present the important factors of characteristics of wild animals with the help of definite words, it can be said that students are on the level of definition with the reference to concept attainment.

4) Generalization

The definition of the concept has not been much affected by the change in the time as well as place. The definition of the same concept does not change in the various situations. If the students have been able to understand the static validity of concept in the various situations, it can be said that the students are on the generalization level of the concept attainment.

For example, the concept of adjective (adjective brings the specialty in the name or pronoun) remains the same in each and every situation with the reference to time as well as place, it can be said that the student has achieved the level of generalization with the reference concept attainment.

2.2.8 Strategies of Concept Attainment Model

With the reference to various level of concept attainment, three prime methods of concept attainment model have been developed. The information of which has been given below.

1. Selection oriented Concept Attainment Teaching Model
2. Unrecognized Material Model

3. Syntax of Reception oriented Concept Attainment Teaching Model

1. Selection oriented Concept Attainment Teaching Model

With the reference to selection oriented concept attainment teaching model, the teacher presents unrecognized examples of the concepts. After and comparing the factors or characteristics, the students make the hypotheses for the checking of the formatted positive and negative examples. After the assessment of the hypotheses, the students tell the name of the concept they have learnt and asserts about the certain terminology of the concept they have learnt. At the end of the process, the teacher tells the students about the thinking process used by the students were right or it needs improvement.

2. Unrecognized Material Model

In this method, the teacher presents a paragraph, sentences or incidents to the students. This method is more important in the social science subject. The students get the recognition of the unrecognized material presented to them. The students classify regarding the concept after understanding the factors or characteristics of the concept. The students present more and more examples and compare the factors or characteristics of the concept. Afterwards, the students present name, rules, characteristics and definition of the concept.

3. Syntax of Reception oriented Concept Attainment Teaching Model

In the present method, the teacher presents recognized positive and negative examples of the concept to the students. The students compare the positive and negative aspects of the examples presented to them. The students check the hypotheses of the concept themselves and try to understand the concept. Afterwards, the teacher presents unrecognized examples and asks the students about them to study the students’ concept attainment. The teacher asks the name, definition and factors or characteristics of the concept. At the end, the teacher asks the students about the thinking process they have used and the teacher analyzes the thinking process used by the students.
2.2.8.1 Syntax of Reception oriented Concept Attainment Model

The steps of the syntax oriented concept attainment model have been presented as below.

**Step: 1 Presentation of Information and Recognition of Concept**

In the present step, the teacher gives the students fundamental information about the various steps of syntax of reception oriented concept attainment teaching model. Afterwards, the teacher presents the positive and negative examples (it is also called examples and non-examples) of the concepts which have to be learnt by the students. The positive examples are presented under the head of positive examples and negative examples are presented under the negative examples head. The students have been told to compare the pair of positive and negative examples as according to the factors or characteristics. Then, the students are told to give name to the concept. More examples have been given to the students if needed. At the end, the students have been told to recognize the concept.

**Step: 2 Testing of Attainment of Concept**

When the students respond that the concept has been recognized by them, its testing has been done in the second step. For it, the teacher present some unrecognized positive and negative examples to the students and tell them to give recognition to them. Moreover, the students have been instructed to present new positive examples in the class. If it has been seen by the teacher that the students have not understood the concept, they are taken back once more to the previous step. At the end of the step, the teacher instructs the students to entitle name, necessary factors or characteristics and definition of the concept. If the students work successfully in the second step, the students have been brought forward to the next step.

**Step: 3 Analysis of Thinking Strategy**

In the present step, the students analyze the thinking process which was involved in the concept attainment process. Initially, the teacher instructs the students to present their own views on how they attained the concept and what was their thinking process or reflection during the attainment of the concept. Here, the teacher asks some questions to the students about how that recognized the concept. It has
been seen that some students initially thinks broadly and then subsequently concentrates on the central idea. Some students think about the concepts taking more distance. Here the students also respond about that they have thought about one or more concepts or rules at a single time spam. The teacher also asks the students about what they felt when their hypotheses were rejected and which hypotheses helped them to get the success in the concept attainment process. In short in the analysis of thinking process, which thinking process was the best to attain the concept have been analyzed by the teacher so by the students.

2.2.8.2 Thinking Strategies for Reception Oriented Concept Attainment Model

1. Holistic Thinking Strategy

In the syntax of reception oriented concept attainment model, the teacher presents recognized examples to the students. Suppose that the teacher has presented the under given examples to the students.

Positive example: Krishna

Negative example: reading

By presenting these examples, the students will consider and think about some factors or characteristics of Shree Krishna like (1) name of great man (2) two words with the reference to positive example. Moreover, the students try to discover these factors or characteristics in the negative examples. Afterwards, the teacher presents the following examples.

Positive example: Delhi

Negative example: bad

By the observation of the positive example, the students try to discover all the factors or characteristics of Krishna in the example of Delhi. Here, the students find out that one characteristic or factor, great of the first positive example ‘Krishna’ has been connected with another positive example ‘Delhi’ because Delhi is also a big and important city of India. The rest factors or characteristics have not been same in both
the positive examples. Suppose that afterwards the teacher has given the following examples.

Positive Example: Kiran

Negative Example: That

After the observation of the present example, the students try to discover the factors or characteristics of the former examples in the present one, Kiran. The students recognize that Kiran is the name of the person. But when the students compare these factors or characteristics with the negative example, the students come to know that these factors or characteristics are not there in the negative examples. In fact, Krishna, Delhi and Kiran are the names of persons and places while the word that does not represent the name of the person or place. The word ‘that’ has been used as a substitute for the name and place. This way, the students analyze the positive and negative examples. Moreover, the students think in all the direction with the reference to factors and characteristics of the concept. This is called the holistic thinking or reflection method of syntax of reception concept attainment model.

2. Partist Thinking Strategy

When the teacher presents the positive and negative examples to the students, the students reflect on only one characteristic or factor of the positive example and try to discover the same factor or characteristic in other positive example presented to them. If the students find out the same factor and characteristic in the second positive example, the students try to find out the same factor or characteristic in the third positive example. If the students fail to find out the same factor or characteristic in the third positive example, the students once more try to find out the new factor or characteristic in the first positive example and compare the same factor or characteristic in other the rest examples. From the examples given above, when the teacher presents the examples of ‘Krishna’ and ‘writing’ in the class room, the students think about one of the factors or characteristic ‘great man’ and the students try to compare this factor or characteristic in the other example ‘Delhi’ and ‘Kiran’. Subsequently, the students come to know that ‘Delhi’ and ‘Kiran’ are the name of the place and person. One thing becomes clear is that the students make the hypotheses
taking just one factor or characteristic of the positive example. The students test the hypotheses in the other examples provided to them. This way, the students think about part of the example rather than considering its all the components. So, this method is called the partist thinking method of syntax of reception oriented concept attainment teaching model. In the Bruner strategies, the students most probably use the holistic thinking or reflection method for the attainment of the concept.

2.2.9 Application of Concept Attainment Teaching Model in the Class Room

It is important for the teacher to plan well before the teaching. Thus, when the teacher wants to teach the content of the lesson with the help of concept attainment teaching model programme, the teacher must be well planned. The teacher must include the following aspects to make the planning of the concept attainment teaching programme.

- Find out the concepts from the content and carry forward it.
- Find out the positive and negative examples of the concept.
- Find out rationale and variable characteristics after analyzing the concepts.

The selection of the example should be done keeping in mind the following aspects.

- Only those examples should be selected which represents the factors or characteristics of the concept.
- The medium of the presentation of the examples used by the teacher should be according to the mental level of the students.
- The teacher should collect the enough examples to fulfill the aim of testing of the concept attainment of the students.
- The positive and negative examples should be arranged that way that the factors or the characteristics of the concept can be tested effectively.
- The teacher should select the unrecognized examples appropriately.
2.2.10 Social System

In the present step, which action, behavior and interaction would take place between the student and the teacher has been described and classified by the teacher. The role of the teacher in the present step has been described as under.

**Teacher’s Role**

- Concept which be taught to the students should be pre-decided by the teacher before entering the class.
- Collection of the positive and negative examples should be done by the teacher effectively.
- The strategies selected by the teacher should be as according to the type of the concept and the mental level of the students.
- The medium of the presentation of examples in class room should be as according to the mental level of the students.
- The teacher manages all the activities done by the student while teaching-learning process in the class room.
- The teacher should motivate the students for the free discussion in the class room.
- The teacher motivates the students to do inductive reasoning in the class room for the concept attainment.
- The teacher can use the audio-visual aids if needed in the class room.

**Role of Students**

- Behave as according to the guidance of the teacher.
- The examples of the concepts in the work sheet according to development of the work in the concept attainment model.
- Students keep note of the example and factors or characteristics.
- To be participated in the free discussion.
2.2.11  Principal of Response

In the application of the concept attainment teaching model programme, the teacher responds following way to the answers and practices of the students during the teaching-learning process in the classroom.

- When the students presents more than one concept in the classroom, the teacher should help them to find out one true concept from the concepts they have gathered.
- The teacher should present more examples as according to the necessity of the students for more examples.
- The teacher should listen the thoughts of the students carefully and teacher should use the thoughts if possible.
- The teacher should accept the instructions and advices of the students sympathetically.
- The teacher should help the students to focus on the prime factors or characteristics of the examples.

2.2.12 Support System

The concept attainment model programme needs that type of lessons in which the content has been well organized with the reference concepts so that the positive and negative examples of the concept can be presented by the teacher. When the teacher wants to organize the content and analyze it with ethical approaches, the information regarding the concept has been woven by the teacher. One point that should be noted is that the students are not supposes to discover their own new concept in the strategy of concept attainment teaching model programme. But they are supposed to get knowledge about the concept presented to them by the teacher though the sources of the information have already been known to them.

2.2.13  Instructional and Nutrient Effect

Each and every teaching model programme has been prepared on predefined aim. The aims of the construction have been called the aim of the teaching model programme. But every teaching model programme gives many side products than pre-defined outcomes. That is called nutrient effects of the teaching models. The
Instructional and nutrient effects of the concept attainment teaching model programme has been as follow.

**Instructional Effects**

- Students are able to develop the understanding of the various elements of the concept.
- Students are able to develop the methods of concept construction.
- Students are able to develop the inductive reasoning skill.

**Nutrient Effects**

- It increases the awareness of the students towards the options.
- It develops the ability to tolerate the vague situation.
- It helps to develop sensitivity towards logical reflection in the communication.
- It helps to develop new directions to evaluate the examples.

### 2.2.14 Evaluation System

After the application of the present teaching model, the questions regarding the objective type and essays type can be asked. Which concept has been used on which base in the teaching-learning process the most important point with the reference to concept attainment is teaching model programme. After the completion of the concept attainment teaching programme, the evaluation has been done with the reference to objectives of the programme.

### 2.3 Abstract of Precede Related Researches

Precede related researches provides the foundation for any research. So, its review should be done appropriately. In this section, the researcher has presented the review and abstract of related researches with the concept attainment teaching model programme. At the end of the section, the researcher has presented the rationale of the present study. The review of related researches has been presented as follow.
Study – 1

Researcher - L. V. Fakat

Subject - A Study of Technology of Teaching and Assessment of Mathematical Concepts

Degree - Ph. D.

University - Saurashtra University

Year - 2003

Objectives -

1. To prepare the system and planning of concept attainment teaching model for the teaching of mathematical concepts and concept conditioning model.

2. To study the effectiveness of selected technology of mathematical concept teaching model in comparison with traditional method of teaching.

3. To construct and validate criterion referenced test for the achievement assessment of selected mathematical concepts

Population and Sample -

1. The population of the present study was the students of 9th standard of the Kutch district.

2. In the present research, the researcher had selected 210 students from Shree J. P. and L. S. High School, Kera; 216 students from R. D. Vidyalaya, Mundra and 161 students from Shree Leuva Patel Kanya Vidyalaya as a sample of the study. The students were classified into three groups as according to quasi experimental design of the study.

Research Design -

1. Self-constructed criterion referenced test

2. Mathematical Achievement Test Constructed by the Teachers of the School
3. Group Verbal Non-verbal Intelligence Test Constructed by Desai and Bhatt

4. Experimental Research Design

Data Analysis - T-Test was used by the researcher to analyze the data.

Findings -

1. System and planning of concept attainment teaching model for the teaching of mathematical concepts and concept conditioning model was proved more effective than the traditional method of teaching. While concept conditioning model was remained more effective than concept attainment teaching model.

2. The outcome and result was achieved with the reference to teaching of arithmetic, trigonometry and physical concepts of mathematical concepts of the male and female students.

3. The technology was also prove effective with the reference to students holding high intelligent quotient while all three technology was proved equally effective for the students who were holding low intelligence quotient.

Study – 2

Researcher - Shree Vasharambhai

Subject - A Study of Effectiveness of Concept Attainment Teaching Model Programme for Concepts of Science Subject

Degree - Ph. D.

University - Gujarat University

Year - 2010

Objectives- To study the effectiveness of concept attainment teaching model programme with the reference to academic achievement of science subject.
Population and Sample -

In the present research, 360 students of 8th standard were selected as a sample of the research in which 70 students from Parimal Vidyalaya, 56 students from Gayatri Higher Secondary School and 44 students from H. L. Patel High School. Thus, there were 170 students selected from the urban area. 72 students from M. P. Pandya High School, 62 students from U. L. Patel High School and 56 students from Pratibha Vidyalaya were selected from rural area as sample of the research. The selection of the school was done with random sampling method. In the present research, true experimental design; random group pre-test post-test design was used as a research design of the research. The experimental force applied after the equalization of the group by the intelligence test given to them.

Research Tool -

In the present research, various tools were used. They were verbal non-verbal intelligence test of Desai, achievement test constructed by the researcher and creative ability test constructed by C. S. Raval.

Data Analysis

The data was analyzed after collecting the data with different tools. The data was analyzed using different statistical techniques like analysis of co-variance, analysis of variance, F-test, Bartlet Chi-square etc.

Findings –

The analysis of the data analysis showed that the concept attainment teaching model programme was proved better than the traditional method of teaching with the reference to teaching of science subject.
Study – 3

Researcher - K. K. Leuva

Subject - An Effectiveness of Competency based Inductive Thinking Model in science to Develop Reasoning ability of Primary School Students

Degree - Ph. D.

University - Gujarat University

Year - 2001

Objectives

1. To develop inductive thinking model of teaching in subject to science.

2. To try and the efficiency of inductive thinking model in terms of the achievement of the publish.

3. To develop the reasoning ability by using inductive thinking model.

4. To compare the use of inductive thinking model on the traditional method in developing intellectual discipline and reasoning ability of the students.

Population and Sampling

1. All the primary school of the Kambhat Taluka were selected as a population of the research
2. For the sample, Swaminarayana Primary School, Metupur Taluka; Khambhat was selected. From this school 119 students of Standard 7th were selected for their inclusion in the sample.

Research Resign –

1. Inductive thinking model (developed) Desai-Bhatt Group test of intelligence (adopted)

2. Dr. K. G. Desai’s S. E. S. (adapted)

3. Dr. C. C> Pathak Reasoning Ability Test (Adapted)

4. Criterion Test (developed) No. 1 to 10

5. Retention Test (developed)

6. Optioner for students (Constructed)

7. Experimental Method

Data Analysis –

T-Test was used to analyze the data of the research.

Findings

1. Inductive thinking model is found more effective compare to the traditional method of teaching.

2. Inductive thinking model has been found effective in increasing reasoning ability.

3. Inductive thinking model has been found quite feasible and useful for primary school children in science enchantment.

4. Inductive thinking model was found interesting for the pupils learning through it.
Study – 4

Researcher - Agraval Rajarani
Subject - A Study of Effect of Teaching Techniques on Conceptual Learning with the reference to Creativity
Degree - Ph. D.
University - Jamiya Miliya Ismaliya University, New Delhi
Year - 1997

In the present research, 96 students of 11th standard commerce stream were selected by the researcher and they were divided into three equal groups. The pre-test and post-test were given to both the students of experimental group and controlled group. The researcher has used Raven’s standard progressive matrices, reflective creativity test of information and tool based on the concept attainment model for the testing of variables of the study. The collected data were analyzed by the researcher using statistical techniques like mean, standard deviation, t-test and covariance. The findings of the research had shown that advance organizer teaching model and concept attainment teaching model were more effective than the traditional method of the teaching with the reference to learning of the concepts. Moreover, the group of high creativity holder students got high achievement.

Study – 5

Researcher - Mahajan Jyotsana
Subject - A Comparative Study of Concept Attainment Teaching Model and Advance Organizer Teaching Model on Teaching Abilities of Student Teachers of Junior College and Academic Achievement of Students of Different Schools
In the present study, the student teachers who were taking pre-service training were selected on the basis of high, medium and low norms assigned to them. There were 14 student teachers in each group. Thus, the total numbers of student teachers were 48 in the sample of the study. They were divided by the pre-test post-test experimental design. Teaching ability assessment scale and academic achievement test were used to measure the variables of the research. The collected data were analyzed by the statistical techniques like mean, standard deviation and analysis of variance. For the comparison between the means, chest test was used by the researcher. The findings of the research had shown that advance organizer teaching model was more effective than the traditional method of teaching and concept attainment teaching programme was more effective than the advance organizer teaching model.

Study – 6

Researcher - Vinaykumar

Subject - A Study of Effect of Various Teaching Models on Mathematical Concepts and Achievement of Attitude with the reference to Intelligence and Cognitive Behaviors

Degree - Ph. D.

University - Panjab University

Year - 1992
In the present study, 200 students of 11th standard were selected by the researcher randomly. The subjects of the research were divided as according to the experimental research design by the researcher. Different research tools like Raven’s progressive matrices, group figure of Watkinson, Tally’s attitude scale and academic achievement test was used to measure the variables of the study. The collected data had been analyzed by the statistical techniques of descriptive statistics and variance analysis. The findings had been carried from the statistical analysis by the researcher. In the present research, computer model was more effective than the concept attainment teaching model with the reference to construction of positive attitude. Moreover, positive interaction was noted between the intelligence and cognitive behaviors. Over all, the students who were holding high intellectuals were successful in getting high achievement with the help of the teaching models.

**Study – 7**

Researcher - Gupta Suman

Subject - A Study of Effectiveness of Ausubel’s Advance Organizer Model in Developing the Ability of Teaching of Teachers and Students and Study of Attitude towards the Teaching

Degree - Ph. D.

University - Agra University

Year - 1991

In the present study, 100 student teachers (teacher trainees) of Education College were selected as a sample of the research with purposive sampling method. The subjects of the research were divided into the experimental group and controlled group. The researcher had used various research tools like teaching attitude scale of S. P. Ahluwaliya, teaching ability scale constructed by N. C. E. R. T to measure the
variables of the study. The collected data were analyzed by the researcher using different statistical techniques like mean, standard deviation and t-test. The findings got from the analyses of the data suggested that there was efficient difference found between the mean score of experimental group and controlled group. It was in the favor of an experimental group. Advance organizer model was proved more effective in the class room practice of the teacher. The attitude of student teachers towards the teaching by advance organizer model was found positive.

**Study – 8**

**Researcher** - Jaimini Nirupama

**Subject** - A Study of Effect of Teaching Opinions on Conceptual Teaching Ability and Retention with the reference to Divergent Thinking

**Degree** - Ph. D.

**University** - Delhi University, Delhi

**Year** - 1991

In the present research, the students of 9th standard were selected as a sample of the research. The sample was selected by purposive sampling method. The students were divided into quasi experimental group, imbalance group and controlled group. The researcher had used research tool like Raven’s validated progressive Matrices, creative test constructed by Mahendi and test constructed by the researcher to measure the variables of the research. The data were collected by teaching the experimental group by the advance organizer model and concept attainment teaching model programme; and controlled group with traditional method of teaching. The achievement test was taken to measure the academic achievement of the students. The data were analyzed by analysis of co-variance and findings of the research were achieved. As according to the findings of the research, it was seen that advance
organizer teaching model was effective in the comprehension and application skills. Moreover, both advance organizer teaching model and concept attainment teaching model were equally important for the concept of the content. Advance organizer teaching model and concept attainment teaching model could create the positive effect for divergent thinking and concept attainment with the reference to low and high achievement holder students of the sample.

**Study- 9**

**Researcher** - Kaul Rajendar Pal  
**Subject** - A Comparative Study of Bruner’s Concept Attainment Teaching Model Programme and Ausubel’s Advance Organizer Teaching Model on Different Levels of Creativity of Students  
**Degree** - Ph. D.  
**University** - Panjab University  
**Year** - 1991

In the present research, 180 students of 11th standard were selected as a sample of the research with a purposive sampling method. The researcher had divided the subjects of the research into an experimental group and controlled group. The subjects of experimental group were taught by advance organizer teaching model and concept attainment teaching model programme by the researcher and the students of controlled group were taught by the traditional method of teaching. The researcher had used many research tools to measure the variables of the research. The researcher tools were criterion referenced test, creative test constructed by Torrance, general mental ability group test of Jalota and Tandon, social class scale. The collected data were analyzed using statistical techniques like analysis of variance and t-test. The findings of the research suggested that advance organizer teaching model and concept
attainment teaching model programme were more effective than the traditional method of teaching. advance organizer model was found more positive than concept attainment teaching model of Bruner. There was no effect of academic achievement and creativity on the concept attainment. There was no interaction seen between the teaching approaches, academic achievement, intelligence and creativity.

**Study -10**

Researcher - Manocha Vinita  

Subject - A Study of Development of Study Material of Biology of 8\textsuperscript{th} Standard Students Using Bruner’s Concept Attainment Teaching Model Programme  

Degree - Ph. D.  

University - Devi Ahalyabai University, Indore  

Year - 1991

In the present study, the students of 9\textsuperscript{th} standard were selected as a sample of the research. The students were divided into three groups respectively 32, 36 and 33 students. The subjects of the research were divided into experimental group and controlled group. The researcher had used various research tools to measure the variables of the research. The tools were achievement test, students wish scale and student opinion scale. The collected data were analyzed by using statistical techniques like mean, standard deviation, t-test and analysis of variance. The findings of the research had shown that the syntax of reception concept attainment model and syntax of selection concept attainment teaching model were more effective than the traditional method of teaching. Moreover, there was no significant difference seen between the syntax of reception concept attainment teaching model and syntax of selection concept attainment teaching model programme. The attitude of teachers was
seen positive towards both the syntax of reception teaching model and syntax of selection concept attainment teaching model by the measurement done on it.

**Study - 11**

Researcher - Salvi R. C.

Subject - A Study of Concept of 9th Standard English with the reference to Concept Attainment Teaching Model Programme

Degree - Ph. D.

University - Gujarat University

Year - 1991

In the present study, 270 male and female students of 9th standard were selected as a sample of the research. The students were divided into an experimental group and controlled group for the application of the experimental design. In the present research, the researcher had used various research tools to measure the variables of the research. The research tools were self-concept inventory constructed by J. H. Shah, verbal group intelligence test constructed by Desai-Bhatt, obligatory group test constructed by Sarnathsinh, English attitude scale of Upadhyay, model scale of Sansanwal and English concept attainment test constructed by the researcher. The collected data were analyzed by using statistical techniques like mean, standard deviation and one way and three way analysis of variance. The findings of the research had shown that retention, achievement and obligatory element were seen effective with the reference to English concept attainment teaching model programme. Moreover, there was significant difference seen of intelligence and self-concept on the concept attainment teaching model programme. The attitudes of the students were also seen positive towards the concept attainment teaching model programme.
Study – 12

Researcher - Shishta Rama

Subject - A Comparative Study of Effectiveness of Directed Discovery (Exploratory) Learning and Traditional Method of Teaching with the reference to Teaching of Concept of Science Subject

Degree - Ph. D.

University - J. M. I University

Year - 1990

In the present research, the students of 8th standard of Delhi Public School were selected as a sample of the research. The research method was experimental pre-test post-test experimental design. In the present research, the researcher had used various research tools for the research. The research tools were progressive matrices test and academic achievement test. The collected data were analyzed by using statistical techniques like mean, standard deviation, t-test and analysis of variance. The findings of the research had shown that there was significant difference noted because of techniques of the teaching and treatment to the experimental group. The subjects of the research had performed well on the academic achievement test.

Study - 13

Researcher - Singh Daljit K

Subject - An Effectiveness of Inquiry Training Teaching Model and Concept Attainment Teaching Model Programme in Comparison with Traditional Method of Teaching with the reference to Teaching of Physics
In the present study, 120 students of college level were selected as a sample of the study with random sampling method. They were divided into three groups. The researcher had selected and applied three groups pre-test post-test quasi experimental design as a research design of the study. The researcher had selected various research tools to measure the variables of the study. The researcher had used mental ability test constructed by Jalota, socio-economic measurement scale of Kulshreshta, academic achievement test constructed by the researcher and attitude scale. The collected data were analyzed by using statistical techniques like mean, standard deviation, t-test, correlation and analysis of variance. The findings of the researcher had shown that inquiry training teaching model concept attainment teaching model programme was more effective than the traditional method of teaching. the new and innovative method of the teaching was very important to the students and that were holding the positive attitude towards inquiry training teaching model and concept attainment teaching model programme. There was significant relationship found between academic achievement of the students and attitude towards the teaching method.

**Study – 14**

Researcher - Sud Kamala

Researcher - A Comparison of Various Models for Achievement of Language Concepts with the reference to Intelligence and Creativity

Degree - Ph. D.

University - Panjab University
In the present study, 288 students of 9th standard were selected by random sampling method as a sample of the study. The random experimental group was formatted for the application of the syntax of reception concept attainment teaching model programme. In the present research, the researcher had used various research tools. Research tools were general ability test constructed by Jalota, creativity test constructed by Torrance, closed figured group test constructed by Watkinson and achievement test constructed by the researcher. The collected data were analyzed by using statistical techniques like mean, mode, standard deviation, t-test and analysis of variance. The findings of the research showed that advance organizer teaching model was more effective than the concept attainment teaching model programme. Moreover, there was no interaction seen between the cognitive method, intelligent level and constructive approach.

**Study – 15**

**Researcher** - Bhaveja Bharti

**Subject** - An Effectiveness of Concept Attainment Teaching Programme and Inquiry Training Teaching Programme for Achievement of Convenient Opinion and aim of Science Subject Teaching

**Degree** - Ph. D.

**University** - Indian Education Review

**Year** - 1989

In the present research, 222 students of 9th standard of English medium schools were selected as a sample of the research of the study. The students were divided for the aim of pre-test post-test of the study. In the present study, the research
tools were used for the data collection to measure the variables of the research. Research tools of the study were pre-test, post-test and retention test. The collected data were analyzed by using statistical techniques like mean, standard deviation, t-test and analysis of variance. The findings of the research had shown that the effectiveness of both the model was very positive. The results of the study on the basis of certain method of teaching were very effective. The retention of the students was also very positive towards both the method of teaching.

**Study – 16**

**Researcher -** Pasi B. K. Singh S. C. and Sansanwal D. N.

(Independent Research)

**Subject -** A Study of Effectiveness of Strategies of Teaching Concepts with the reference to Teachers’ Training

**Degree -** Ph. D.

**Year -** 1989

In the present study, 45 teacher educators, 393 student teachers and 2500 students of different schools were selected as a sample of the study in the research. The subjects of the research were divided into three groups for the application of the experiment. The research tools were used to measure the variables of the study. The research tools were Theory check up of Bruce Joyce opinionnaire scale (Indore), teaching analysis guidance leaflet, curiosity test, pre-test and post-test. The collected data were analyzed by the statistical techniques of descriptive statistic and inferential statistics. The findings of the research had shown that motivation, understanding and curiosity ability of the teacher educators and students were significantly increased by the application of concept attainment teaching model programme and inquiry training teaching model. There was positive effect seen on the concept attainment of the teacher educators and student teachers.
Study – 17

Researcher - Pushpanjali Pani

Subject - A comparative Study of Personality Factors with the reference to Syntax of Reception and Syntax of Selection of Score Achieved by Concept Attainment Teaching Model Programme

Degree - Ph. D.

University – Devi Ahalyabai University, Indore

Year - 1988

In the present study, 30 students of 8th standard were selected as a sample of the research. The researcher had attempted to study the opinions of syntax of reception and syntax of selection for the application of concept attainment teaching model programme to measure the variables of the study. The collected data were analyzed by the statistical techniques co-relation. The findings were carried out from the statistical testing of the hypotheses. The findings of the research had shown that both the opinions had equally the same effect on the concept attainment teaching model programme.

Study – 18

Researcher - Agraval R and Mishra K. S.

(Independent Study)

Subject - A Study of Effectiveness of Concept Attainment Teaching Model Programme for Increasing the Achievement of Concepts in Science Subject

Degree - Ph. D.

Year - 1988

In the present study, 36 female students of standard 6th from the government primary school were selected as a sample of the research. The subjects of the research were divided into an experimental group and controlled group for the application of
the experimental design of controlled group pre-test post-test design. The researcher tools had been used to measure the variables of the research. The research tools of the study were pre-test and post-test constructed by the researcher. The collected data were analyzed by various descriptive statistical techniques. On the basis of the analysis of the data, it was found that syntax of reception concept attainment teaching model was proved to be effective for the achievement of the concept of science subjects with the reference to students of 6th standard. Thus, the concepts of the students had been grown with the reference to various concepts of the science subject of 6th standard.

**Study – 19**

Researcher - Avasthi V. Devi  
Subject - A Study of Development of Various Training Strategies of Science Subject by Concept Attainment Teaching Model Programme.  
Degree - Ph. D.  
University - Devi Ahalyabai University, Indore  
Year - 1986

In the present research, 22 student teachers of home science and science subject and 162 students 9th standard were selected as a sample of the research with purposive sampling technique. The students were divided into an experimental group and controlled group with the reference to pre-test post-test experimental design of the research. The research tools were used to measure the variables of the research. The research tools of the present research were check up of Bruce Theory, theory check up (Indore), interest scale, student response scale and achievement test based on concepts constructed by the researcher. The collected data were analyzed by various statistical techniques like F-test and t-test. The findings of the research had shown that various techniques of concept attainment teaching model were equally effective with the reference to academic achievement of the students. Moreover, with the reference to teaching ability score of the trainees, IDQP practice group was more effective than CDP practice group. Teaching ability was seen well in both the group.
2.4 Analysis of Review of Precede Researches

The researcher has read and reviewed the 19 researches related with the present research. The analysis of the related researches has been done here.

The researcher had to describe the information presented in the precede researches. Moreover, the researcher has also to analyze and review the precede research with the reference to the variables under the investigation. Only the description of the precede researches does not help the researcher to come on the knowledge gap and rationality of the present research. So, the researcher has attempted to review and analyze the precede researches.

The researcher has attempted to analyze and review the related research thesis of Ph. D. level. There were 19 researches of Ph. D. level were selected and included between the year 1989 to 2010.

From the precede researches, the researchers have been undertaken on different levels of the education. 1 research at primary school, 10 researches at secondary education level, 3 researches at higher secondary education level, 3 researches at college and education college level, 1 documentary research and 1 independent study.

With the reference to sampling of the 19 precede researches; the maximum number of the sample selected was 587 subjects and minimum numbers of the sample selected was 12 subjects of the researches.

The research tools were used to measure the variables of the research. The researchers had used different types of the research tools in the research. Some researchers had selected the tools constructed by other researchers and some researchers had constructed their own tools for the data collection. All the research tools were validated in the research. The variety of research tools were seen in the different researches. Research tools were Desai Bhatt group verbal intelligent test, socio-economic scale constructed by B. V. Patel, aptitude test constructed by Shree Pandit, Science higher ability scale constructed by Sansanval and Joshi, general creativity scale constructed by A. D. Shah, Science creativity test constructed by C. S. Raval, reasoning ability test constructed by Sarnath Singh, creative thinking test
constructed by Mahendi, Progressive Matrices constructed by Raven, Group figured test constructed by Watkinson, attitude scale constructed by Tally, creative test constructed by Torrance, general mental ability test constructed by Jalota and Tandon, social class scale constructed by Sharma, self-concept inventory constructed by J. H. Shah, obligatory group test constructed by Sarnath Singh, English attitude scale constructed by Upadhyay, response scale constructed by Pasi and Sansanval, social-economic scale constructed by Kulashreshta, theory check up constructed by Bruce Joyce, theory check up (Indore), response scale, teaching analysis guidance and curiosity test were used by different researchers.

In the preceding researches, t-test, f-test, analysis of variance, analysis of co-variance, mean, mode, standard deviation, co-relation, chi-square etc famous statistical techniques were used to analyze the data of the researches.

Analysis of Findings

In the present research, the effectiveness of the concept attainment teaching model has been studied with the reference to different variables of the research. In the present chapter of the research, various teaching models remained how much effective for the concept attainment has been studied here with the reference to review of related researches. So, the researcher had attempted to present the review of related literature keeping in mind the variables of the research and factors or characteristics of the researches. The researches have been taken from wide time spam to evaluate the effective of the researches. The analysis of the findings of various researches has been done as following.

Gupta Suman (1991), Jyotsana (1992), Pasi, Singh and Sansanval (Independent Research) (1989) and Daljit Singh (1990) have compared and studied the effectiveness of advance organizer teaching model programme and concept attainment teaching model programme for the concept attainment. Moreover, these researchers have selected the subjects of teacher education colleges to apply the programme of concept attainment. The findings of the research after the application of advance organizer teaching model programme and concept attainment teaching model programme, it was noted that there was positive relationship and change found between the experimental group and techniques applied. The teaching ability element became the effective. There was significant relationship found between the
intelligence and academic achievement of the students with the reference to positive attitude towards the physics. The effectiveness of advance organizer teaching model programme and concept attainment teaching model programme was the same.


Vashramabhai Rama (1990), Pushpanjali (1989), Agraval and Mishra (1992) studied the teaching model by their study on the students of 8th standard. The findings of their research had shown that the effective of various teaching model was positive on the learning of the students. Moreover, the strategies regarding the concentration were successful with the reference to one of the outcomes of the study. The effect of all the teaching model was better with the reference to low intelligent quotient and high intelligent quotient students. In the educational findings of Manocha Vinita (1991), there was no significant difference found between syntax of selection oriented concept attainment teaching model programme and syntax of reception oriented concept attainment teaching model programme with the reference to achievement score of the students studying in various standards.

In the research findings of Rajarani (1997), it was seen that the students who were holding high intelligent quotient got high achievement with the reference to academic achievement of the students while in the research findings of Vinay (1992), it was seen that there was positive relationship and interaction between intelligence and cognitive procedures.

Rajarani (1997), Kaul (1991) and Vinay (1992) etc have undertaken the research work on the students of 11th standard as a sample of their research.

Mahajan (1992), Gupta Suman (1991), Daljit (1990), Vinay (1992) and Upadhaya (1999) had undertaken the research work to study the relationship between the academic of achievement of students, attitude of student teachers (teacher trainees) and intelligent quotient. Thus, the objective of their research was almost the same. Moreover, Nirupama (1991), Sud (1999) Kaul (1991) and Upadhyay (1999)
had undertaken the research work to study the relationship between the intelligent quotient and creativity of the students. In the research findings of their research, it was seen that the attitude of experimental group was positive towards the conceptual techniques while there was significant relationship was seen between the intelligence and academic achievement of the students. Only in the research findings of Vinay (1992), it was noted that the field free subjects got high academic achievement and concept attainment than the decided field (field based). In the research findings of Upadhyay (1999), it was seen that there was increase noted in creativity and principle formation ability of the students of experimental group of the research.

Suman (1991), Bharti (1989), Kaul (1991), Avasthi (1988), Mahajan (1992), Vinita (1991) and Fafal (2002) have undertaken the research work keeping in mind academic achievement, academic ability, achievement test and creativity of the students to measure the concept attainment of the students. On the basis of their research findings, it can be seen that there was positive effect seen of concept attainment teaching model programme on academic ability, creativity, academic achievement, thinking techniques and concept attainment ability of the students. The positive result could be got by the focus on their thinking techniques. There was significant change could be seen after the application teaching techniques and treatment. By the application of academic achievement test, the academic achievement of the students of experimental group could be studied. In the research findings of Kaul (1991), it was seen that there was no positive interaction seen between teaching model and creativity of the students. In the research findings of Fafal (2003), it was seen that there was positive and significant effect seen of the concept attainment teaching model programme on the concept attainment of low and high intelligent quotient students.

The research work of Pasi, Singh and Sansanval (1989) was independent only with the reference to objectives of the study. The research work was done as according to intelligence level of the students, academic achievement of the students, attitude of the students and creativity of the students.

Positive effect was seen with the reference to inductive thinking model to teach the science subject in the research work of K. K. Leuva.
Daljit (1990), Vinay (1992), Salvi (1991), Sud (1990), Pasi, Singh and Sansanval (1989) and Upadhyay (1999) have undertaken the research work in concern with different variables like intelligence, attitude of achievement, achievement of reasoning, creativity and different types of abilities. It was noted in the findings of the research that there was significant development seen in the mental ability, academic achievement of intelligence and academic achievement of the students. In the educational implements of Vinay (1992), it was seen that the computer teaching model was more effective the concept attainment teaching model programme. Moreover, creativity has great influence on the retention score of the students with the reference to variables of the research.

Bhaveja (1989) and Jaimini (1991) have studied and measured thinking techniques with the reference to retention ability, mental abilities, and divergent thinking with different types of techniques. According to Pushpanjali (1988) and Salvi (1991), there is A to J factors or characteristics of the personality. Both the researchers have measured factors or characteristics achievement, intelligence and attitude with the reference to objective reasoning. So, it can be noted and said that there was the equivalent effect of concept attainment teaching model programme and syntax of selection and reception oriented strategies on the personality factors of the students.

On the basis of the review of precede researches, it can be known that there was positive attitude of teacher educators, students and researchers towards the various teaching models. So, there was positive change seen in the attitude of students towards the concept attainment and curiosity and response of the students.

On the basis of review of precede researches, it was noted that the teaching with concept attainment teaching model and other teaching models was significantly effective than the traditional method of teaching. The teacher educators showed the positive attitudes towards the teaching by the teaching models. There was difference seen in the academic achievement between various teaching models and especially between the concept attainment teaching model of Bruner and advance organizer teaching model of Ausubel. Thus, various teaching models and concept attainment teaching model have supported the learning of the concepts of the students studying at different level of the educational system. Moreover, the response of the students and
teachers was very positive towards the teaching and learning by the concept attainment teaching model programme.

**Scope of Research**

The present research has been undertaken in the year 2009-2010. The research scope of the present research on the basis of the review of precede related researches has been presented as under.

The precede researches has been undertaken taking the concept attainment teaching model programme in the subjects like science, mathematics, English, Social Science, Hindi, Sanskrit, Biology and Science and Technology. Thus, there is till now more scope and space to undertake the researches in the subjects like arithmetic, physics, chemistry, Gujarati etc with the reference to concept attainment teaching model.

The precede researches have been undertaken with the reference to different variables like gender, area, academic achievement, etc. moreover, there is till now scope or space to undertake the research with the reference to different variables like type of literary genres, attitude, aptitude, interest etc.

With the reference to sample and population of the study taken in the precede researches, there is scope to have more generalization of the sample to population.

Thus, the researcher felt the scope and space to undertake the further research with the reference to problems, variables, population and sample of the study according to best of the knowledge of the researcher. Moreover, the teaching model has been innovative field of the research where there is an extent need of the researches to be undertaken. So, the researcher has decided to undertake the research taking concept attainment teaching model from different models of teaching.

**Rationale of Present Study**

The present research is how different from the precede researches has been important to know both by the researcher and by the reader. What is the peculiarities or rationale of the research can be known by the review of the related literature and precede researches. The present study has been undertaken for the students to understand and memorize the concept of the lesson easily and for the long time
memory of the students. Here in the present research, the researcher has attempted to mingle the traditional method with the innovative method of teaching having new approaches to the methodology of the education.

On the basis of the review of precede researches, the peculiarities and rationale of the present research can be given as follow.

1. The precede researches in the present field have been undertaken mostly in the subjects like Mathematics, Science and Technology and English. The present research has been undertaken with the reference to certain grammatical concepts of the Gujarati subject which shows the peculiarity and rationale of the present research.

2. In the precede researches, the researchers have selected only one or two schools for the application of an experiment and data collection while in the present research, the researcher has selected four schools: two schools from rural area and two school from rural area. Thus, experimental group treatment was given into two schools and controlled group treatment was given into two schools. So, John Henry effect was attempted to decrease in the present research by the researcher to maintain the internal validity of the research with the reference to internal validity threat.

3. In the present research, power point presentation with the help of M. S. Office application has prepared by the researcher which differentiate the present research with the precede researches.

4. In the present research, the researcher has constructed the research tool in the form of achievement test which differentiate the present research with the precede researches.

5. In the present research, the researcher has taken the retention test of the students 15 days after the completion of the concept attainment teaching model programme. It was taken to note down the retention of the students after the certain time spam of the programme.

6. In the present research, schools of rural and urban area of Mehsana district of Gujarat state were selected as a sample of the research.

7. In the present research, the researcher has used t-test to compare the difference between the two variables, incidents or situation of the research which is according to the research peculiarity of the present research.
2.5 Conclusion

In the present chapter, the researcher has presented the theoretical foundation of the research to provide the sustainable base to the research. The researcher has presented, described and analyzed various aspects of the teaching model and gave deep presentation to the concept attainment teaching model. The researcher has tried to analyze different aspects of the steps of the teaching model to apply in the classroom practices attempted by the teacher. The researcher has also attempted to provide the entire foundational base important for the research.

The researcher has provided the review of precede researches to specify the research space and scope for the present research. The researcher has review the precede researches in the form of researcher, presentation of problem, degree, university, year, procedure of research work and important findings.

The researcher has also specifies the analysis of precede researches, the scope of the present research and peculiarities or rationale of the present research in comparison with the precede researches.

In the next chapter – 3, the research design has been presented and discussed by the researcher.
Reference


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