Chapter - III

Review of Related Literature
3.1 INTRODUCTION

The Model of Teaching is merely a tool for thinking about the teaching situation. It is a set of concepts carefully arranged to explain what teachers and students do in a classroom, how they interact, how they use instruction materials, how these activities affect and what students learn. These activities are considered in a sequence of the phases, ultimately leading to certain direct and indirect metacognitive abilities and attitudes among the learners. Teaching has been designed as “a plan or pattern that Teachers can use to design face to face teaching in classrooms or tutorial settings and to shape instructional materials including books, films, tapes and computer mediated programmes and curriculum. Each model guides us as we design instruction to help students achieve various objectives” (Joyce.B and Weil. M.1990). The models of teaching adopted by the researchers are those developed by Joyce. B and Weil. M. These models have been categorized into four families depending upon the nature of specific objectives to be achieved through these models. They are Information processing model, Social Interaction model, Personal model and Behavior modification model. The research in the area of models of teaching has mainly seemed to be concentrated upon the ‘Information processing models’. As the present study is aimed at investigating the ‘Effectiveness of Inductive Thinking Model of teaching, which is one of the models of Information processing family’, the related studies have been reviewed in light of it, in this chapter.

The overview of research studies in the areas of Inductive Thinking Model indicates clearly that only a few researchers have attempted to search the areas
going into its depth. But still a number of researchers pertaining to this field have been reviewed and their review along with trend observed is being presented in this chapter. This chapter has been subdivided into the following subtitles:

- Studies conducted abroad.
- Studies conducted India.
- Review of Research Trend.

3.2 STUDIES CONDUCTED ABROAD

Warburton, Mary Jean, (1995) conducted a study “Reasoned possibility: The role of Imaginative Thinking in Education with particular reference to the 15-18 year old learners”.

Imagination is recognized as distinct and unique feature of the human intellect, but its role in education remains rather unclear. This thesis examines the concept of imagination, and clarifies definitions of imaginations and imaginative thinking which have justifiable educational value, and from which practical applications might be drawn for classroom practice. From an examination of historical and current conceptions of imaginations, and analysis of terms, "imagination" is defined as a capacity to think of possibility, and "imaginative thinking" as the generation of refined, disciplined, and reasoned possibilities. It is claimed that “thinking imaginatively” plays a role in a wide range of intellectual activities including hypothesizing, interpreting, empathizing, judging, planning, creating, inferring and evaluating, that its is fundamental to most intelligent thought, and that has applicability to all curriculum areas at all levels throughout the school. It is asserted that the capacity and the disposition to think imaginatively are consistent with educational ideals of an independent and critical intellect, and that they should be explicitly and consciously developed in classrooms.

This thesis then describes the intellectual and imaginative characteristics and interests of adolescents. It discusses conditions, which might support students’
imaginative thinking, and a planning structure is proposed to guide teachers’
decisions about how learners’ imaginations might be engaged. The planning
structure is exemplified in brief sample lessons, and general guidelines about the
elements or topics, which might engage the intellectual and imaginative interests of
15-18 year old students are discussed. Implications for the nature and the structure
of the education and professional preparation of teachers are then explored.

student and instructor learning style preferences on academic achievement in
English”.

Research supports the belief that students, when taught in a manner that is
consonant with the ways they learn, score higher on tests and attitude than do those
taught in a manner dissonant with their learning style. The identification of
students’ learning styles and the subsequent correlation of them with instructors’
learning style have important implications for curriculum and achievement
outcomes. The purpose of this study was to determine the relationship between
matching/mismatching students’ and instructors’ learning styles and academic
achievement. The sample population comprised 318 students and 6 English
instructors from Stilwell High school. The Dunn, Dunn, & Price’s Learning Style
Inventory, measured student learning preference, the Productivity Environmental
Preference Survey measured the English instructors’ learning style preference, and
the Test of Achievement and Proficiency Survey (TAPS) measured academic
achievement in English. Two variables, intake and temperature, are found statically
significant. Results of the statistical analysis of the data from each of the 20 PEPS
learning style variables for each instructor with each of their students’ 20 LSI
learning style variables and the TAPS scores are presented.

A number of conclusions were drawn from the findings of this study. Several
implications include: If students were taught by instructors that matched their
preferred learning style, there may well be significant gains in academic achievement. Improved achievement could then lead to improved preparation for advanced study and higher retention and graduation rates. Such findings could be significant in improving other areas such as: (a) developmental courses, which are required for both high school and college students, (b) educational courses designed to prepare future teachers and administrators at the high school and college level, and (c) K-12 class scheduling which could be designed to maximize academic achievement.

**George, Glenda Poston (1996) investigated on “A comparison of academic achievement by Right Hemispheric mode processors versus left hemispheric mode processors in college preparatory chemistry classes”**.

The purpose of this study was to determine the relationship between hemispherity preference scores and achievement scores in college preparatory chemistry classes. The study included 16 sections of college preparatory chemistry taught by 5 teachers identified as left mode processors. Long-term achievement included all the graded activities for the first semester and was chosen as the dependent variable because it more accurately reflects the effects of hemispherity preference over scores from a single source. Students' hemispherity preference scores were determined using the Hemispheric Mode Indicator. The Pearson product-moment coefficient of correlation was used to determine correlations between hemispherity preference scores and achievement scores. The effect of GPA was partial out. Chi square tests were used to determine the existence of a statistical difference in dropout rates of global versus analytical processors in college preparatory chemistry classes.

Findings of the study indicated right mode preference students dropout of college preparatory chemistry classes at significantly higher rates and attain significantly lower achievement scores than left mode preference students. There
were significant differences in dropout rates by teachers and by school. These differences may be partially due to the culture of the school and community as much as to individual teacher differences. There were no significant differences in achievement or in dropout rates by gender or by race. It is concluded that hemispherity does significantly influence achievement in and dropout rates from college preparatory chemistry classes.

Cozza, Barbara (1996) studied on “Concept mapping through logs and metacognitive reflection during third graders’ scientific problem-solving”.

The purpose of the study was to investigate third graders’ metacognitive and science problem-solving processes for the purpose of formulating an instructional metacognitive model from the data. The researcher analyzed six third-grade students’ concept maps and science reflective logs in order to identify the learning processes of children engaged in science problem-solving tasks. The materials for data collection were composed of the pretest and posttest concept map, think-aloud protocols of problem solving, and reflective logs. The think aloud protocols measured the metacognitive processes during the problem-solving sessions. The concept maps and reflective logs explicated the metacognitive processes further.

Each participant took part in six problem-solving activities on the topic of electricity. The sessions were videotaped and Audiotaped, and analyzed further by the researcher. At the beginning of the unit, a pretest concept map was constructed by each learner, to tap into prior knowledge of the learners. At the end of the unit, a post test concept map was constructed by each learner. This posttest was done to evaluate the acquired knowledge and scientific conceptual change of each participant. Data analysis was descriptive and used a small heterogeneous population. The data analysis took place in two different phases. The model used Vygotsky’s theory of everyday concepts and scientific thinking. The use of the problem-solving sessions was essential to the study because metacognitive
behaviors were activated that ordinarily are not present in other classroom activities. All areas of cognitive and metacognitive behaviors were activated. Children explored, monitored their progress, and gave suggestions to others. Learners recorded ideas in logs and on maps, moving from everyday concepts to scientific thinking. Throughout the process, participants, self-monitored, and self-reflected.

Quintero, Ileana M. (1996) researched on “Understanding children’s conceptions of geographical space”.

The Development Geographers have argued that children develop their geographical ideas from concrete perceptions to more representational forms of understanding geographical space. Furthermore, the constructivist approach of Jean Piaget suggests that children will approach their geography lessons with some preconceived ideas, which form a basic structure of knowledge. This research addresses the question of how children come to know their geographical environment. More specifically, what do they already know from their experience and how do they develop their geographical knowledge in the classroom?

The research, consisting of observations, interviews, and geographical activities, was conducted among six third graders. The progress of the students was followed closely using the method of extended clinical interviews as developed by Eleaner Ducworth. This method analyzes the children’s own words and ideas, with special attention to unclear or contradictory expressions. In the classroom, the teacher taught the children about maps though very abstract representations. This research explored how the children developed their understanding of maps by means of special activities that allowed them to observe concrete places and make spatial connections in their own neighborhood. The children placed great importance upon recognizing and conceptually organizing their immediate surroundings, beginning with simple notions and progressing to ones that are more complex. Their first strategy was to identify landmarks without any particular
relationship among them. The second strategy was to locate places with respect to their current location. The third strategy was to select a landmark and then connect together a series of other landmarks along a particular route. This research suggests that teachers should foster exploration and inquiry about the neighbourhoods of their students and should be open to dialogue with them.

Cecire, Sarah Marie, (1997) investigated on “The effects of reciprocal questioning on concept development and verbal interaction patterns during an interactive videodisc lesson”.

This study investigated the effects of reciprocal questioning on the concept development and verbal interaction patterns among undergraduate teacher education students. Subjects worked in cooperative learning groups to complete an interactive videodisc lesson that illustrated how the language arts can be integrated in a second grade classroom. Research questions examined the effects of the presence or absence of reciprocal questioning on: 1) knowledge about integrating the language arts as exhibited on a concept map, 2) verbal interaction patterns, and 3) attitudes toward the use of the equipment, the study guide, or working in cooperative groups. The sample consisted of forty-two undergraduate teacher education majors enrolled in a Reading and Language Arts methods class at a small, private Midwestern college. The study employed a pretest-posttest control group design. One treatment group utilized the reciprocal questioning procedure as they completed the interactive videodisc lesson while the other group used a discussion format without prompts. Subjects drew a concept map both prior to and upon completion of the videotape lesson to demonstrate their understanding of integrated language arts. After the lesson, the subjects filled out a semantic differential scale indicating their attitudes toward working in cooperative groups, using the videodisc materials, and using the study guides.
There were no significant difference between groups on the pretest and posttest maps. There was a significant difference within the discussion group between pretest and posttest maps. The reciprocal questioning group asked significantly more procedurally related questions, clarification and confirmation questions, low level questions, higher level questions, and made more procedurally related questions, higher level questions, and made more procedurally related statements than the discussion group. The semantic differential indicated that the reciprocal questioning group found: 1) working in cooperative groups more confusing and less worthwhile, 2) the videodisc materials more confusing, and 3) the study guide more confusing and less friendly than the discussion group. Findings indicate that interactive video is effective in stimulating discussion, but students need support in order to effectively use a new strategy such as the reciprocal questioning procedure.

Costello, Rebecca Kasper, (1997) studied on "Classroom teachers' perceptions and the transfer of skills resulting from the participation in the instructional support team process: A phenomenological study".

Four classroom teachers describe their experience with the Instructional Support Team (IST) process in this phenomenological study. The IST process is a pre-referral system for special education and a collaborative teacher support system. The purpose of this study is to consider three questions. These questions involve: teachers' attitudes toward students with learning problem, transfer of instructional strategies into the classroom for non-referred students and the general perceptions held by regular education teachers about IST. The study could not find evidence that IST effects teacher's attitudes toward students with learning problems. The findings do indicate that these classroom teachers are increasing their teaching abilities to solve the learning problems of students and are applying this knowledge to the needs of all the children in the class. Finally, three of the four teachers in this study have positive perceptions about IST. The potential for IST to make a
difference in the structure of the regular classroom is apparent. Two of the teachers in the study report a significant change in the manner that they approach the instruction of students since participating in the IST process and in the IST training. Two factors that impact on the effectiveness of IST are: a) the quality of training in the IST components, and b) school administrators’ commitment to the process rather than compliance with the guidelines. The school administrators who are committed to IST ensure that teachers are trained and that the process is responsive to the needs of the students.

Schulte, Margaret Florence, (1997) investigated on “Ethical decision-making among health care executives: A study of the relationship between cognitive development, ethical reasoning skills and ethical behavior of health care executives”.

The study was undertaken to investigate the relationship between cognitive development, ethical reasoning skills and the ethical behavior of health care executives. Cognitive development was evidenced in one instance by the combination of age, education, work experience, and, in another, by gender. The correlation between ethical reasoning skills and years in management and years with the same employer was also studied. Lastly, the relationship between ethical reasoning skills and the decision making of the health care executive was studied.

The investigation did not find a clear relationship between cognitive development and ethical reasoning skills when analyzed in selected variables. However, a significant relationship was found between the Ethical reasoning of the subject population and the decision they made. Support was found for the hypotheses that health care executives tend to act consistently with the output of their ethical reasoning process. This work indicates that further research is needed to define the language of the study of the ethical decision making process. Particularly, deeper and more multi-dimensional research is needed of the factors
that influence how the executive determines the behavior in which to engage in the professional setting, and to find the ways to improve the ethical decisional capabilities of health care executives.

Roseman, John Monore (1998) studied on “Formal reasoning of fifth-year preservice teachers”.

**Purpose**

The purpose was to determine the status of fifth-year teacher credential candidates with respect to their level of formal reasoning; and to determine possible relationship between reasoning level and the following variables: Type of training institutions, subject mater, age, culture and gender. The research was descriptive. The sample was 206 fifth-year graduate students. The dependent variables was level of reasoning operationalized by the ‘Arlin’s test of formal reasoning’ which yields a total score and eight sub scores that represents scheme as associated with formal operations. The independent variables were age, gender, subjects and ethnic background.

Fifty four percentage of candidates demonstrated formal reasoning. Twenty one percentage scored Arlin’s transitional range. No significant difference between private and public institution students. Gender, subject area of study appears the most powerful influence on demonstration of formal reasoning capacity.

**The recommendations are:**

1. Re-design teacher preparation programme to require problems solving activities.
2. Develop a higher-level reasoning training programme for teacher education faculty.
3. Encourage professional development organizations to develop higher reasoning support materials for professional development.
Jinnah, Farida Dawoot (2000) in his research “Exploring the effects of three variations of the lecture method on concept achievement”.

This study is to compare the effect of lecture method, lecture method supplemented with multimedia and supplemented and multimedia with handouts on the mean concepts achievement of students and to discover the students perception and preferences for the above three methods. He took the convenience samples based on the willingness of the instructors to allow access to students during their schedule class hour. Analysis of variance revealed that there was only one that statistically difference between the means of the three groups. The posttest gains scores of group three was significantly greater than the group one.

Hsieh, Hsiu-chin (2003) investigated on “The effect of whole brain instructions on students’ achievement, learning, motivation and team work at a vocational high school in Taiwan”.

The students received a total of nine hours of instruction on three units. Instructions of treatment group incorporated the four MAT system approach (McCarthy, 1980). This is an eight step educational system devised by McCarthy that is constructed to address learners learning style and hemispheric preferences. Instructions utilizing a textbook approach for the control group followed the steps of the traditional textbook approach. Evidences from the study suggest the application of a whole brain instructional approach should be considered as there was a significant difference in achievement test application level as well as student motivation, clearly a change took place. Although a significant difference did not exist with student perception in ‘teamwork’ and ‘learning’, it is of interest to note that in both instances the mean score for the treatment group was higher than that of control group.
Ives, Deborah L. (2003) investigated on “The development of Seventh graders’ conceptual understanding of geometry and spatial visualizations abilities using mathematical representation with dynamic models”

The researcher explored on two issues: 1) The impact of an instructional unit in which area and perimeter were treated as dynamic geometric concepts on the spatial visualization abilities and representation abilities of students. 2) The thought process that students used to build mathematical representation using dynamic geometric models. The design was a quasi-experimental pretest-posttest, control group design. Using an analysis of covariance ANCOVA, there was a significant difference among population means at 0.05 level on one of the three test in favor of experimental treatment. The qualitative design explored the thought processes of six randomly selected students through ‘think-aloud protocols’. The results have implications for curriculum designs and practice using dynamic models in middle school mathematics in geometry and measurements.

Hues Mann, Kimberly, Elizabeth (2005) studied on “Cognition moderating the relation between aggression and school achievement in elementary school children”.

The results of the study indicated that both achievement and aggression have substantial continuity from year to year in elementary school children and more important that aggression is correlated with poor achievement with in each year and between years. Further, analysis revealed that the longitudinal relation between aggression and achievement is quite different for boys and girls. Further, it indicated that aggressive boys with good coping skills were less likely to do poorly a year later on academic testing, while aggressive boys who reported feelings of victimization were at risk of doing worse a year later. This would suggest that points of intervention for school psychologists would be in helping students to learn better coping skills and assessing for feelings of victimization.
Yuruk Nejla (2005) researched on “An analysis of the nature of meta-conceptual processes and the effectiveness of meta-conceptual teaching practices on students’ conceptual understanding of force and motion”.

A multi-method research design that incorporated experimental and case study designs was employed. While the experimental groups meta-conceptual teaching interventions, in the control group, the same science content was taught by traditional method. The research was conducted in two classrooms of a physics teacher. The samples were 45 grade eleven and grade 12 high school students. Data from a variety of sources were collected to access students’ conceptual understanding of force and motion and their meta-conceptual processes. In order to assess students’ conceptual understanding of force and motions, Force Concepts Inventory (FCI) was administered to both groups. The data regarding students’ meta-conceptual processes were derived from students’ journals, audio-recording of group based activities, video-recording of classroom discussions and interviews conducted following the instructional interventions.


Sixth and seventh grade students were taken as sample and were administered activities 4 and 5 of Torrance Tests of Creative Thinking, verbal form b and a friendship, sensitivity and divergent attitude survey developed by the researcher. The Pearson correlation technique was used to analyze the data of above activities. The 0.05 level of significant set, and t-test was used to determined gender difference. There was significant relationship between creativity test scores and friendship attitude and there was significant between creativity and sensitivity levels. A significant relationship was found to exist between creativity test scores and perceptions of divergent thinking among gifted students. No overall significant
gender differences were found regarding friendship, sensitivity and divergent thinking.

3.3 STUDIES CONDUCTED IN INDIA

Most of the researchers conducted in the area of Models of teaching have shown that the investigators tried to find the effectiveness of any of the Models in a real situation. They tried to find out the teaching patterns, which are conduct for developing cognitive and affective behavior. It is generally agreed that the objectives to be achieved through the teaching learning process are multidimensional in nature. It is also felt that a particular method of technique may not be appropriate for achieving the multidimensional objectives. This led researchers to expose to use of various method and technique in an integrated fashion, which resulted in the development of new instructional strategies. The greatest emphasis was on development of the personality of the child. In other words, cognitive, affective and psychomotor behavior must be developed in a balanced and integrated fashion. 'Models of teaching' have great potentiality for achieving this goal of education. Joyce and Weil (1980) developed more than 20 models which were grouped on the basis of their chief emphasis and the way they approached educational goals and means. Relating to models of teaching the first study was completed by 'chitriv' in 1983 at Nagpur. Crisman (1984), Farks (1985), Ivins (1985), Das (1986), Chaudhary (1988), Rai (1989) are few who have based their work on Bruner's 'concept attainment model'. They have studied student's outcome in terms of learning achievement. Principle investigation in these cases was to study the effect of models of teaching on conceptual learning, concept attainment and concept identification. Most of these researches have emphasized purposive random, stratified random sampling.

Rajoriya (1986) compared Advance Organiser Model with traditional methods for teaching class viii science with sample belonging to different residential background. Lewis (1987) studied this model to compare the readability of simplified science material along with science achievement. Worthen (1968) hypothesized that Inductive Thinking Model or inductive processes would increase the retention of information and confirmed the hypothesis in the same direction. Feeblay (1972) reviewed studies based on Taba’s Inductive Thinking Model of teaching and indicated that inductive methods generally lived up to the expectations (cited in Joyce and Showers 1988).

**Shingaki and Brown (1980) conducted an investigation to determine utility of models of teaching experience, conceptual level, creativity and intelligence.**

Study was based on models of teaching of Bruner, Taba, Asubel, Harway and Schrader from information processing family. Several corrections were found to be significant. The high positive inter correlation between the sub scores of creativity measures was also found. Not much work has been reported in inquiry training model. The studies in this model of teaching have been reviewed by Strike (1970), and Mayer (1975). Lima and Suganithi (1986) tried to identify teaching skills in relation to inquiry training model. These studies involved parametric as well as non parametric techniques using ‘t’ test, ANOVA, graphical methods etc.

**Battacharya (1984) attempted to study “Concept Attainment Model and Inductive Thinking Model for teaching of geography in terms of institutional resources”**.

He also found that models of teaching approach resulted in better achievement in geography even in average and low resource status institutions. The study was conducted on class viii students with parallel group design of 2x2x2 factorial groups using ‘T’ test, ‘F’ test and three-way analysis of variance.
‘Institutional Resource status Index’, Socio economic status index, ‘Entering behavior test’ in geography was used to collect data.

**Passi B.K., Singh and Sansanwal D.N. (1985) studied on “Models of Teaching – Developing Training Strategy”**.

The objectives were to study the effectiveness of Training in Concept Attainment Model in terms of understanding: 1) Reaction towards the model, 2) To study the effectiveness of Training to the Inquiry Training Model in terms of understanding of reaction towards the model, 3) To study the resultant willingness of Teacher Educators to implement the models in Teacher Education Programmes, 4) To develop a strategy of Teaching on models of Teaching. A purposive sample of 45 teacher educators was taken as subjects of the study. The treatment comprised orientation in the Theory of Models, a lesson plan guide, and a teacher analysis guide through lecturers and discussions. The findings were: 1) Training in CAM did bring significant favorable change in Teacher Educators’ reaction towards CAM, 2) The level of understanding of CAM did not influence Teacher Educators’ reaction towards CAM, 3) The training strategy comprising theoretical discussion, demonstrations, and peer practices plus feedback was found effective in terms of developing understanding, favorable reaction and willingness to implement models of Teaching in a teacher training programme.

**Baveja (1988) studied on relative effectiveness of Concept attainment model, inductive thinking model over traditional method of teaching through the teaching of Biology of Students of Standard XI.**

The first study on ‘Inductive Thinking Model’ was done by “Baveja” in 1988. She found that concept attainment model and Inductive Thinking Model were superior to traditional methods in terms of Concept Attainment and retention through Biology teaching to class xi students. She used criterion test in Biology, intelligence test and interview schedule to collect her data and non-parametric
techniques, like chi-square for analysis. She further found that Inductive Thinking Model developed mental ability of the learners and brings change in their thinking strategy towards the most effective one.

Pandey. S.N. (1986) reported on “Effectiveness of Advance Organiser Model’ and Inquiry Training Model for teaching Social Science to class VIII Students”.

The objectives were to compare the effect of A.O.M and I.T.M and conventional teaching in terms of pupil’s achievement is Social studies.

The major findings are: 1) The treatment had different effects on pupil’s achievement, 2) The difference in means of gain scores in achievement due to A.O.M and conventional Teaching was significant at 0.05 level, 3) Difference due to I.T.M and conventional teaching was significant at 0.01 level and there was no significant difference due to A.O.M, I.T.M and conventional teaching.

Sushma (1987) investigated “the effectiveness of concept attainment and biological science inquiry model for teaching biological science to students of Standard VIII”.

The concept attainment model was more effective than the biological inquiry model. The biological science inquiry training model was found be more effective than the conventional teaching. The concept attainment model changed the attitude more favorably than biological science inquiry model.

Gaythri (1989) conducted a study on “The effectiveness of Jerry Lucas’ memory model in learning botany”.

The major objectives is to identify the impact of memory model among students of plus one at higher secondary level in learning and Taxonomy it was an experimental study with sample of sixty students of higher secondary school with the major hypotheses that training through the memory model positively influences retention in by plus one higher secondary school. The findings of the study was
training through memory model positively influences in training of botany. The results were that the memory model was more effective in Indian classrooms over the conventionally memory training techniques.

Bose (1994) investigated in the “Effectiveness of Hilda Taba’s Inductive Thinking Model in learning Botany in higher secondary schools”.

The Major objectives of the study was to find out the effectiveness of Hilda Taba’s Inductive Thinking Model. He found that this Model improves the achievement of learners in botany and is more effective than the traditional method.

Gupta (1988) compared “Concept Attainment Model’ and ‘Inductive Thinking Model’ on the criteria of achievement self concept and attitude towards science”

The researcher found that self concept remained unaffected by either of the treatments. ‘Inductive Thinking Model’ was found superior to concept attainment model in terms of achievement and attitude towards science facilitated learning.

Singh. S.N. in 1994 studied on ‘comparison of Inductive Thinking Model with traditional method of teaching Economics to class xi students in terms of selected cognitive variables’.

The major objectives of the study were to find out the effectiveness of Inductive Thinking Model in terms of achievement of economics as well as reactions of students towards Inductive Thinking Model and to compare Inductive Thinking Model with traditional method in terms of achievement of economics, Inductive reasoning, concept formation, higher mental ability in economics, Economic understanding, scientific attitude and creativity separately by considering intelligence as a covariate. The statistical technique used for analyzing the data were mean, S.D, co-efficient of variance, chi-square, ANCOVA, multiple regression Analysis, and correlated ‘t’ test. He found that Inductive Thinking Model was found be more effective compared to traditional method in terms of
achievement in economics, and reaction towards Inductive Thinking Model. The intelligence was found to influence significantly the students’ achievement in economics, Inductive reasoning, Concept Formation, higher mental ability in economics, economic understanding and scientific attitude but not creativity of the students. Inductive Thinking Model was found to be suitable for high intelligent students although low intelligent students could also be benefited.

Naresh Kumar Gupta (1995) studies on “Relative effectiveness of some information processing models of teaching on mental processes and attitudes towards science”.

His study was conducted to find out the effectiveness of teaching through concept attainment model, Inductive Thinking Model, and Inquiry training model on development of pupil’s mental processes, such as:

1. Development of reasoning ability
2. Forstering scientific creativity
3. Forstering inquisitiveness ability
4. Forstering ability to see the problems
5. Growth in persistency
6. Development of favorable attitude of the students towards science.

He found that concept attainment model was found effective in developing mental processes but it could not foster a few others like inquisitiveness, persistency and problems awareness ability among students. Inductive Thinking Model was found to promote some mental processes like reasoning ability, scientific creativity and problem awareness ability among students. However, it could not bring development worth the name in inquisitiveness or persistency ability among them. It was also found that Inductive Thinking Model was helpful in developing favorable attitude of students towards science. Further, it was found that Inductive
Thinking Model as well as Inquiry training model. Promoted problem awareness ability among students more than concept attainment model.

3.4 REVIEW OF RESEARCH TREND

The review of literature in this chapter establishes that many of these studies have been done on concept development on various subjects, Brain hemispherity, Types of thinking etc. among the students from college level to elementary level.

More similarities among Indian studies can be found in regard to objectives, sample, hypotheses, sampling technique, data collection, analysis of data and inferences drawn. Most of the investigators followed experimental design in this regard. However some studies have not been specified duration of treatment, practice, feedback etc. Yet, the researcher inferred the following points from the related literature.

1. It is evident from these studies that almost all models of teaching are found to be superior in some aspects than traditional method of teaching. Further they could prove the effect of models of teaching on scientific attitude, creativity, divergent thinking, formal reasoning, learning styles, Brain hemisperity, metacognition etc.

2. It is also found that none of these studies have attempted for investigate criteria variables like concept formation, Logical reasoning, Styles of thinking, Awareness to Nature of Knowledge, sensitivity to language etc.

3. It is difficult to determine which model is appropriate for teaching different subjects at various levels. Because no two studies are alike in following the same procedure. Further, most of the studies tried to compare any two models of teaching to teach any of the subjects.

4. Hilda Taba was proponent for propagating the term ‘Teaching Strategy’ through her Inductive Thinking Model. Hence a study is needed in present days, to improve the ability to handle information among students and teachers.
5. No study is found to teach physical geography at Upper Primary level through Inductive Thinking Model. Hence, the researcher has tried to find her study as an appropriate one to investigate on effect of Inductive Thinking Model on forming geographical concepts, logical reasoning, styles of thinking through the teaching of physical geography at upper primary level.

3.5 CONCLUSION

The review of Literature, in this chapter, clearly indicates that effect of Inductive Thinking Model in terms of cognitive processes is the need of the hour. The present researcher, therefore undertaken the problem for assessing the effects of Inductive Thinking Model on concept formation, logical reasoning, styles of thinking through the teaching of physical geography at upper primary level.

Thus, this chapter provides a framework of literature to form an appropriate Research procedures, which will be dealt in the next chapter.