



**CHAPTER-II**  
**REVIEW OF THE**  
**RELATED**  
**LITERATURE**

# CHAPTER-II

## REVIEW OF THE RELATED LITERATURE

### 2.0.0 INTRODUCTION

This chapter deals with review of related literature which directly or indirectly related to the study proposed by the researcher. A careful review of the research Journals, books, dissertation, thesis and other resourceful information on the problem to be investigated is one of the important steps in planning of any research so that researcher can find the direction for pre-requisite to plan, study, avoid duplication, sources of problem.

### 2.1.0 REVIEW OF THE RELATED LITERATURE

**Zubair, Gayathri (2012)** conducted *a comparative study on constructivist model and Behaviourist model of teaching in achievement of mathematics*. The objective of the study was 1) to find out the effectiveness of constructivist model of teaching 2) To compare the effectiveness of constructivist model of teaching and behaviourist model of teaching. The achievement test was used as the tool as assessment. The statistical techniques used were arithmetic mean, standard deviation and t-test. The findings of the study were: 1) Constructivist model of teaching is more effective than behaviourist model of teaching. 2) Sex has no effect on the achievement of the students' in constructivist and also in behaviourist model of teaching. 3) Constructivist model of teaching is more effective than behaviourist model of teaching in the achievement of boys and girls.

**Kumar (2010)** undertook study on *Effect of 5-E learning strategy on fifth grade students' on mathematics achievement*. The objectives of the study were 1) to

study the effect of 5-E learning cycle on mathematics achievement of fifth grade student's. The selection of the sample was done through purposive sampling method. The experiment was set up according to the non-randomized pre-test post-test quasi-experimental control group design. Data analysis was carried out using t-test and Analysis of Co-variance. The result showed that students' in the constructivist classroom followed by 5-E learning cycle improved their learning achievement in mathematics more than that of students' in the traditional expository teaching followed by direct instruction. It also finds that learning mathematics through 5-E cycle in the constructivist classroom enhanced particular understanding, application and in general knowledge, skill as compare to traditional way of teaching.

**Kacar (2013)** studied *the effect of 5-E learning cycle model in teaching trigonometry on student's' academic achievement*. The design of this experimental research is chosen as randomized pre-test-post-test control group design. For the analysis of data obtained in research, SPSS 15.0 (Statistical Package for the Social Sciences) package program is used. All the analysis is made in computer and statistical analysis methods. The major findings of the study were there is a statistically significant difference between experimental and control group student's.

**Vasan & Gafoor (2014)** study entitled as *Effect of Constructivist Class Room Environment on Achievement of Students' in Mathematics at Primary School Level*. The main objective was to study the effect of constructivist class room environment on Achievement of students' in Mathematics. Experimental method was used in this study with Pre-test, Post-test equivalent group design. Here the researcher adopt the co-operative learning strategy for create a constructivist class room environment to the experimental group and the control group was taught the same topic by traditional method. The treatment period for both groups was about two weeks. For the analysis of the collected data, mean, standard deviation and 't - test were used. Result revealed that there was a significantly positive effect of

constructivist class room environment on achievement of students' and the effect of constructivist class room environment on achievement of boys was not significantly differ from girls.

**Hiccan (2008)** examined the *influence of 5-E learning cycle on 7th grade students' achievements in linear equation with one variable*. It was revealed that 5-E learning cycle had a statistically significant effect on conceptual and procedural knowledge.

**Baser (2008)** aimed to *compare the application of teaching activities of 5-E model based on constructivist approach with traditional teaching methods for teaching of cylinder, empty circle and filled circle topics in primary education seventh grade mathematics lesson*. Results showed that the students' who studied with the activities of 5-E learning cycle learnt better than the students' who studied with traditional teaching methods.

**Cakiroglu (2006)** investigated *effectiveness of 5-E learning cycle on 8th grade students' achievement on photosynthesis and respiration in plants*. The experimental group students' (n=33) learned the lesson by 5-E learning cycle instruction, control group students' (n=34) learned the lesson by traditional instruction. The significant difference was found between the experimental and control groups in favour of 5-E learning cycle instruction.

**Lord (1999)** *compared 5-E learning cycle instruction with the traditional instruction* in environmental science course by choosing two control and two experimental groups which consisted of college undergraduates. As a result, it was seen that experimental group's approximate test scores were higher than the control group. In the questions about remembering the knowledge, both groups got nearly the same scores. But in the questions about interpreting, analyzing and thinking critically, the control group students' showed lower performances.

**Cardak, Dikmenli & Saritas (2008)** aimed to investigate *that the effect of the 5-E learning cycle on sixth grade student's' achievement during the circulatory system unit*. While the experimental group and the control group were the same at first, after implementation, there was an important difference in favour of the experimental group.

**Demircioglu, Ozmen & Demircioglu (2004)** performed study based on the 5-E, *which was instructional model for the constructivist view of learning, about the topic "Factors Affecting the Solubility Equilibrium" in lycee-2 chemistry curriculum*. It was noticed that experimental group students' were more successful than the other group. Because in the experimental group, the activities used were based on 5-E learning method.

**Yildirim, Senel and Ayas (2007)** expressed the aim of their study *to discover 7th grade student's' misunderstandings about dissolution and melting and solution them via activities designed based on the 5-E learning cycle*. At the beginning of the study, a concept test was implemented as a pre-test. According to the results of the test, an activity was developed based on the 5-E learning cycle. The teacher implemented the activity regularly in the period of the lesson. After two weeks passing, pre-test was implemented as post-test. Finally, three students' played role in the semi-structure interviews that was conducted. At last, it was pointed out that the activity designed according to the teaching model affected students' in a positive way in remediation of student's' misunderstandings about dissolution and melting.

**Sivakumar & Bhaskar (2012)** conducted study *on 'Effectiveness of constructivist approach on science learning'*. The objectives of the study were 1) to study the effectiveness of constructivist approach for acquiring science process skills. 2) To find out whether there is a significant difference among below average, average and above average achievers of experimental group in the acquisition of science process skills. The parallel two-group design was adopted

for this study. Sample was selected based on purposive cluster sampling technique. The statistical technique use were t-test, mean, standard deviation, one-way ANOVA and Pearson Product moment correlation. The findings of the study were: 1) the experimental group taught through constructivist approach performed better than the control group in science process skills test. 2) The constructivist approach is suitable to all the levels of student's. 3) There is a significant difference among above average, average and below average achievers of experimental group in their acquisition of science process skills as an effect of constructivist approach.

**Kadem (2013)** conducted study to assess *the effectiveness of constructivist approach on the achievement in science of IX standard students'* using quasi experimental design. The objectives of the study were: 1) to study the effectiveness of constructivist approach on the students' achievement in science. 2) To study the effectiveness of constructivist approach on the students' achievement in science with respect to gender. A non- randomized pre-test and post-test design was used in the present study. The sampling technique used was that of purposive cluster sampling. The t-test was used to find out the difference. The results indicated that the constructivist approach has a positive effect on the achievement of students' in science. It was found that it was equally effective for both boys and girls in improving their achievement in science.

**Gupta (2013)** conducted study on *effectiveness of 5-E model on classroom processes and learning achievement of class VIII students' in science.* The objectives of the study were: 1) to find the effectiveness of 5-E model interms of achievement of students' in science 2) To study the interaction of treatment, gender and their interaction on achievement in science. 3) To study the effect of treatment, types of achiever and their interaction on achievement in science. Non-equivalent pre-test post-test quasi-experimental design was employed. The purposive sampling method was used. The statistical technique used were percentiles, mean, standard deviation coefficient of variation t-test, percentage

and ANCOVA. The findings of the study were: 1) the 5-E model of the constructivist approach was found to be effective in terms of students' achievement in science. 2) The interaction between treatment and gender did not influence significantly the students' achievement in science. 3) Gender did not influence significantly the students' achievement in science. 4) 5-E model was found equally effective for both high achievers as well as low achievers in improving their achievement towards science.

**Soomro (2010)** conducted '*teaching Physics through Learning Cycle Model: An Experimental Study*'. The aim of the study was to measure the effectiveness of learning cycle model based on constructive approach in teaching of physics in term of students' achievement. The Pre-test and post-test equivalent group design was used for study. It is concluded that instruction based on 5-E learning cycle model caused a significantly better achievement.

**Garcia (2005)** carried out a study to compare the *effectiveness of using 5-Es learning cycle instructional model with the traditional lesson plan to teach evolution concepts and enhance student's' attitudes toward the subject of science*. The results showed that although there was no significant difference between students' who were instructed by 5-Es learning cycle model and students' who were instructed by traditionally designed instruction with respect to understanding evolution concepts and students' attitudes towards science, a significant change was found based on paired pre-test and post-test comparison. In addition it was revealed that 5-E learning cycle model had some positive effects on lower level of student's.

**Lord (1997)** tested the *effectiveness of instruction based on 5-E learning cycle model by comparing it with the traditionally designed instruction*. The traditional designed instruction constituted based on teacher-centered and lecturing methods. Thought-provoking scenarios, critical thinking questions, and constructed concepts maps were used in 5-E learning cycle instructional model's phases. The results revealed that students' in the 5-E learning cycle model group had much

greater understanding of the information covered especially on questions that required interpretation. It was stated that students' who were taught with the 5-E learning cycle model understood the course material in a much deeper, more comprehensive way. Moreover, vast majority of the students' who were taught with 5-E learning cycle model feel positive about the course.

**Ceylan (2008)** conducted study on *Effects of 5-E learning cycle model on understanding of State of matter and solubility concepts*. The main purpose of the study was to compare the effectiveness of 5-E learning cycle model based instruction and traditionally designed chemistry instruction on 10<sup>th</sup> grade students'. In the experimental group, students' were taught with respect to the sequence of 5-E learning cycle model through the use of activities such as demonstrations, video animations, laboratory activities, and discussions. In the control group, traditionally designed chemistry instruction was implemented through teacher explanations and use of textbook. The results showed that instruction based on 5-E learning cycle model caused significantly better acquisition of the scientific conceptions related to state of matter and solubility concepts than traditionally designed chemistry instruction.

**Kilavuz (2005)** conducted study on *the effects of 5-E learning cycle model based on Constructivist theory on tenth grade student's' understanding of acid-base concepts*. The main purpose of this study was to compare the effectiveness of 5-E learning cycle model based on constructivist theory approach over traditionally designed chemistry instruction on ninth grade students'. The classes were randomly assigned as control and experimental groups. Students' in the control group were instructed by traditionally designed chemistry instruction whereas students' in the experimental group were taught by the instruction based on 5-E learning cycle model. The hypotheses were tested by using analysis of covariance (ANCOVA) and t-test. The results indicated that instruction based on constructivist approach caused significantly better acquisition of scientific



conceptions related to acid-base. Students' in both groups showed statistically equal development in attitude toward chemistry as a school subject.

**Gökhan & Çagatay (2013)** conducted research on the *effect of laboratory activities based on 5-E model of constructivist approach on 9th grade student's' understanding of solution chemistry*. It was aimed to investigate whether the laboratory activities based on the 5-E model of the constructivist approach has a significant effect on academic achievement of 9th grade student's. A non-equivalent control group design, a type of the quasi-experimental research, was used in the present study because participants were not randomly assigned to groups. The same teacher taught both groups. The experimental group students' were taught with laboratory activities based on the 5-E model of the constructivist approach whereas the students' in the control group were taught with the traditional approach. The data obtained from pre- and post-tests of both groups were compared with the independent t-test. The results from pre-tests showed that there was no significant difference between control group and experimental group. On the other hand, the post-test results showed that there was a significant difference between groups in favour of the experimental group.

## 2.2.0 CONCLUSION

From the review of related literature we can conclude that:

- Children learn more, and enjoy learning more when they are actively involved, rather than passive listeners.
- Education works best when it concentrates on thinking and understanding, rather than on rote memorization. Constructivism concentrates on learning how to think and understand.
- Constructivism gives students' ownership of what they learn, since learning is based on students' questions and explorations. The students' are also more likely to retain and transfer the new knowledge to real life.
- Students' in constructivist classrooms learn to question things and to apply their natural curiosity to the world.

- Constructivism promotes social and communication skills by creating a classroom environment that emphasizes collaboration and exchange of ideas.
- Constructivist approach plays an effective role in teaching-learning process.
- After teaching through constructivist approach it was found that it shows a significant positive effect on achievement of the student's.
- Constructivist model of teaching is more effective than behaviorist model of teaching
- Constructivist classroom enhanced particular understanding, application and in general knowledge, skill as compare to traditional way of teaching.
- It was found that it was equally effective for both boys and girls in improving their achievement in science.
- It reveals that sex has no effect on treatment.
- Students' have positive attitude towards this approach.
- It had some positive effects on lower level of student's