

CHAPTER - III

METHODOLOGY

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CHAPTER III

METHODOLOGY

3.0 Setting

The methodology chapter of the research study outlines the design of the study, construction of tools, data gathering procedures, and data analysis. Selection of an appropriate methodology for the study provides clear direction to the researcher with regard to the various steps to be followed in carrying out the research successfully. The first chapter of this study contained a clear description of the rationale for the selection of the research problem.

The investigator highlighted the importance of selecting such a vital research topic dealing with children with low vision with reference to classification of vision loss, eye disorders and their practical implications, challenges faced by the low vision children in school and at home, importance of devices and various management strategies. The investigator also stressed the need for comparing the visual efficiency (optical and perceptual) between the three groups of blurred, central and peripheral vision loss in order to find out the difference in visual efficiency as result of vision loss. The need of the study is also highlighted from the point of identifying the children who have impaired vision at an appropriate time and to determine the current visual functioning level of the children, training need to help the children make use of his remaining vision by using the developed visual efficiency training package.

The main purpose of the study is to encourage and help the child with low vision to make best use of remaining vision. It enhances their development, education and experiences on the whole the functional vision skills are strengthened. A variety of activities were given for vision stimulation and for improving visual efficiency. The different terminologies used in the study were also defined in Chapter I. Chapter II contained a thorough review of literature pertaining to various causes and vision training. The chapter included studies in low vision devices, and specific studies related to functional vision training. The thorough review of literature made at

the beginning of the study infact, provided necessary insight to the investigator in selecting the problem for the study.

Having described the rationales of the study supported by a detailed review of literature, the investigator aimed at describing the methodology of the study in this chapter. The methodology of the present study entitled **“Effect of Training Package on Developing Visual Skills of Children with Low Vision”**. At the outset the objectives of the study are presented for ready reference. The objectives are followed by the description of variables, the sample, and the research tools used for the study. The hypothesis and data analyses procedures are also explained in this chapter.

3.1 Objectives of the Study

The objectives of the study were to:

7. Identify children with low vision using comprehensive vision assessment checklist.
8. Prepare and use visual efficiency training package to enhance visual skills of children with low vision.
9. Compare the difference between pre and post tests mean scores of visual skills of children with different vision loss viz. blurred vision, central vision and peripheral vision.
10. Find out the difference between the pre and posttests mean scores of visual skills with respect to optical and perceptual visual functioning skills.
11. Study the influence of Gender, age, type of vision loss and its interaction with respect to visual skills.
12. Create awareness to teachers and parents on the effective use of devices and materials for improving visual efficiency.

3.2 Selection of the Sample

3.2.1 Site Description

The sample was selected from **nine** inclusive primary schools under SSA programme in coimbatore educational district.

3.2.2 Sample

The sample consisted of children enrolled in grade I to V. A total of **60 children** were selected and among them **45** were children having **blurred vision**, **7** children with **central vision loss** and **8** with **peripheral vision loss**.

Purposive sampling technique was used to select the samples. The investigator explored the low vision children enrolled in the primary schools of 22 Blocks in Coimbatore educational district. Out of which 9 schools were selected using purposive sampling technique. The children having visual acuity less than 6/18 after correction, considering the WHO working definition were selected. This process was stretched up to 3 months and the final sample for the study consisted of 60 children with low vision of which **34 boys and 26 girls**.

Table 3.1
Grade wise Distribution of Sample

S.No	Grade Level	Number of Students			Percentage
		Boys	Girls	Total	
1	I	5	1	6	10
2	II	2	4	6	10
3	III	7	9	16	27
4	IV	3	7	10	17
5	V	17	5	22	36
Total		34	26	60	100

3.3 Variables of the Study

Variables

Selection of proper variable is an important ingredient of a good research. It depends on how effectively the variables are being selected. In this study the gender, age and grade level are selected as the independent variables. Types of vision loss, visual functioning skills (Optical and perceptual), are used as the dependent variables.

The investigator carefully explored the inclusion of independent and dependent variables as presented under the table.

Table 3.2
Variables and its Level

S.No	Variable	Level
1.	Gender	i. Boys ii. Girls
2.	Age group	i. 6-8 years ii. 9-11 years
3.	Grade level	i. I - V grade
4.	Type of vision loss	i. Blurred vision ii. Central vision loss iii. Peripheral vision loss
5.	Visual functioning	i. Optical ii. Perceptual

Table 3.3
Classifications of Low Vision Children as per Variables

S.No	Variables	Boys	Girls	Total	Percentage
1.	Blurred vision	26	19	45	75
2.	Central vision loss	03	04	07	12
3.	Peripheral vision loss	05	03	08	13
Total		34	26	60	100

3.4 Research Design

The researcher adopted Quasi - experimental design to find out the **Effect of Training Package on Developing Visual Skills of Children with Low Vision**. The study was designed on the basis of pretest and posttest without control group.

The flow 3.1 chart represents the methodology followed in the study.

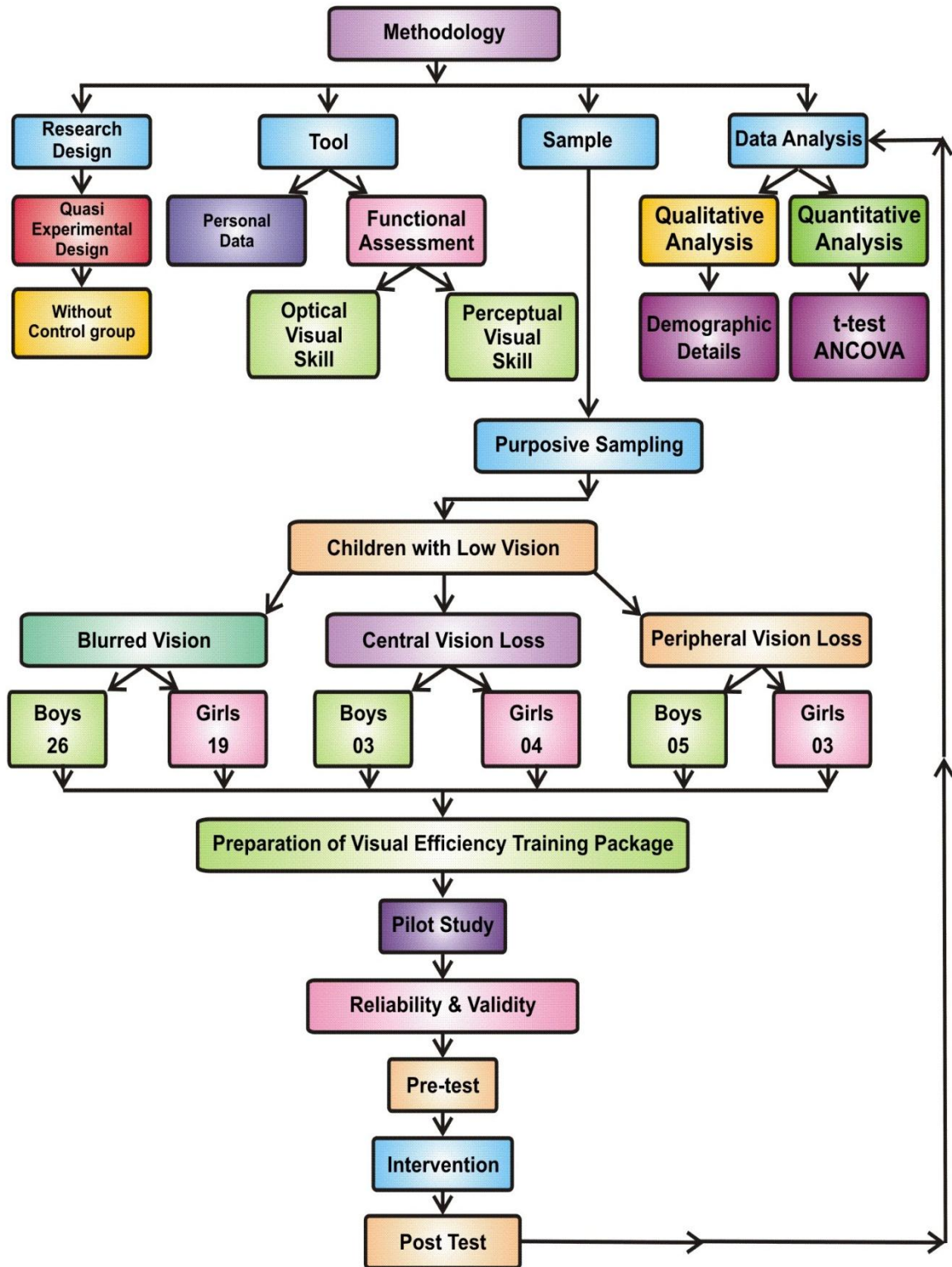
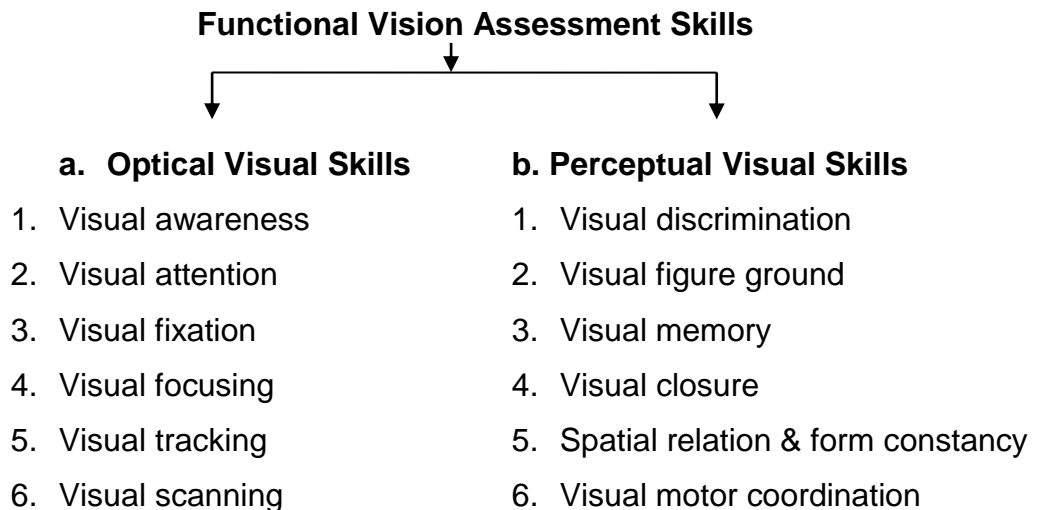


Figure 3.1 Flow Chart Represent the Methodology of the Study

3.5 Tools used for the Study

Based on the objectives of the study, the investigator selected suitable tools such as;

- i. **Personal data bank** was used to collect the information about the subjects such as name, age, gender, onset of blindness, visual acuity, field of vision and causes of low vision and the same personal data bank enclosed in **annexure - I**
- ii. The **Functional vision assessment checklist** developed by Vijayan, P. and Victoria, G. (2006) was used to find out the visual efficiency of low vision children. The functional vision assessment checklist consisted of optical and perceptual visual skills consisted of 49 activities under 12 main areas of visual skills as listed below and in the **annexure - II**.



3.6 Preparation of visual efficiency training package

The major problem of the low vision students and that they receive very little information by incidentally. Developing functional vision efficiency and training to use the remaining vision is essential for them which are the pathway to the information to stimulate the brain. As the brain receives new information the child will develop the processing skills by discriminating

shapes, pictures and symbols. Some low vision students were hesitant to use their vision for such children the teacher and parents should motivate the children and to develop his visual efficiency at the maximum level. For the new learners they also need additionally need based sensory training in order to supplement their tactile, auditory and olfactory skills.

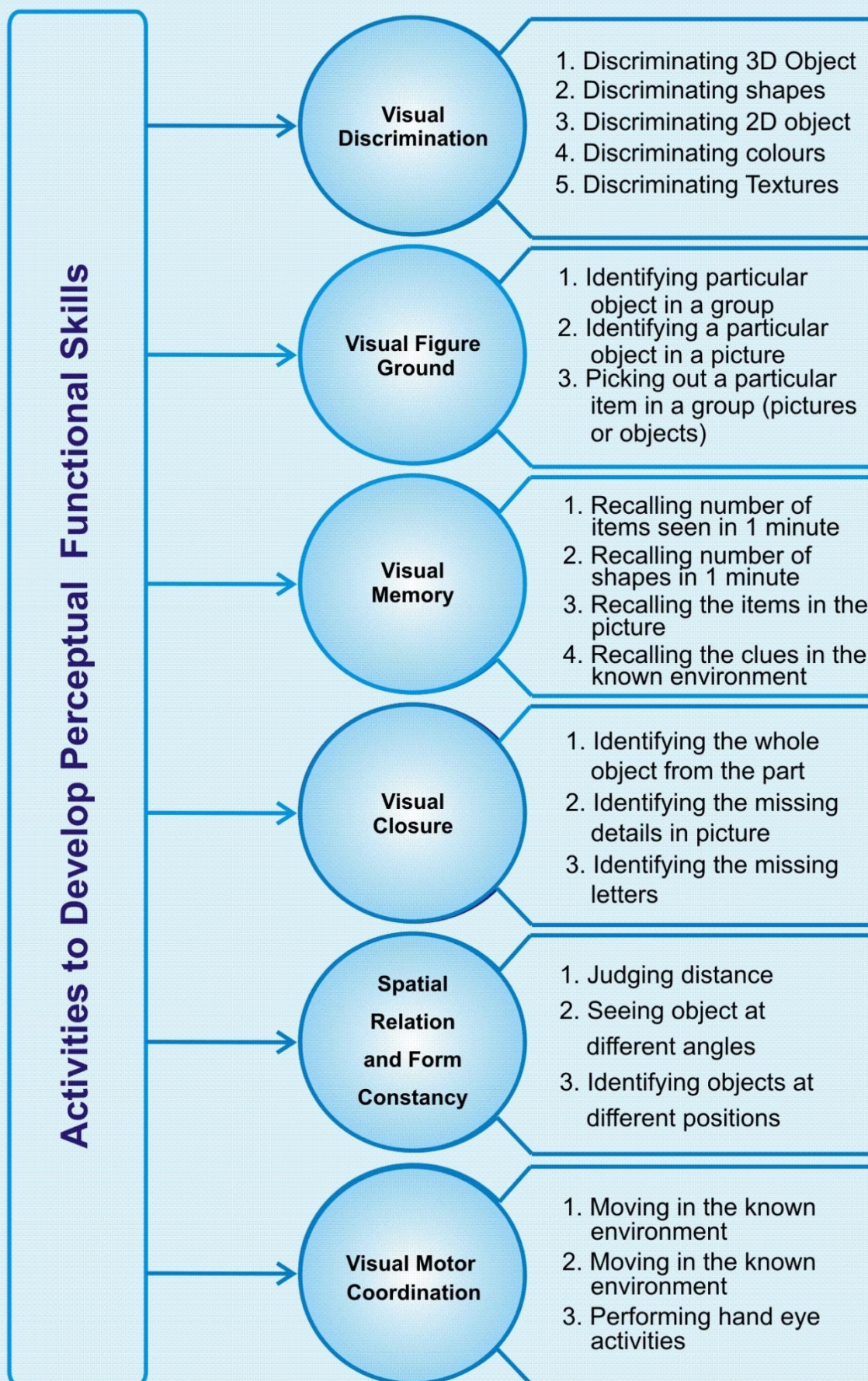
The success and the information obtained from an assessment can depend on the objects chosen. It is best to use objects which are familiar to the person being assessed, selecting interesting objects, having bright colors, with appealing sounds or movements, along with multipurpose usefulness. And used food, playthings and money are usually good to use with children.

Since visual efficiency training was planned to provide for younger low vision children care was taken in selecting the objects, those objects should be manipulated easily or with the minimum assistance of parents or by teachers, attractive colours, and non hazardous without distracting the students and cost effectiveness. The investigator used locally available and familiar objects, models. In addition, pictures and diagrams have been included in the visual efficiency training package to train the children with low vision.

After preparation of the visual efficiency training package it was given to the special educators, professionals and to the low vision experts and field tested through pilot study to obtain reliability and validity.

The flow charts **3.2** a and b represents the activities to develop optical functional skills and perceptual visual skills.

Figure 3.2
b. Activities to Develop Optical Functional Skills



3.7 Pilot Study

Pilot study was conducted by administering visual efficiency training package for 20 low vision students studying from 1-5 grade level. The functional vision skills were evaluated using again rating scale with two point rating. When the task is able to perform a score one was given. If the student is unable to perform zero score was marked. Based on the scores secured by the students the investigator incorporated certain modifications. The modified package was further scrutinized by expert's namely special educators, teacher educators and professionals working in the field of special education. Based on their opinion and ideas the package was modified and finalized.

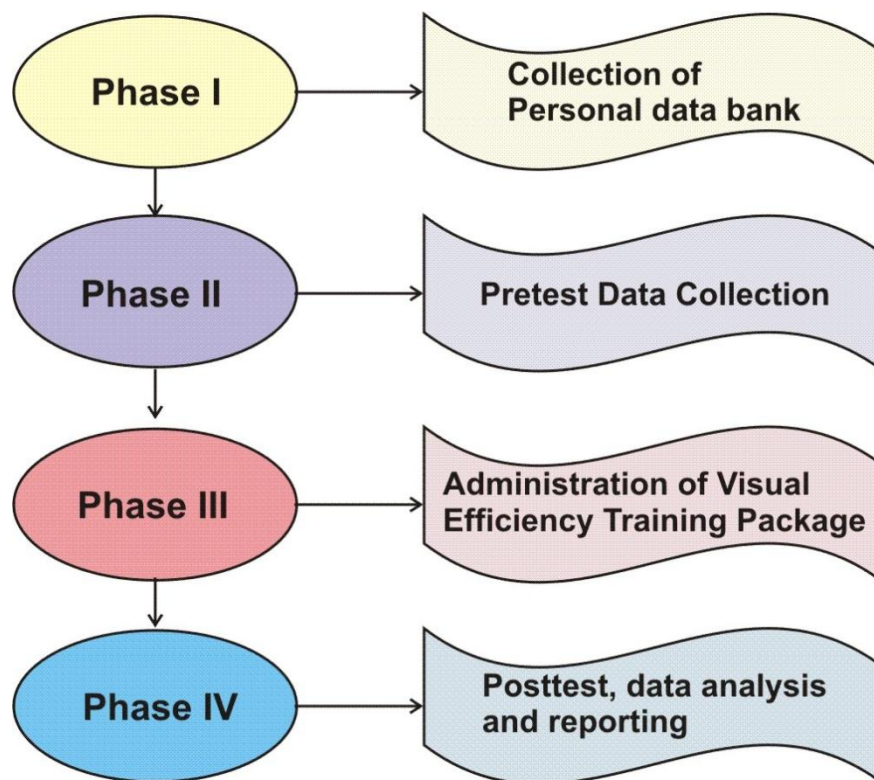


Figure 3.3

Flow chart representing the phases involved in administration of the Visual Efficiency Training Package

3.8 Reliability and Validity

The Pearson Product Moment Correlation Co-efficient was used to analyze the pre and posttest visual skill scores, the reliability of the visual efficiency training package 'r' value was found to be 0.88.

The reliability coefficients clearly indicate that the developed visual efficiency training package and the tools used were reliable. The process of pilot study took 3 months. The content validity of the test had already established by the authors. However the investigator sought the opinion from low vision experts. They opined that the visual efficiency training package is valid and reliable. The reliability and validity of the tests reassured the quality of the responses and the findings of the study. The visual efficiency training package is enclosed in **annexure-III**.

3.9 Administration of Package and Data Collection Procedure

The present study used quasi experimental design with pre and posttest without control group. The study was conducted in four phases. The flow chart 3.4 depicts administration of the test diagrammatically.

Phase I- Personal data bank was used to collect the personal data of the selected samples. Clinical assessment was done and certificate procured from ophthalmologist along with the prescription of low vision devices. The visual acuity of each child is recorded before and after correction for both near and distance vision.

Phase II - Pretest data collection - Pre testing was done to find out the functional skills of low vision children using the functional vision assessment checklist. After pretesting, the teachers were oriented how the visual efficiency training package needs to be used to develop appropriate functional vision skills among the children with low vision.

Phase III - Administration of visual efficiency training package - Visual efficiency training was given to each child individually. Care was taken

to consider on the type of vision loss visual functioning, seating arrangement, lighting condition, colour, contrast back ground size, distance and position and organized the training programme. The training was given from 30 to 45 minutes per day for each child based on the visual abilities of the child for a duration of six months. The investigator sought the help of special teacher to assist in training and visited all schools on rotation and hence each school children were assisted at least thrice in a week.

Phase IV - Posttest, data analysis and reporting - After intervention the investigator used the same functional vision assessment check list to collect the posttest data.

3.10 Hypotheses Testing

In order to realize the objectives of the study, the investigator formulated a total of **24** hypotheses for testing through statistical procedures. The null hypotheses and corresponding statistical procedures used in the study are listed in table 3.4.

Table 3.4
Hypotheses and Corresponding Statistical Procedures

S. No	Null Hypothesis	Corresponding Statistics
1.	There is no significant difference between the pretest and posttest mean scores of visual skills of children with blurred vision	Paired 't' test
2.	There is no significant difference between the pretest and posttest mean scores of visual skills of children with central vision loss	Paired 't' test
3.	There is no significant difference between the pretest and posttest mean scores of visual skills of children with peripheral vision loss	Paired 't' test
4.	There is no significant difference between the pretest and posttest mean scores of visual skills of low vision boys	Paired 't' test
5.	There is no significant difference between the pretest and posttest mean scores of visual skills of low vision girls.	Paired 't' test
6.	The posttest mean scores of visual awareness do not differ significantly (1) between the three	ANCOVA

S. No	Null Hypothesis	Corresponding Statistics
	groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender”	
7.	The posttest mean scores of visual attention do not differ significantly (1) between the three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender”	ANCOVA
8.	The posttest mean scores of visual fixation do not differ significantly (1) between the three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender	ANCOVA
9.	The posttest mean scores of visual focusing do not differ significantly (1) between the three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender	ANCOVA
10.	The posttest mean scores of visual tracking do not differ significantly (1) between the three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender	ANCOVA
11.	The posttest mean scores of visual scanning do not differ significantly (1) between the three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender	ANCOVA
12.	The posttest mean scores of visual discrimination do not differ significantly (1) between the three groups of vision loss (2) between lo vision boys and girls and (3) Intervention between vision loss and gender	ANCOVA
13.	The posttest mean scores of visual figure ground do not differ significantly (1) between the three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender	ANCOVA
14.	The posttest mean scores of visual memory do not differ significantly (1) between the three	ANCOVA

S. No	Null Hypothesis	Corresponding Statistics
	groups of vision loss (2) between low vision boys and girls (3) Intervention between vision loss and gender	
15.	The posttest mean scores of visual closure do not differ significantly (1) between the three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender	ANCOVA
16.	The posttest mean scores of visual spatial relation and form constancy do not differ significantly (1) between the three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender	ANCOVA
17.	The posttest mean scores of visual motor coordination do not differ significantly (1) between the three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender	ANCOVA
18.	There is no significant difference between the pretest and posttest mean scores of visual skills of optical visual functioning and perceptual visual functioning of blurred vision	Paired 't' test
19.	There is no significant difference between the pretest and posttest mean scores of visual skills of optical visual functioning and perceptual visual functioning of central vision loss	Paired 't' test
20.	There is no significant difference between the pretest and posttest mean scores of visual skills of optical visual functioning and perceptual visual functioning of peripheral vision loss	Paired 't' test
21.	There is no significant difference between the pretest and posttest mean scores of visual skills of optical visual functioning and perceptual visual functioning with respect to low vision boys and girls	Paired 't' test
22.	There is no significant difference between the pretest and posttest mean scores of visual skills of optical visual functioning and perceptual visual functioning	Paired 't' test
23.	The posttest mean scores of optical visual skills do not differ significantly (1) between the	ANCOVA

S. No	Null Hypothesis	Corresponding Statistics
	three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender	
24.	The posttest mean scores of perceptual visual skills do not differ significantly (1) between the three groups of vision loss (2) between low vision boys and girls and (3) Intervention between vision loss and gender	ANCOVA
Comparisons between three different conditions of vision loss		Scheffe's test

3.11 Data Analysis Procedure

For analyzing the data, the following statistical techniques were used

- a. For comparing Mean scores of visual skills of children with low vision before and after introduction of visual efficiency training 't' test was used.
- b. Analysis of pre and posttest mean scores of vision loss with regard to gender and vision loss, optical and perceptual visual skills ANCOVA was used.

3.12 Conclusion

In this chapter the methodology of the present investigation is enumerated. A clear cut view about the method selected, administration of the tool and evaluation of the tool is discussed. Thus the data collected were consolidated, analyzed, interpreted and presented in the next chapter - IV Analysis and Interpretation.