# CHAPTER - III

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## 3.0 Introduction

The rationale of the present study along with its objectives & hypotheses has been presented in Chapter I. The Second chapter deals with the review of related literature studies. This chapter is devoted to description of site, sample, design, tool, procedure of data collection and data analysis. The details are given below.

## 3.1 Site Description

The study was conducted in five schools under SSA programme in Coimbatore Educational district, TamilNadu, India.

## 3.2 Sample

The sample consisted of children in Grade VI and VIII. A total of 256 children were involved in the study and among them 60 were Students with Special Needs. Purposive sampling technique was used to select the inclusive schools wherein children with special needs were enrolled. A survey was made to find out students with Special Needs in the schools. Among the 22 Blocks in Coimbatore Educational district, 5 schools have been selected using Purposive sampling technique. The categories of Students with Special Needs include Visually Impaired, Hearing Impaired, Movement Impaired and Cognitive Impaired.

The Inclusive schools have been selected on the basis of enrollment of atleast 5 Special needs students in the school. The Special Needs Students in VI and VIII Grades were selected considering their nature of disability viz., Visually Impaired, Hearing Impaired, Movement Impaired and Cognitive Impaired using the medical record available in the school. This phase was stretched up to one full month. The students with Cognitive Impairment was considered as a separate group because of their difficulties

in cognition and in learning. All other, Special Need Students were grouped as one variable.

**Table 3.1: Distribution of Sample**

| S. No | Categories | Grade | | |
|---|---|---|---|---|
| | | VI | VIII | Total |
| 1. | **Students with Special Needs** a. Visually Impaired | 9 | 7 | 16 |
| | b. Hearing Impaired | 8 | 8 | 16 |
| | c. Movement Impaired | 5 | 7 | 12 |
| | Total | **22** | **22** | **44** |
| 2. | Students with Cognitive Impairment | **8** | **8** | **16** |
| | **Total** | **30** | **30** | **60** |
| 3 | Non Disabled Peers | **88** | **108** | **256** |

### 3.2.1 Inclusion Criteria

Three categories of Special Needs Students viz., Visually Impaired (VI), Hearing Impaired (HI) and Movement Impaired (MI) were included in the study as the study objectives were to assess the Effect of Collaborative learning for Students with Special Needs. The above mentioned categories of the disabled can independently work and earn their livelihood with or without assistive devices. Another category of disability namely Cognitive Impaired having Mild and Moderate level enrolled in the inclusive classroom were included in the study as a separate variable. Collaborative Learning has to be done to the whole classroom, as it benefits all students, and hence the study involved the non disabled peers of the selected Grades.

Other than Sensory disabilities, developmental disabilities such as autism and learning disabilities were not identified separately. If any such invisible category was there he/she may come under Non Disabled category.

### 3.2.2 Exclusion Criteria

Apart from these three categories, Multiple Disabilities were not included in the study as most of them were dependent who had profound and severe disabilities.

### 3.3 Design of the study

Quasi-experimental design was adopted in the Research study. The design is as follows:

$$\mathbf{Q_1 \ x \ Q_2}$$

Here, the **Q1** and **Q2** denote pretest and posttest respectively and **x** means treatment (Collaborative Learning).

### 3.4 Variables

The variables selected for the study and the levels are given below:

**Table 3.2: Variables Selected for the Study**

| Variables | Levels |
|---|---|
| Categories of Children | Students with Special Needs :<br>i) Visually Impaired (VI)<br>ii) Hearing Impaired (HI),<br>iii) Movement Impaired (MI) |
| | Cognitive Impaired (CI) |
| | Non Disabled Peers (NDP) |
| Gender | i) Boys<br>ii) Girls |
| Grade | i) VI<br>ii) VIII |
| Dependent variable | i) Academic Performance<br>ii) Academic Gain<br>iii) Level of Retention<br>iv) Social Skill Development |

### 3.5 Research Frame Work

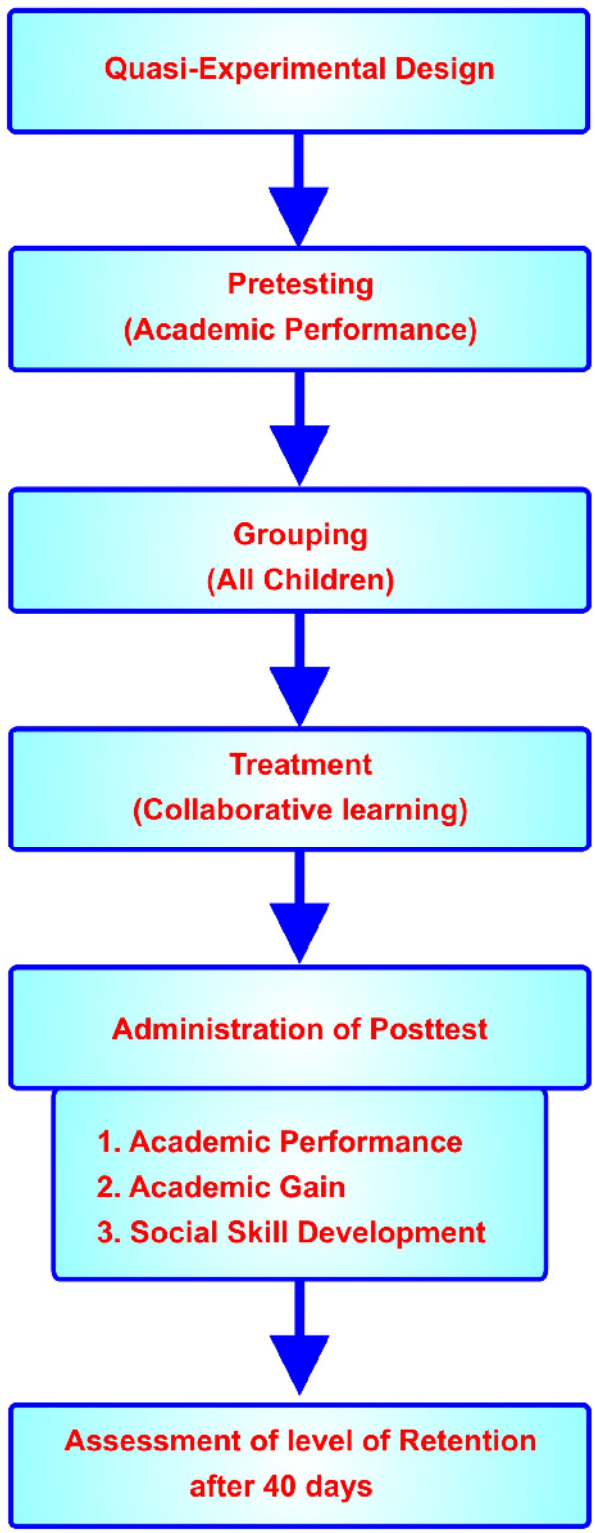


**Figure 4.4 Research Framework of the study**

### 3.6 Tools Selected for the Study

The investigator developed tools to assess the academic outcomes and social skill of students involved in the study. The below mentioned are the details of the tools:

i) **Personal Data Sheet** includes the demographic details of the samples such as Gender, Type of disability and details of school placement (Appendix I)

ii) **Curriculum Based Assessment**: Questions were framed based on Science Curriculum in the respective Grade. The questionnaire had:

**Part I** - Fill in the blanks (10x1=10)

**Part II** - Find the odd ones out (5 x 1=5) (Grade VI as per measurement procedure in the textbook)

Match the following (5 x 1=5) (Grade VI as per measurement procedure in the textbook)

**Part III** - Short Questions (5 x 2 =10)

The total score was 30.

The Tool is appended in the Appendix II & III.

**Social Skill Development *(Sociometric rating):***

Social Skill rating was based on the work of Coie and colleagues (1982). Participants were required to complete two questions-i) to identify the three teammates that they enjoy participating in their learning with the most, ii) three teammates which they do not enjoy participating in their learning. (Appendix IV)

### 3.7 Pilot Study

Pilot study was conducted in Grade VI and Grade VIII at Sri Avinashilingam Girls' Higher Secondary School, Coimbatore with 4 children with Special Needs in a classroom of 20 non disabled counterparts. Pretesting and Posttesting were conducted in a sequence. The tools were found to be reliable to administer to the whole group of samples. This provided a base for the intervention phase of Collaborative learning in all selected schools.

From the pilot study of children**, Difficulty Index (DI) and Discriminate Index ($DI_{2)}$**

The completed tests were subjected to a pilot study on a sample of 30 students. Sufficient time for all the testees to attempt every item was allowed in the Pilot study. The immediate purpose of an item analysis is to determine the difficulty and discrimination indices of each item, to be included in the final study. The D - Index method suggested by Valette (1977) was followed in doing this item analysis, because of its simplicity.

#### 3.7.1 Determining Item Difficulty

Based on the scores obtained by the pupils in the Pilot study tests, the high and the low groups were defined using cutting point. The top per cent of the pupils formed the high group and the bottom per cent of the pupils formed the low group.

As the item - analysis proceeds; four figures were recorded for each item:

H - number of highs who answered correctly.

L - number of lows who answered correctly.

H+L - total number who answered correctly (success)

H-L - how many more highs than lows answered correctly (discrimination)

Item - wise analysis was made to find out the proportion of the pupils answered each item correctly in the high and the low groups. PH and PL. Using these values, the item difficulty level P was obtained by the formula:

$$P = \frac{PH + PL}{2}$$

### 3.7.2 Determining Item Discrimination

The item discrimination D was obtained by using the formula:

D = (PH - PL)

Ebel (1979) is of the opinion that an item with the Index of discrimination 0.35 and up can be considered a very good item. Taking into account of these facts, items having highest discrimination indices and difficulty levels between 0.40 and 0.60 were selected. The survived items were arranged according to their difficulty and discrimination indices.

### 3.7.3 Determining the Effectiveness of Distracters

In the test items, which are of multiple - choice types, one further step was made in the item analysis namely inspecting the way each item distracter functioned. If an item contains a distracter, which attracted no one, not even the poorest testees, it is a non-functioning distracter. If a “wrong” distracter attracted more high than low scores, it is a malfunctioning distracter. Retaining such a distracter will actually harm the test. As non-functioning and malfunctioning distracters were not found in the analysis of all the items there was no need to make any alterations in the distracters. The usable items thus selected were assembled in a final form.

### 3.8 Establishment of Reliability and Validity of the tool

For finding the reliability, test instruments were pilot tested. A group of 30 children of each Grade VI and VIII was formed from the sample. The children were administered the test instruments. The Cronbach’s alpha coefficient was calculated. Cronbach's Alpha is mathematically equivalent to the average of all possible split-half estimates.

The reliability of the test Cronbach's Alpha is **0.838** used in the study. It reveals the results and was found reliable.

### 3.9 Validity of the Tool

Curriculum based Assessment was developed to validate content of each item in the test and was determined by the subject experts in the field of School Education.

The Jury's opinion was obtained from the subject expert .Thereby the Validity of the achievement test was established by the experts. The school subject teachers also analyzed the relatedness of the test items to accomplish the goals of instruction.

### 3.9.1 Internal Validity of the Study

The school involved in the study was selected by the Purposive sampling method. Permission was sought from the Principal and subject teachers in advance to implement the strategy among sixth and eighth Grade children in groups. The effect of instrumentation in implementing the Collaborative learning strategy to the selected sample was done carefully by the investigator without any bias.

### 3.10 Data Collection Procedure

**Phase I Pretesting and Grouping**

The students were tested of their academic performance with the lesson 'Types of energy' in Grade VI and 'Electricity and Heat' in Grade VIII. Since these lessons were just completed by the classroom teachers, the questions were framed to test the understanding of the lesson. This test was considered as pretest and the score pretest score.

Grouping was a crucial step in implementing Collaborative learning. Heterogeneous grouping was done with 4 to 5 children in a group. For instance, in a class of 20 children, there were 5 groups. A group consisted of high achiever, low achiever, a disruptive child, a special need child and an average child.

**Phase II. Implementation of Collaborative Learning and Posttesting**

The implementation of Collaborative Learning was stretched up to six months, 3 months for Grade VI and another 3 Months for Grade VIII. The Collaborative Learning implemented in Science Lesson is detailed below:

Grade VI - 'Separation of Substances'

Grade VIII - 'Light and Sound'

Each intervention session was of 45 minutes. The intervention steps are as follows:

i) Explanation of specific academic task of learning (5mts)
ii) Collaborative learning instruction and process by assigning the responsibility of the roles to the group members (5mts)
iii) Students are motivated to do group lesson/experiments and then to discuss "why" regarding solutions to the problems (25mts)
iv) Sharing opinions of each member of the group and recapping the particular topic of the lesson. (10mts)

Group members were given an opportunity in turn to assign roles and contribute his or her ideas to the whole group.

Collaborative Learning was implemented for a period of four weeks for each Grade in a school. All the five schools have been visited on rotation for implementation. A total of 8 sessions with 45 mts each session were given to the students in VI and VIII Grade in the selected five schools. Classroom setting was changed as a collaborative Learning session. The Five schools have been monitored on rotation basis for a period of 3 months for Grade VI and 3 Months for Grade VIII and thus making a total of six months to introduce Collaborative learning. After Collaborative learning method, posttest was administered using the questionnaire developed.

**Phase III Retention**

After Posttesting, the level of retention was checked by administering the same questionnaire used in posttest after an interval of 40 days.

**Statistical techniques used:**

Academic Performance, Academic Gain and level of Retention were calculated to find out the effect of Collaborative Learning in enhancing the learning of children in inclusion.

**Academic Performance**

Academic Performance was calculated using pretest and posttest score.

**Academic Gain:**

After intervention, with the score of pretest and posttest, gain score was calculated using the following formula

**Gain = Posttest score - Pretest score**

**Level of Retention:**

After the interval of 40 days retention test of the experimental group students was calculated by finding the retention score using the following formula

$$\text{Retention} = \frac{\text{Retention score}}{\text{Post test score}}$$

### 3.11 Data Analysis Procedure

For analyzing the data, the following statistical techniques were used.

1. The For comparing Mean scores of Academic Gain of students before and after introduction of Collaborative Learning, ***'t' test*** was used.
2. For comparing level of Retention of students after posttesting, ***'t' test*** was used.
3. To find out the influence of the Grade and Gender and their interaction, ***MANCOVA*** was used.
4. To find out the relation between Social Skill development and Academic Performance, and Level of Retention of students, ***Correlation Coefficient*** was used.

next chapter deals with Data Analysis and Interpretation of the study.