

# CHAPTER – III

## RESEARCH METHODOLOGY

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### **3.1 Introduction:**

The objective of the study was to find the effectiveness of the reading intervention program of students with reading difficulties of grade 6 and to determine whether the intervention have some impact on academic performance of the students with reading difficulties. Previous literature suggests that the problem of reading difficulties can be minimized with proper intervention program (Wang & Anderson, 2010; Wanzek & Vaughn, 2008). The participants progress to fluency was measured through ORI measures and then comparison of data using various statistical tests was done. To gather the information within group and between group designs were “analysed using paired t test and independent t test respectively”. To check the effectiveness of intervention on academic performance of students with reading difficulties, analysis of variance (ANOVA) was used. This provides the information of intervention on individuals as well as on groups.

In this chapter, the design of the study and its sample, population, participants and criteria for selecting participants, ethical considerations, tool used and their description, process of tool administration, description of intervention, research timeline, data analysis will be discussed. In discussing study design, the reason for the selection of this specific research design will also be included. In this chapter, “sample characteristics, treatments, threats and threats control were also described”.

## **3.2 Study Design**

The present study is an: Quasi Experimental Research Study. More specifically it is a Pre and Post-test type of Quasi experimental research. Two groups were formed with the percipients with reading difficulties. “One is experimental group, and another is control group”. In the present study, screened students of class – VI those have reading difficulties with the initial reading test were put in experimental group whereas screened students of class – VI with initial reading test of school – 2 were taken in control group. Both the groups were administered reading skills test as Pre - Test. Scores of pre-test of both groups were recorded. Based on the performance, an intervention program (i.e. Treatment) was given to the participants in the experimental group and no such intervention program provided to the participants in control group. Academic scores in English of previous examination of both groups were collected. During the intervention, a teacher made test of English was administered to participants of both groups. “After completion of the intervention program to the experimental group, both the groups were administered the same test as a Post test”. Scores of post-test of both groups were compared to see the effect of the intervention program. After the intervention program, 1<sup>st</sup> summative evaluation was administered by school as per their schedule. Academic score of this evaluation in English were recorded. Academic scores of both groups were taken to determine the effect of intervention program on their academic performance.

### **3.2.1 Variables**

“Variables of a study are the characteristics that the researcher manipulates, controls or observes (Rajput, 2015)”. “The independent variable is the condition or characteristic that the researcher manipulates in order to observe its impact/influence on dependent variables

(J.W.Creswell, 2002)”. In an experimental study, the researcher manipulates the variables and observe the effect within controlled conditions.

**(i) Independent Variables:**

The independent variable is a factor which determine its effect on dependent variables. In the current study, the independent variable is the use of reading interventions and aiming to improve reading skills for student of class – VI. The manipulation of the interventions depends on the ways of implementing the program.

**(ii) Dependent Variables:**

Dependent variables are the measurable changes that have seen in the study by the effect of independent variable. It is measured with the observed effect of independent variable. Dependent variables are variables affected by an additional source (J.W.Creswell, 2002).In the present study, “dependent variables are reading skill and academic performance”.

**(iii) Intervening Variables:**

“Variables like age of the participants, their IQ level, grade level, intention to participate, intention to retain the participation, gender, previous knowledge in English language were intervening variables. In the present study, there were an attempt to control the effects of these variables”. That was done by choosing participants who scores poor (grade – C) in English in previous term end exam. The participants were of same class, almost same age interval and there wasn’t any gender bias in forming groups.

### **3.3 Hypotheses**

The hypotheses of the study to analyse data using testing hypothesis techniques are as follows:

**<sup>1</sup>H<sub>0</sub>** : “There is no significant effect of reading intervention on reading performance of students with reading difficulties”.

**<sup>1</sup>H<sub>1</sub>** : “There is significant effect of intervention on reading performance of students with reading difficulties”.

**<sup>2</sup>H<sub>0</sub>** : “The effect of intervention is not significantly sustained to the students with reading difficulties”.

**<sup>2</sup>H<sub>1</sub>** : “The effect of the intervention is significantly sustained to the students with reading difficulties”.

**<sup>3</sup>H<sub>0</sub>** : “There is no significant effect of reading intervention on academic performance of students with reading difficulties”.

**<sup>3</sup>H<sub>1</sub>** : “There is significant effect of reading intervention on academic performance of students with reading difficulties”.

## **3.4 Methodology**

### **3.4.1 Population of the study**

“Students of class – VI of rural co-ed Bengali medium secondary school under state board having reading difficulty of Howrah (West Bengal, India) were regarded as the population of the present study. The age group of the participants was 10.9 -11.6 years”.

### **3.4.2 Sample**

#### **a) Locale of the study:**

The locale of the study was chosen “district Howrah of West Bengal (India)”. It is a small district of West Bengal consists of two subdivisions – Uluberia and Howrah.

There are 11 blocks in Uluberia of which Bagnan block was selected by convenience sampling.

**Table No – 3: Locale of the study**

District	Subdivisions	Selected Subdivision	Blocks	Selected block
Howrah	1.Howrah Sadar	Convenience selection  ↓  Uluberia	Amta-I	Convenient – purposive selection  ↓  Bagnan
			Amta -II	
	Bagnan – I			
	Bagnan – II			
	Uluberia – I			
	Uluberia – II			
	Shyampur – I			
	Shyampur – II			
	2. Uluberia		Udaynarayanpur	

*Source : Additional District Inspectors office ,Uluberia*

**b) Selection of Schools:**

“The sample of the study was selected by multistage sampling technique. The Bagnan block was chosen by researcher through convenience sampling since the schools of Bagnan block was easily accessible to and within the proximity of place of the researcher”. Also, factors like socio economic status, level of living, literacy of various areas of Bagnan block are not much diversified. So, the block was selected purposively as well.

The researcher personally visited the office of additional district inspector (ADI) to get the data regarding rural co-ed schools in Bagnan block. The researcher requested ADI sir to grant permission to conduct the study. He approved the request and directed the researcher to ask for permission from the concerning school authority. The researcher obtained the data of rural co-ed school under Bagnan block. There are 24 rural co-ed

secondary Bengali medium schools in Bagnan block. Researcher selected Bagnan – II block by lottery method.

Researcher visited Cluster Resource Centre (CRC) of Bagnan – II and collected the information about rural co-ed secondary Bengali medium schools under the block and its location. There are 12 such schools in this selected area. The researcher visited the selected schools personally to check the feasibility and availability of the research. Among these schools, two schools were selected as per convenience and purposively. The schools were selected considering the following features:

- ⊖ they must have no external intervention by any non-government agency or others.
- ⊖ location of these schools is not so far and not so close to keep acting social factors as constant throughout the study and to avoid interaction with participants.
- ⊖ the schools should not have any external support.

The researcher visited the schools as per data provided by CRC. Purposive sampling technique was used to select the schools as per the above criteria. Researcher has met to the head of the institutions and request for conducting research in their school. Some of them disallowed the request whereas three of them showed interest in the research. Two schools were selected among them. The list of the schools is given below:

**Table No – 4 : List of schools**

Sl. No.	Schools	Remark	Code
1	Antila Anchal H.P Vidyapith		
2	Asharia Iswaripur High School		
3	Bagnan Ananda Niketan Vidyamandir		
4	Baidyanathpur High School	<b>Selected</b>	<b>School – 2</b>
5	Kantapur A.M Institution		
6	Mugkalyan High School		

7	Chak Kamala Bharti Sikshaniketan (H.S)		
8	Hallyan High School		
9	Bantul Mahakali High School	<b>Selected</b>	<b>School – 1</b>
10	BenapurChandanapara High School		
11	Rupasgori High School		
12	Santoshpur Sri Gouranga Vidyapith		

*Source : Cluster resource centre , Bagnan - II*

### c) Selection of participants:

There are number of students of class – VI in selected rural Co-ed secondary schools under WBBSE board. There are two sections of class – VI in each school.

**Table No – 5 : Description of students’ number**

Schools	Number of students in Class - VI		
	Section - A	Section - B	Total
<i>School – 1</i>	56	49	105
<i>School – 2</i>	51	43	94
	<b>Total</b>		199

*Source: based of researcher’s data*

There were 199 students of boy and girl of class – VI of sections – A and B of selected schools. With prior permission of head of the institution the research settings were set up. Those students of both schools were explained about the study and asked for consent of participation in initial screening. Among them 174 students were agreed to participate in initial screening. Concerned English teachers were the first to identify those students with reading problem in class – VI of their school. Previous academic record of those students was also taken under consideration. For initial screening, reading scanner by *National Educational Psychological Service, Ireland* was used. Administering the tool, 101

students were found with reading difficulties. The following tables shows the screening process:

**Table No – 6 : Identification of participants**

Sl.	Identification measure	School – 1	School – 2
1	Students availability	105	94
2	Informed Consent form for initial screening(students) -Agreed	92	82
3	Teachers observation and previous records	76	63
4	Reading Scanner ( <i>National Educational Psychological Service, Ireland</i> )	39	43
5	Informed consent form to participate in research (Parents and Students) – Agreed	37	39
6	Size of the group (effect by mortality) (discontinued in the research process)	37	34

Source: Researchers own set up

The process of identification of participants is shown in the following diagram.

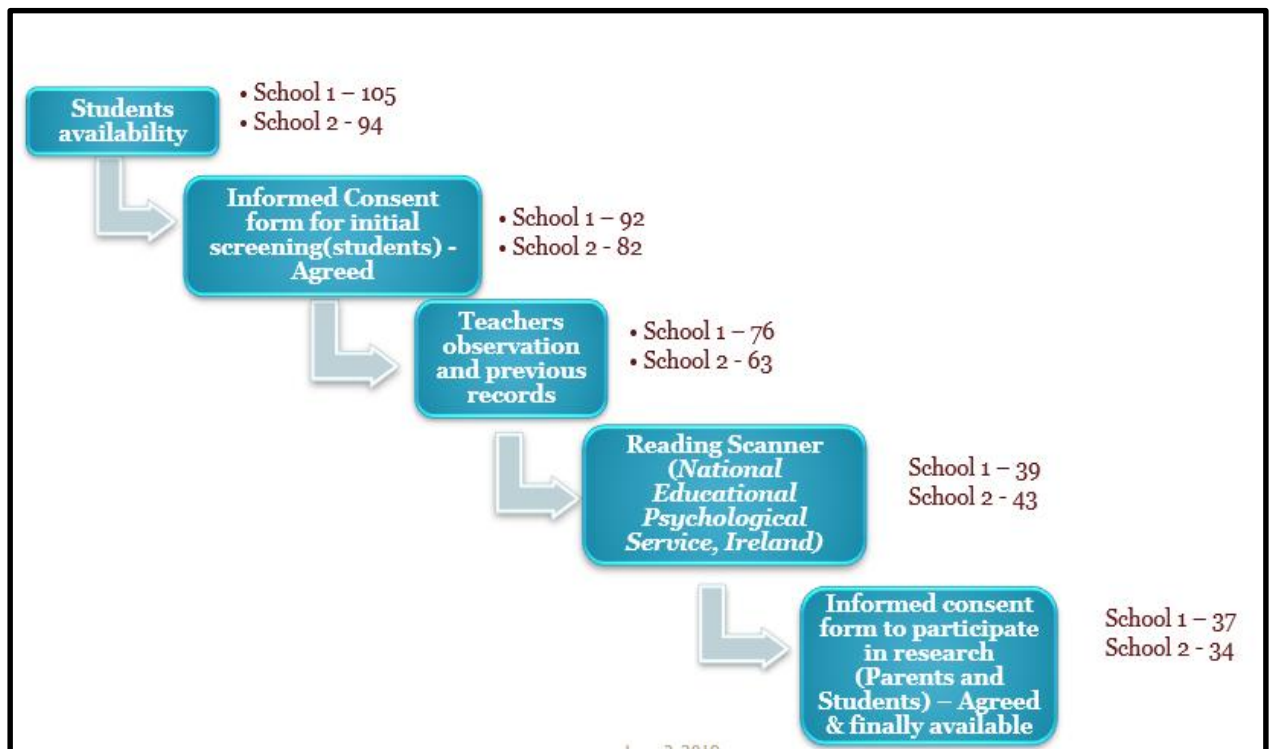


Fig – Sequence of Identification of students with reading difficulties



### **3.4.3 Ethical Considerations**

The ethical factors need to consider for conducting study in rural set-up. It is very important to assure all the participants who are comfortable with that area that is being measured. It should be assured to the participants and their parents that the testing is not culturally biased, the data will be kept fully confidential and the data is informative and beneficial for society for future use. Also, participants' level of clear understanding about the study, willingness of the participants to participate in the study should be taken into consideration.

The researcher obtained an approval from the additional district inspector of schools to perform research in Uluberia and he suggested some valuable suggestions regarding the locale of study, other factors what may act crucial for the study. The research was subject to approve to conduct the research work by director of Cluster Resource Centre (CRC). For that researcher visited personally to the director and submit via email the research proposal clearly mentioned about research methodology, informed consent of participants, screening tools, tool for measuring reading skills, and statement of approval from the head of the institutions to conduct the research in their school. Researchers got approval to conduct the study from CRC of Bagnan – II block. “The participants in this study were asked to sign informed consent form after explaining about the research procedures and ensuring their data privacy protection (Appendix – 4(c)). Before including the participants, parents of the participants were also asked to sign their informed consent form to allow their child to participate in the study (Appendix – 5 (b))”. Also, the entire research work was done in the school with proper approval from the head of the institution to conduct the research in their school campus. (Appendix- 1(a) & 1 (b))

### 3.4.4 Treatment and Threats control

#### 3.4.4.1 Group formation:

The study was conducted on students of class – VI of selected rural co-ed Bengali medium secondary schools under state board in Bagnan – II block. The study was quasi experimental in nature. “One group was set as experimental group and another group was formed as control group. Treatment i.e. reading intervention program was given to the experimental group”. No treatment be made for control group. After completion of intervention, changes in dependent variable was measured and compared with that of the control group’s measurement.

The distribution of the students in the two groups in terms of gender and disabilities was relatively equal; The experimental group had 15 girls and 23 boys, while the control group had 13 girls and 20 boys.

**Table No – 7 : Group Information**

<b>Description</b>	<b>Experimental group</b>	<b>Control group</b>
N	37	34
Mean age	11 y 1m	10y 11m
Age range	10y 7m – 11y 6m	10y 7m – 11y 4m
Gender ratio [male–M/female–F/ other - O]	M – 22 / F – 15	M – 20 / F – 14
Habitat	Village (under same demographical location)	Village (under same demographical location)
Religion [ Hindu – H / Islam – I]	H – {M – 8, F – 9} I – {M- 14, F - 6}	H – {M – 9, F – 8} I – {M- 11, F –6}

*Source : Researcher’s own setup*

#### **3.4.4.2 Threats:**

##### **Minimization of the *Hawthorne Effect*:**

The Hawthorne effect is the concept that, “subjects’ knowledge that they are in an experiment modifies their behaviour from what it would have been without the knowledge (J.G.Adair, 1984)”. That is, in this study, participant’s knowledge of being part of the experiment could potentially yield artificial improvement (e.g. by listening other’s response) and as a result, the desired result due to intervention could not be measures. The researcher in this study had tried to minimize the *Hawthorne effect* in the following way.

The researcher subdivided the participants into two groups randomly (Exp – A & Exp – B). The instructions of intervention were created different for these groups. While Exp – A was given instructions for enhancing phonic awareness, word recognition, Exp – B received instructions for enhancing basic letter sounds. Then the instructions interchanged with each other and applied to these groups. In second phase of intervention, same assessments were administered at same time and together to the participants in experimental group. Thus, improvement could be viewed not as an artificial increase in scores due to an awareness of being observed, rather as desired result influenced by treatment.

#### **3.4.5 Intervention**

From the initial reading screening, it was clear that the students were having reading difficulties. After administering the pre-test using GORT – 5, the following observations were made. These were:

- ✓ Almost all identified students with reading difficulties were capable to recognise letters in words.
- ✓ They were facing difficulties in reading sight words.
- ✓ They were facing difficulties in letter sounds.
- ✓ They miscue words with other alike words

Considering all such observations, intervention program was designed. Intervention was scheduled after 5<sup>th</sup> period four days in a week. Friday had schools' own schedule whereas Saturday's school time was till 2pm. Though due to time constraints school authority where experimental group was framed, allowed to utilize Friday and Saturday on phase – 1 and for assessments. Each class were 60 min duration with break 10 min. English textbooks, story book (as prescribed by state board) were used in the intervention program. Also, materials like charts of letter sounds, audio-video clip was used in the classes. The intervention program consists three major parts:

### ***1. Development of basic letters sound skills:***

In this part of intervention, researcher tried to focus on basic letter sounds skill. To teach them about letter sound, researcher used audio-visual clip to make the learning more interesting. It was also taught about consonant – vowel, consonant – consonant, double letter sound and long stress letters sound in word. During that part of program, participants were asked to read the passage undermarked word from their textbook as directed by the researcher.

### ***2. Reading skills:***

This part consists of various reading passage from textbook according to direction of researcher. Time of reading were being considered. To practice of reading of various

passage accurately was the main objectives of this part of program. After some classes they are grouped for peer learning with proper monitoring. In peer learning, three passages were given to reading accurately and fluently. After that some question regarding the passages were asked. Score were given by the researcher for each peer group. This technique motivates them to learn reading skills. To improve reading skills, it was directed to read the passages leaving the unknown word. Researcher marked these words and explained about its letter sound. In this way, participants went through the intervention process.

### ***3. Assessing skills and academic performance:***

“Before commencing the program, Gray Oral Reading Test (5<sup>th</sup> Ed.) (GORT – 5) was administered”. Response sheet made a sense of their reading skills. During the intervention program an academic test as per board syllabus (i.e. syllabus of 1<sup>st</sup> summative Evaluation) were administered to get academic score during mid-point of intervention. After completion of the intervention, participants were assessed reading skill with the same test. To test the objective – 3, the GORT – 5 was administered again after completion of entire intervention to get sustained score of both groups. Finally, the score of their academic performance in English in 1<sup>st</sup> summative exam was collected.

### 3.4.6 Research Timeline and Sequence of Interventions

Table – 8 : Research Timeline

Preparatory Module		Reading Intervention module					Sustained Test
		Pre – test	Phase -1	Mid-point	Phase - 2	Post test	
January		February 4 ,2019 - March 2019 - April 13, 2019					May 8
<b>Approval copy of both schools attained</b> Parent's & Participant's informed consent form attained & Students data collection & concerned teachers' suggestion regarding identification Administer of Initial screening & students 'previous academic performance data		Pre- test was administered for Participants in both experimental & Control group Exp – A, Exp – B created & Basic reading task (from their textbook) Mid- point assessment was conducted, & break was given Exp – A: Basic letter sounds Exp – B: Phonic awareness, word recognition Pre- test was administered for Participants in both experimental & Control group Same test as in post-test was administer after 24 days to collect sustained scores					

Source : Researcher's own set up

### 3.4.7 Tools

The following tools was used in the study:

1. Initial Reading Test (Tool – 1): Reading Scanner by **National Educational Psychological Service, Ireland.**
2. Test for English Reading Skills (Tool – 2): “**Gray Oral Reading Test, 5<sup>th</sup> Ed. (GORT – 5)**”.

### 3. Academic score in English:

- i) Previous academic scores will be collected from the school record before intervention.
- ii) During intervention a test was administered for academic score (Tool – 3): the tool was constructed by English teacher according to the English board syllabus)
- iii) After intervention academic score of 1<sup>st</sup> summative evaluation of English was considered.

#### **Description of Tools:**

##### **1. Tool – 1:-Reading Scanner by *National Educational Psychological Service* :**

To identify reading difficulty, reading scanner by National Educational Psychological Service was used. There were three different segments in the tool. “The tool was about reading skills of sight-vocabulary using a visual method. That means participants read words by looking at them and remembering them”.

#### **Administer of test:**

The test has three components – learning sight vocabulary – I (100), learning sight vocabulary – II (100), Phonic skills (87). The number in the bracket indicates number of words in each segment.

Participants were asked to read aloud of first check list of sight words column wise. The first two components were to check how many words the participant can read ‘by viewing’. That is, number of words which the participant can quickly and confidently read. If the participant is unsure, guessing or needs time to sound out, that word should be left and let the participant to proceed to go to the next word and that word should be

marked. In this way, the first two component of the test be administered. Each successful word-read carry score 1 and for each marked word participant score 0.

For the 3<sup>rd</sup> component, participants were asked to read letter or words with its sound. The list was given from one letter sounds to two letters, then three letters sound and lastly various stress words, blending of letters sounds etc. there were 87 items. Each successful letter sound carries score 1 and deviate letters were marked. It carries score 0. The norm of evaluation for class – VI is given below:

**Table – 9 : Norm of Evaluation**

<b>Components</b>	<b>Total scores</b>	<b>Good</b>	<b>Reading difficulties</b>
Learning sight vocabulary - I	100	≥ 65	< 65
Learning sight vocabulary – II	100	≥ 65	< 65
Phonic skills	87	≥ 57	< 57

Source : *National Educational Psychological Service*

**2. Test for English Reading Skills (Tool – 2): - Gray Oral Reading Test,5<sup>th</sup>Ed. (GORT – 5):**

The latest edition published in 2012 (GORT-5) which includes, “updated norms, extending participants age from 6 years 0 months upward to 23 years 11 months”. Anna H. Hall, Tannebaum said, “ New edition also came with streamlined basal and ceiling rules, revised items that are passage-dependent, and additional studies showing evidence of sound psychometric properties (Anna H. Hall , Rory P.Tannebaum, 2013)”. The purposes of the GORT-5 are “to identify students with oral reading difficulties and to determine strengths and weaknesses, evaluate student progress, and provide a standardized norm-referenced test that is appropriate for conducting reading research with school-age children” (Anna H. Hall , Rory P.Tannebaum, 2013). The GORT-5 should be



administered individually by examiners trained in formal assessment such as teachers, school psychologists, and diagnosticians (Anna H. Hall , Rory P.Tannebaum, 2013).

**Test Description:**

“The GORT-5 kit includes an examiner’s manual, two parallel forms of a student book (A and B), and one examiner record booklet for each form. Each student books contain 16 reading passages with increasing difficulty level. The examiner record booklets contain five comprehension questions for each passage as well as 3 places to record student information, time spent reading, deviations from print, other reading behaviors (e.g., substitutions, omissions, additions), and prosody (i.e., expression, volume, phrasing, smoothness, and pacing) (Anna H. Hall , Rory P.Tannebaum, 2013)”.

**Administration:**

The GORT-5 was designed to be administered to individual students in a quiet setting. Test review by Hall and Tannebaum suggested, “administration time typically ranges from 15-45 minutes with the test ideally being administered in one session. Two sessions are sometimes required if the student becomes fatigued or uninterested. The examiner determines the first passage for each student based on knowledge of their individual reading abilities or by using the entry point by grade level table provided in the examiner record booklet (Anna H. Hall , Rory P.Tannebaum, 2013)”. The students are provided with the passage and directed to read the passage orally as “carefully and quickly as you can (Anna H. Hall , Rory P.Tannebaum, 2013)”. Also Hall, Tannebaum added “the examiner times the student reading and records deviations from print as the student reads the passage. Following the reading, the examiner removes the passage, reads the comprehension questions to the student, and records his/her answers. Testing continues

until a basal and ceiling have been reached (determined by Fluency score) (Anna H. Hall , Rory P.Tannebaum, 2013)”.

### **Scoring:**

Raw data scores for each subtest were taken. Finally sum of scaled score and comprehension score was observed and using the tables Gort – 5 toolkit provides with it. It will present participant’s ORI score (Anna H. Hall , Rory P.Tannebaum, 2013).

### **Standardization, Reliability, Validity of GORT – 5:**

“The GORT-5 was normed using a sample of 2,556 students across 33 states, including are presentative sample of people with disabilities. Reliability coefficients are reported at 0.90 or higher. Item difficulty, discrimination, and bias were also examined to provide content-related validity. Difficulty of items were within the acceptable range (i.e., between 15-85%) with discrimination power 0.30 for all ages. (Anna H. Hall , Rory P.Tannebaum, 2013)”.

### **3. Tool – 3 (for academic performance in English):**

To judge academic performance in English during the intervention, teacher was asked to construct a tool consisting items from board syllabus. It is a teacher – made test.

### **3.4.8 Data Analysis**

The data were analysed in two phases – Descriptive data analysis and inferential data analysis. In *descriptive analysis*, data that gathered in pre-test, post-test, sustained test, academic performance test were analysis descriptively using SPSS. In *inferential analysis*, researcher tested the hypotheses to answer the research questions using statistical hypothesis testing. Researcher had also attempted to present the test result in

diagram. In the present study, the scores in pre-test, post-test and sustained scores are ORI (Oral Reading Index) score of GORT – 5 which comprise of fluency score and comprehension score. The participants academic scores are their percentage scores that they performed in previous exam, during intervention academic exam and 1<sup>st</sup> summative exam. “Paired sample t test was used to compare mean score of experimental and comparison group in pre and post-test (within groups). Independent sample t test was used to compare the mean difference of pre and post test score of experimental and comparison group (between groups). To test the impact of intervention in their academic performance researcher used analysis of variance (ANOVA). In the present study, SPSS (*Statistical Packages for Social Science*) software was used for inputting the data, analysing the data”.

### **3.5 Summary:**

The main purpose of this chapter was to discuss the research methodology of the study. “A detailed discussion of the research design, population, sample, intervention program, tools, treatment instructions, data analysis technique were provided. The data was analysed using the Statistical Package for Social Sciences (SPSS). The results of the data analysis and inference are discussed in Chapter IV later”.

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