

***REVIEW OF RELATED
LITERATURES***

CHAPTER – II

REVIEW OF RELATED RESEARCH LITERATURE

2.1 INTRODUCTION :

The essential aspect of a research project is the review of related literature before taking up the research project. It helps the researcher in many ways in conducting study with insight. Review of related literature is must for only research, as it helps like a map by which a scholar can identify the track or route to the destination.

Review helps the researcher to delimit and define problem to avoiding duplicating well established finding. It gives the researcher an insight in to the problem and methodology. There fore the purpose of reviewing of related literature is to build up the context and back ground of hypothesis.

In the first chapter a detailed discussion about the process skill and laboratory approach has been presented. This discussion hinted at the effectiveness of laboratory approach. Need of laboratory approach to develop process skills and achievement which is the focal point of this study has been argued for. A comprehensive review of research literature was undertaken to explore the effectiveness of theoretical framework of the research.

As in the present subject area of Biological science, following are the few studies carried out :-

- **RAMESH: (1984)-** Development of objective based science curriculum and to study its efficacy in the acquisition of process skills among high school science students. Ph.D. Edu. Pan U.

OBJECTIVES:

1. Whether the objective based curriculum was superior to the convectional curriculum of science at high school level in terms of achievement
2. Whether intelligence contributed to achievement.
3. The objective based curriculum was superior to the conventional curriculum of science at high school level in term of acquisition of process skills.
4. Whether there was a significant effect of intelligence on achievement and acquisition of process skills.

FINDINGS :

1. The objective based curriculum and conventional curriculum in chemistry were equally effective so far as' achievement in science was concerned.
2. The high ability group performed better than the average and low ability group.
3. The above average intelligence group had higher mean scores on the process skill test than average and better average and below average intelligence group.



- **CHHIKARA M.S. (1985)** : An investigation in to relationship of reasoning abilities with achievement of concepts in life sciences
Ph.D. Edu. J.M.I.

Sample of 370 Students were taken. The tool used in the study were battery of concept achievement test and a battery of reasoning ability.

FINDING OF THE STUDY.

1. A slight modification was made in the hierarchy levels of organization levels of biological phenomena when concept in secondary school life sciences were identified and the concept achievement test was found reliable and valid. All these supported the first hypothesis i.e. it was feasible to identify the hierarchy of concepts in to seven levels of organization of biological phenomena and to measure achievement of these concepts through objective tests.
2. The result of factor analysis of reasoning ability supported that it was possible to identify reasoning abilities that the secondary school students possessed with the help of cognition and convert production of semantic classes relations and implications tests.
3. Indian children did not differentiates as clearly as inferred according to the structure of intellect. theory .

4. A definite positive relationship between conceptual achievement in life sciences and reasoning ability was found.
5. The fourth hypothesis i-e the possibility to predict conceptual achievement in life science on the basis of the reasoning ability test was supported to a large extent by the results of regression analysis .

➤ **DIGHAL K.C. (1985)** – Improved method of teaching Biological science in schools of Tripura and west Bangal, Ph.D, Edu cal V

The objectives of the study were

1. To explore how to make life science teaching lively realistic and interesting to the students.
2. To attempt scientifically the improvement of the present method.
3. To remove drudgery in the teaching of biological science.
4. To prepare a better method which was an extraction from the existing methods and more scientific and refined.

The Findings of the study were.

1. There was a significant difference in the effectiveness of self activity based method, life science club method and audio visual method.
2. Two or three methods when combined formed an improved one on the basis of their similar nature.
3. Preparation of charts, model, collection of specimen through local excursion organization of science exhibitions by the students, arrangement of film shows by the schools and

orientation programmes for life science teachers brought better results.

- **GANGOLI S.G. AND GURUMURTY: (1985)**- A Comparative study of the effectiveness of open ended approach of doing physics experiments versus traditional approach at higher secondary stage. RCE, Mysore (NCERT)

OBJECTIVE:

1. To compare the knowledge and understanding of concept principles facts and ability to apply knowledge and understanding developed by students conducting physics practical by the guided open ended approach with those by the traditional approach.
2. To compare the skill in observation, classifying drawing tabulating, computing etc. developed by the students following the above two approaches.

FINDINGS:

1. The students of guided open ended group showed better performance in achievement test and in the skill test than those of traditional laboratory groups.
 2. Students of the experimental group were found to be superior to students of the control group.
- **KHALWANIA: N. S (1986)** – Effectiveness of concept based science curriculum in developing cognitive structure and

acquisition of process skills among high school students Ph.D.
Edu. Pan U.

OBJECTIVES:

1. To study its efficiency as compared to a conventional curriculum in terms of development of cognitive structure and acquisition of process skills.
2. To study the interaction of the curriculum with the level of intelligence.
3. To study the effect of socio economic status of the learner on the development of cognitive structures .

FINDINGS:

1. The concept based curriculum was more effective in term of acquisition of process skill.
 2. The level of intelligence did not effect means scores on the process skill test.
 3. The high socio economic status group and low socio economic group did equally well in the acquisition of process skill in science.
6. **MENON S.B. (1986)**- The study of a system of science education in the perspective of the process of science inquiry Ph.D. Edu.

OBJECTIVES:

1. To arrive at the norms of development of the process skill of scientific inquiry among student of secondary and higher secondary classes of the English medium school.
2. To study the overall impact of the curriculum system on the development of the process skill of scientific inquiry.
3. To examine the science text books for standard VII to XII for their suitability to develop skills of scientific inquiry .

FINDINGS:

1. The overall proficiency in the process skills steadily increased as students went up from standard to standard.
2. There was a sudden transition in the overall development of process skill between standard X and XII.
3. The skill of identifying variables had been developed by the time students reached standard VIII.
4. The skill of interpreting observational data was developed around 15 years of age.
5. The skill of controlling variables did not develop among the students in the system at 17 years of age.
6. Children of the CBSE affiliated school were found better in the development of the process skills.

➤ **Sushma (1987)** : Effectiveness of concept attainment and Biology science Inquiry models for teaching Biological science to class VIII students Ph.D. Edu. B.H.U.

The Objectives of inquiry were :-

1. To study the effects of concept attainment model based teaching on pupil achievement.
2. To study the effect of Biological science inquiry model based teaching on pupils achievement .
3. To compare the effectiveness of concept attainment model based teaching and the traditional teaching approach on pupils achievements.
4. To study the effect of concept attainment model teaching on pupils attitude towards biological science.

Major finding of the study were:-

1. The CAM and Biological science inquiry model were found effective at 0.01 level when the means of pretest and post test scores were compared by applying t-test.
 2. The concept attainment model was found more effective than the biological science inquiry model.
 3. The Biological science Inquiry model was found more effective than conventional teaching.
 4. When the means of pretest and post test attitude scores were compared, both the methods had significant effects.
- **Agnihotri S.K. (1987)** – Study of influence of some of the methods of teaching physics on the achievement in physics of class x students in Delhi, Phd Edu.

The objectives of the study was to test the following hypothesis.

1. There is no significant difference between the mean achievement in physics of different groups of students taught by different method Viz. lecture cum demonstration method, laboratory method, programmed instruction and assignment cum discussion method.
2. The interaction between teaching methods and different schools is not significant .
3. The interaction between teaching methods and different levels of students is not significant .

Finding of the study were :-

1. The traditional method or the lecture cum demonstration method followed by the verification type of laboratory work was more effective than the assignment cum discussion method out this method was less effective than the assignment cum discussion method but this method was less effective than the programmed.
2. With respect of achievement instruction in physics programmed for the teaching of physics was less effective than the method of teaching physics systematically designed by the investigator but this method was found to be more effective than the assignment cum discussion method and the traditional method or the lecture demonstration method followed by the verification type of laboratory work.
3. Out of four methods the method of teaching physics systematically designed by the investigator was found to be most effective with respect to achievement in physics .

4. The relative effectiveness of all the 4 methods with respect to achievement in physics was the same not only for all the schools but also for all the levels of students.
 5. If all four methods of teaching physics it was found that the method of teaching physics systematically designed was first programmed instruction modified by the investigator for the teaching of physics was the second of traditional method, lecture cum demonstration was third and assignment cum discussion method was the fourth.
- **Radhmonyamma 1988**:- Evolving instructional techniques appropriate to the development of various scientific skills among secondary school pupils in Kerala Ph. D, Edu. Univ. of Kerala.

OBJECTIVES:

1. To find out the methods adopted for teaching science in secondary schools.
2. To list the scientific skills that can be developed through science teaching.
3. To construct an achievement test based on scientific skills.
4. To find out general nature of attainment of people in scientific skills.
5. To test effectiveness of the new method.

Methodology : - The sample comprised 50 pupils selected from an Urban, government. boys and rural private girls school. Pupils

were selected through stratified random sampling techniques. Tools were observation of classes, an opinionnaire and an achievement test in science prepared by the investigator.

Major Findings :

1. The study found that whereas the achievement in science as well as acquisition of science skill was low. It was observed that the newly evolved method for teaching of scientific skills through tested lesson plans was more effective than the traditional method.
 2. The correlations between marks scored in different science subjects were higher for the experimental group as compared to the control group.
- **Kayathri Alias Usha S. (1989):** An investigation into the effectiveness of Jerry Luca's memory model in learning botany
M.Phil, Edu. Alagappa Univ.

OBJECTIVES:

1. To develop and test the effectiveness of memory training model in studying botany along the lines of Jerry luca's memory model.
2. To assess the effectiveness of this memory training model in improving the achievement of students in botany and also the effectiveness of luca's memory training model over the traditional memory training techniques.

Methodology :- The sample of the study comprised 60 students both boys and girls who were assigned experimental and control group. The data were analysed using statistical techniques such as mean, SD and t- test..

Major Findings:-

1. It was found that training through Jerry Lucas memory model positively influenced retention of what was learnt in cytology and taxonomy in botany.
 2. Students who had been trained through Jerry Luca's memory training model differed significantly in their achievement in botany from those students who had been trained through the traditional memory training techniques.
- **Shista Rama (1990) :-** An investigation in to the effectiveness of guided discovery learning vis a vis the conventional approach to the teaching of scientific concepts in life sciences.

OBJECTIVES:-

1. To identify through the analysis of subject matter, conceptual hierarchies of the concepts of leaf photosynthesis, food chain purification of air, balance of nature and to identify behaviour specifications of each objectives for teaching each concept.
2. To develop a programme which would help to encourage curiosity and spirit of inquiry amongst the students about the world in which they live.

3. To compare the scholastic performance of concept achievement of pupils who undergo a teaching programme based on guided approach of teaching scientific concepts in biology with pupils who undergo the conventional type of programme.

Major Findings :

1. It was observed that the performance of the experimental group was superior to that of the control group on the concept achievement test in Photosynthesis.
2. It appeared that the treatment of teaching concepts of photosynthesis with blended strategies and different modes of teaching had brought significant difference in the achievement of biological concepts.

➤ Goel V.P. Agbebi E.A. (1990) - Learning physics through lecture demonstration method (LDM) and individualised instruction method Indian edu. Review Vol 25 (4) 87- 89)

OBJECTIVES:

To compare the relative effectiveness of the individualised method and lecture demonstration method on acquisition of psychomotor and related cognitive skills among female pupils.

Methodology : - Forty four female Nigerian student studying in class V whose age ranged form 15 years constituted the sample of the study. The data were collected with the help of earlier validated tool developed by Goel an Indian student .

Major Findings:-

1. A significant difference was observed between the groups which followed the individual laboratory method and the lecture demonstration method.
2. The group of students following the individual laboratory method achieved significantly better on the psychomotor skills than did the lecture demonstration group.
3. Students who followed the lecture demonstration method achieved at a higher level related cognitive skill than did the group of students which followed the individual laboratory method.

2.3 REVIEW SUMMARY:

The researcher has presented a brief review of related studies done in the field of science. After reviewing above literature researcher finally come across the conclusion that a lot of researches related to the physics, chemistry in term of achievement and some are related to biology to see the effectiveness of particular teaching method on achievement.

Researcher could not come across in her review of related literature about studies on the development of process skills in relation to employment of various method of teaching learning. There fore the review suggest to conduct a study on relationship between methods of teaching and the development of process skills among the students.