

CHAPTER – IV

ANALYSIS OF DATA

4.1 Introduction

In this chapter, researcher presents quantitative results from the dependent variables in terms of the Gray Oral Reading Test (GORT-5) scores (ORI scores). ORI scores are a reflects of students reading fluency score and comprehension score. Statistical data analyses were conducted using a paired t test, independent sample t test to determine the effect of intervention within the subjects and between the groups respectively. To determine the effect of intervention was sustained on students with reading difficulties, data were analyzed using paired t test, independent sample t test for within group effect and between group effect respectively. For determining the effect of reading intervention on academic performance of students with reading difficulties, analysis of variance (ANOVA) was used. Again, each data in every step were analyzed descriptive way to find the tendency and characterizes of data. Since paired t test used only for dependent data, before analyses data with paired t test, researcher finds correlation between the set of scores. Statistical package of social science (SPSS), (version 25) software was used to analyze the data for the study.

4.2 Research Questions and Hypotheses

This study was designed to provide answers to the following research questions:

1. Does the reading intervention program improve reading skills (in terms of ORI measures) of students with reading difficulties of six grade?

2. Does the reading intervention program have sustainable effect (in terms of ORI measures) on students with reading difficulties of six grade?

3. Does the reading intervention program impact on academic achievement of the students with reading difficulties of six grade?

In order to obtain the most significant data that relevant to the research study, the following *hypotheses* were developed for statistical testing:

¹H₀: “There is no significant effect of reading intervention on reading skills of students with reading difficulties”. (Null hypothesis)

¹H₁: “There is significant effect of intervention on reading skills of students with reading difficulties”. (Alternative hypothesis)

²H₀: “The effect of intervention is not significantly sustained to the students with reading difficulties”. (Null hypothesis)

²H₁: “The effect of the intervention is significantly sustained to the students with reading difficulties”. (Alternative hypothesis)

³H₀: “There is no significant effect of reading intervention on academic performance of students with reading difficulties”. (Null hypothesis)

³H₁: “There is significant effect of reading intervention on academic performance of students with reading difficulties”. (Alternative hypothesis)

4.2 Identification of Students with Reading Difficulties

4.2.1 Identification measures

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 viz. section – A and section – B.

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
Total			199

Source : Based on Researcher’s data

There are “199 students comprised of boy and girl students 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:

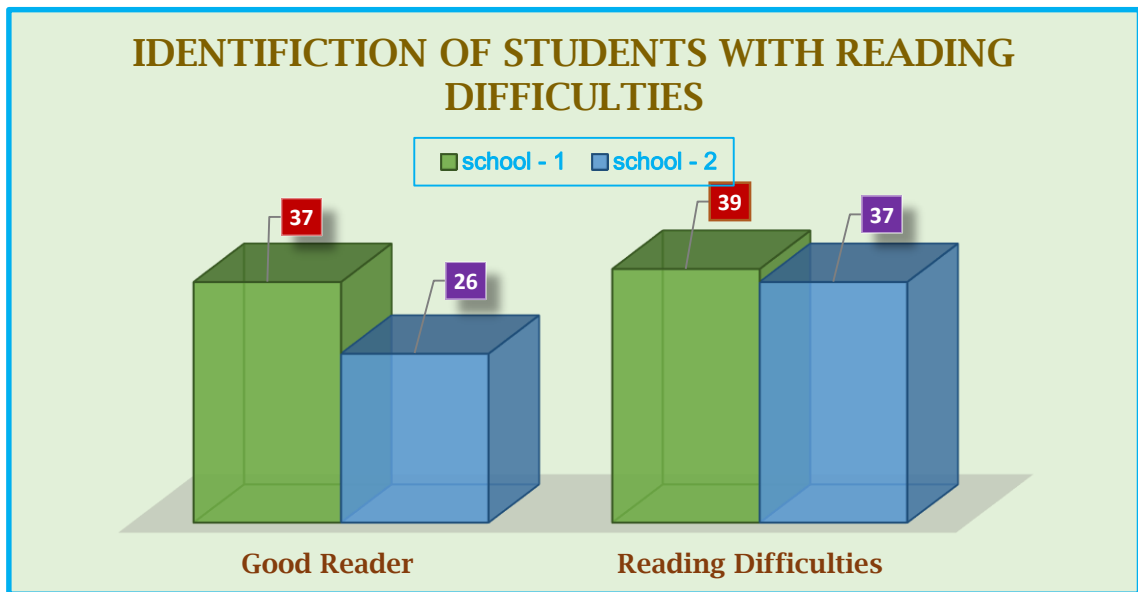
Table No – 6 : Identification of participants

Sl. No	Identification measure	School – 1	School – 2
1	Total Students availability in class – VI	105	94
2	Informed Consent form for initial screening(students) - Agreed	92	82
3	Teacher’s observation and previous records	76	63
4	Reading Scanner (<i>National Educational Psychological Service, Ireland</i>)	39	37
5	Informed consent form to participate in research (Parents and Students) – Agreed	37	34

Source : Based on researchers set up

The following table shows the result for identification of students with reading difficulties with reading scanner:

Graph – 1: Identification of students with reading difficulties



Group formation:

While forming the group, researcher had tried to minimize the internal threats and controlled the intervening variables as far as possible. 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 abilities was relatively equal, they belonged to same age range. The experimental group had 15 girls and 23 boys, while the control group had 13 girls and 20 boys.

Table No – 7: Group Information

Description	Experimental Group	Comparison Group
N	37	34
Age range	10.7 – 11.6	10.7 – 11.4
Gender ratio [male–M/female–F/ other - O]	M – 23 / F – 15	M – 20 / F – 13
Habitat	Village (under same demo-graphical location)	Village (under same demographical location)
Religion [Hindu – H / Islam – I / O - other]	H – {M – 6, F – 9} I – {M- 17, F - 6} O - nil	H – {M – 9, F – 8} I – {M- 11, F –5} O - nil

Source: Based on researchers set up

4.3 Descriptive Statistics of Test Scores

Before testing the hypotheses, researcher had made descriptive study of pre-test scores, post test scores, sustained scores of both experimental and comparison group and their academic scores (before intervention (BI) scores, during intervention (DI) scores and after intervention (AI) scores).

4.3.1 Pre-test and Post-test scores for Experimental Group

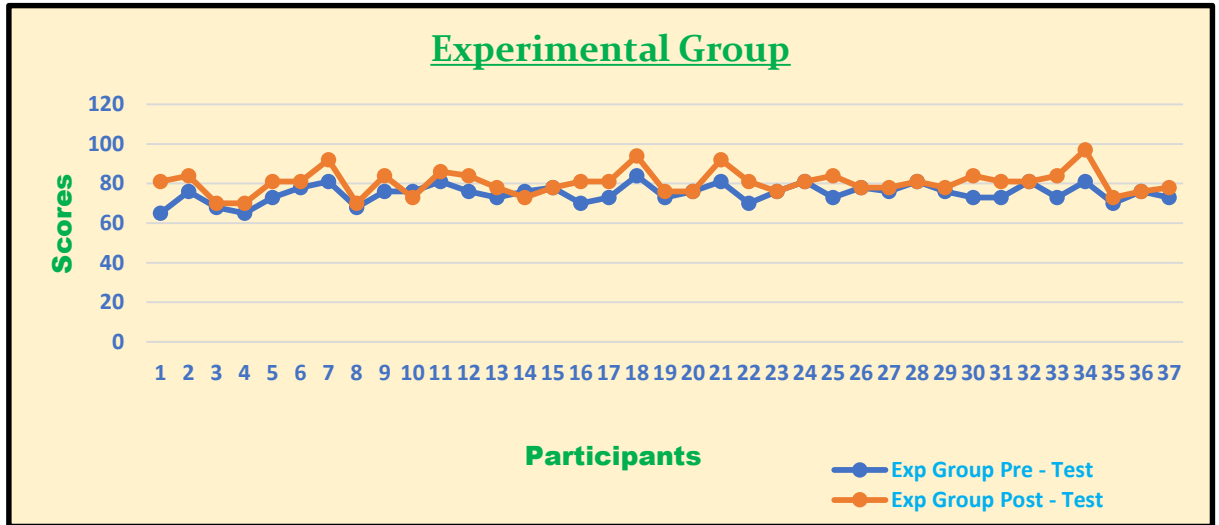
The mean of pre-test scores and post test scores of participants of Experimental group significantly differs. For further descriptive statistical information of these data researcher analysis the pre post scores. The result is shown below:

Table No – 10: Descriptive data of Experiment Group (Pre and Post Test)

Experimental Group			
<i>Pre - Test</i>		<i>Post - Test</i>	
Mean	75.08108108	Mean	80.43243243
Standard Error	0.764625542	Standard Error	1.040862241
Median	76	Median	81
Mode	76	Mode	81
Standard Deviation	4.651035598	Standard Deviation	6.33131784
Sample Variance	21.63213213	Sample Variance	40.08558559
Kurtosis	-0.251580083	Kurtosis	0.683235822
Skewness	-0.289076939	Skewness	0.638096991
Range	19	Range	27
Minimum	65	Minimum	70
Maximum	84	Maximum	97
Sum	2778	Sum	2976
Count	37	Count	37
Largest (1)	84	Largest (1)	97
Smallest (1)	65	Smallest (1)	70
Confidence Level (95.0%)	1.550732475	Confidence Level (95.0%)	2.110966467

Source : SPSS (Ver. – 25) descriptive data output

The pre-test scores and post test scores are represented in the following diagram.



Graph – 2 : Pre test – Post Test scores (Experimental Group)

4.3.2 Pre-test and Post-test scores for Comparison Group

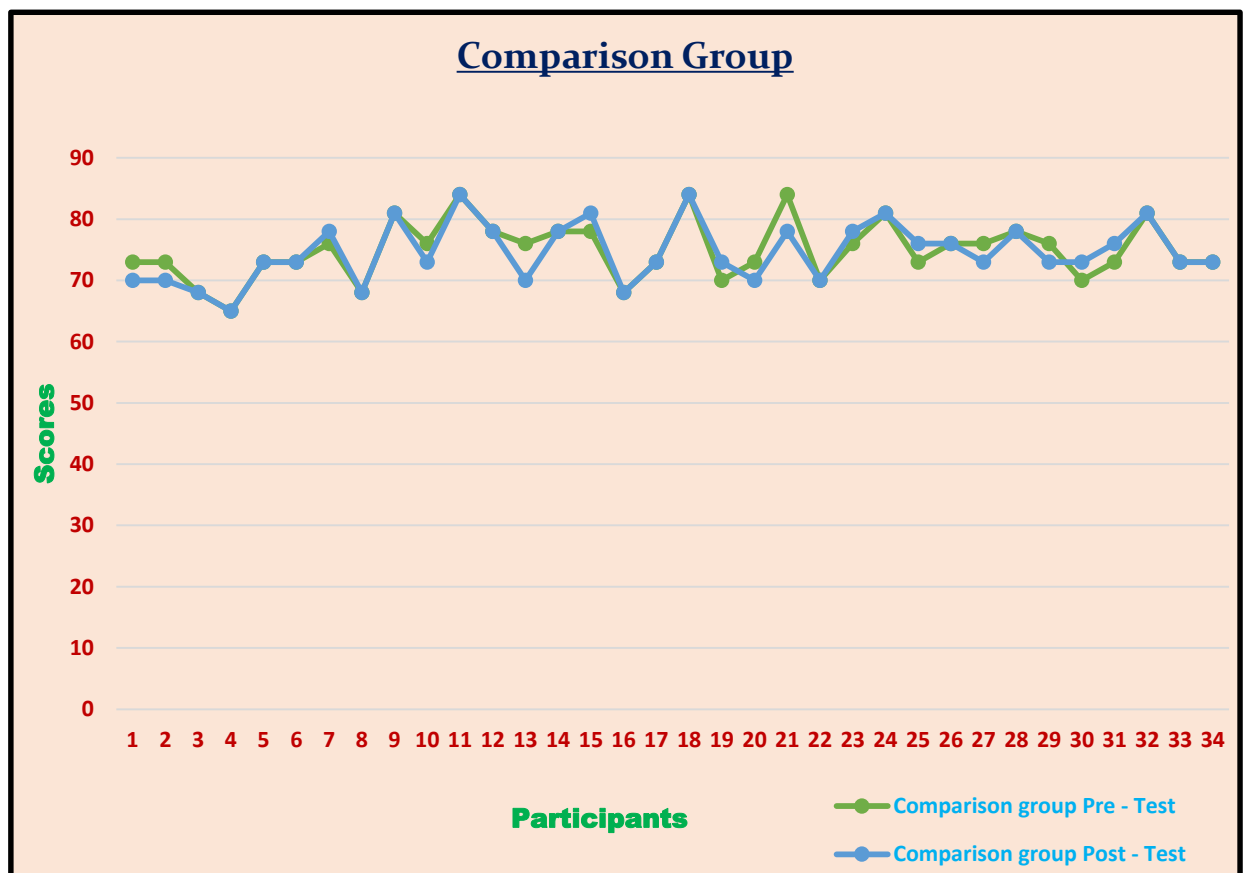
The mean of pre test scores and post test scores of participants of comparison group not significantly differs. For further descriptive statistical information of these data researcher analyzed the pre post scores. The result is shown below:

Table No – 11: Descriptive data of Control Group (Pre and Post Test)

Comparison Group			
<i>Pre - Test</i>		<i>Post - Test</i>	
Mean	74.94117647	Mean	74.61764706
Standard Error	0.820787388	Standard Error	0.828432691
Median	74.5	Median	73
Mode	73	Mode	73
Standard Deviation	4.785971777	Standard Deviation	4.830551169
Sample Variance	22.90552585	Sample Variance	23.3342246
Kurtosis	-0.295696589	Kurtosis	-0.65068409
Skewness	0.176043435	Skewness	0.182289233
Range	19	Range	19
Minimum	65	Minimum	65
Maximum	84	Maximum	84
Sum	2548	Sum	2537
Count	34	Count	34
Largest (1)	84	Largest (1)	84
Smallest (1)	65	Smallest (1)	65
Confidence Level (95.0%)	1.669904497	Confidence Level (95.0%)	1.685458983

Source : SPSS (Ver. – 25) descriptive data output

The pre-test scores and post test scores of participants of comparison group are represented in the following diagram.



Graph – 3: Pre test – Post test (Comparison Group)

4.3.3 Sustained scores for Experimental Group and Comparison group

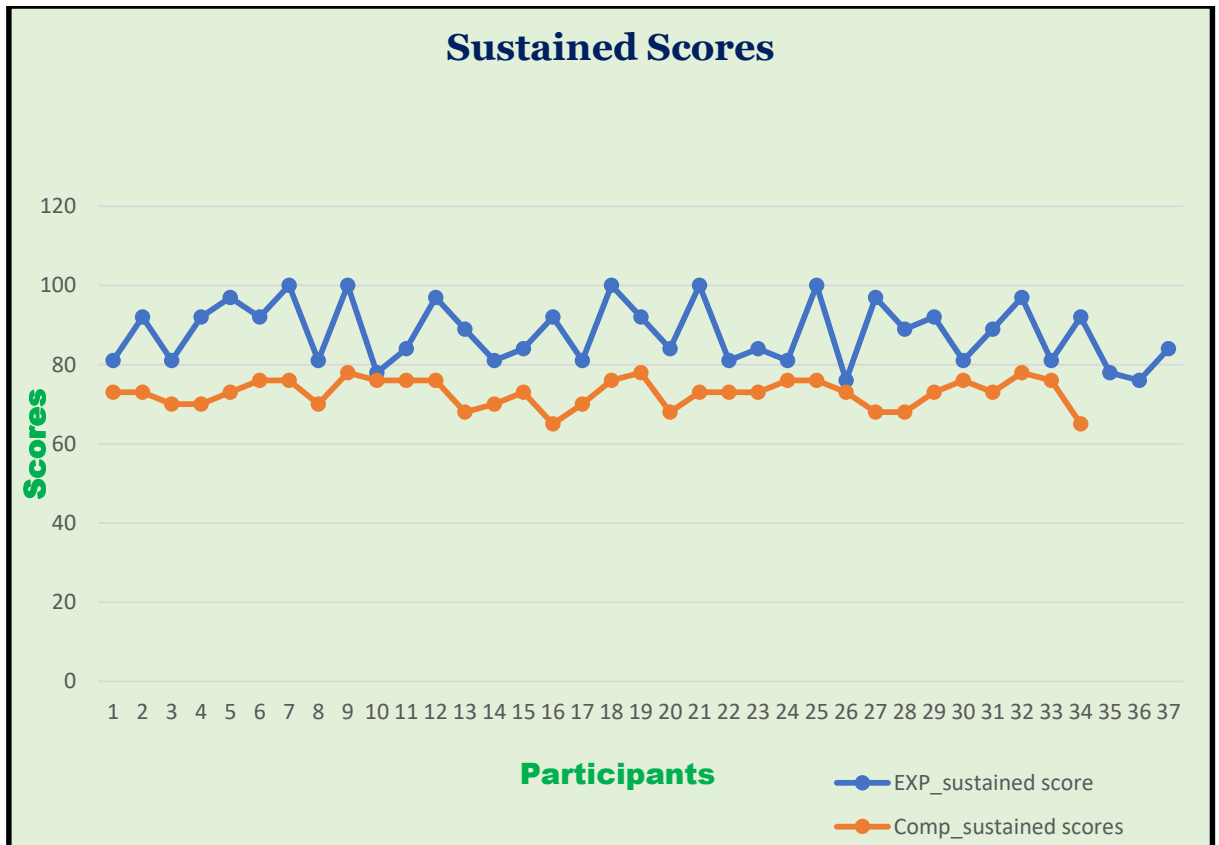
The mean of sustained scores of participants of experimental group and comparison group significantly differs. For further descriptive statistical information of these data researcher analysed the pre post scores. The result is shown below:

Table - 12 : Descriptive data of Sustained scores (for both Group (Pre and Post Test))

Sustained Scores			
<i>Experimental_Sustained Score</i>		<i>Control_Sustained Scores</i>	
Mean	88	Mean	72.82352941
Standard Error	1.275785102	Standard Error	0.624043779
Median	89	Median	73
Mode	81	Mode	73
Standard Deviation	7.760297818	Standard Deviation	3.638769258
Sample Variance	60.22222222	Sample Variance	13.24064171
Kurtosis	-1.311821197	Kurtosis	-0.567118459
Skewness	0.19755069	Skewness	-0.522914872
Range	24	Range	13
Minimum	76	Minimum	65
Maximum	100	Maximum	78
Sum	3256	Sum	2476
Count	37	Count	34
Largest(1)	100	Largest(1)	78
Smallest(1)	76	Smallest(1)	65
Confidence Level (95.0%)	2.587412113	Confidence Level (95.0%)	1.269626615

Source : SPSS (Ver. – 25) descriptive data output

The sustained scores of experimental group and comparison group are represented in the following diagram.



Graph – 4: Sustained Scores (Experimental & Control Group)

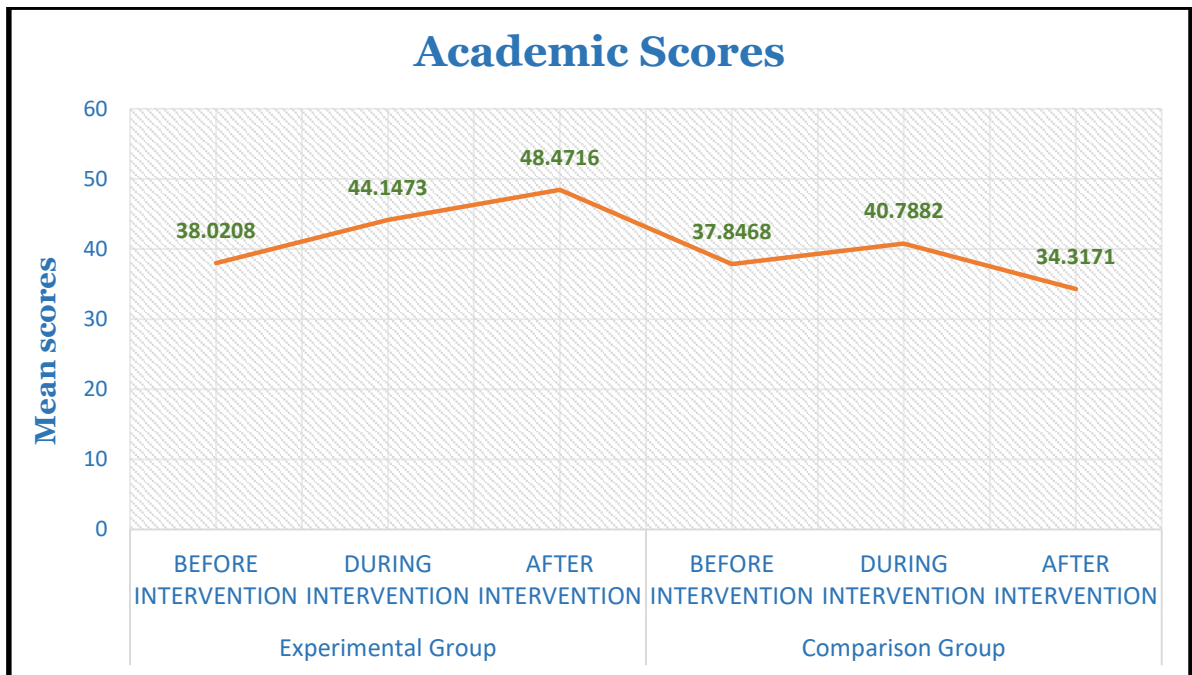
4.3.5 Academic scores of Experimental Group and Comparison Group

The mean academic score of participants of experimental group before intervention was 38.0208, that of during intervention and after intervention were 44.1473 and 48.4716 respectively. The mean academic scores of comparison group before intervention was 37.8468, that of during intervention and after intervention are 40.7882 and 34.3171 respectively.

Table – 13: Descriptive analysis for Academic scores

Descriptive Statistics				
Dependent Variable: ACADEMIC_SCORES				
Group_academic_scores	EXAM	Mean	Std. Deviation	N
Experimental Group	BEFORE INTERVENTION	38.0208	13.68634	37
	DURING INTERVENTION	44.1473	9.85731	37
	AFTER INTERVENTION	48.4716	10.49949	37
	Total	43.5466	12.15453	111
Control Group	BEFORE INTERVENTION	37.8468	9.94552	34
	DURING INTERVENTION	40.7882	9.24989	34
	AFTER INTERVENTION	34.3171	7.89269	34
	Total	37.6507	9.36457	102
Total	BEFORE INTERVENTION	37.9375	11.95710	71
	DURING INTERVENTION	42.5387	9.65210	71
	AFTER INTERVENTION	41.6934	11.69507	71
	Total	40.7232	11.27603	213

The academic scores of before, during and after intervention of both experimental and comparison group are shown in the following diagram.



Graph – 5 : Mean academic scores of Experimental & Control Group

4.4 Effect of Intervention on Reading skills of students with reading difficulties

The hypothesis that researcher tested here is as follows:

Null hypothesis:

H_0 : “There is no significant effect of reading intervention on reading performance of students with reading difficulties”.

Alternative hypothesis:

H_1 : “There is significant effect of intervention on reading performance of students with reading difficulties”.

In this section, researcher had tried to show first the effect of intervention on reading skills of students with reading difficulties of experimental group. “The same effect was being

tested in case of students of comparison group. Lastly, the effect of intervention on reading skills of students with reading difficulties of experimental group with respect to students with reading difficulties in comparison group”.

4.4.1 Effect of Intervention on Reading skills of students with reading difficulties (For Experimental group)

For the **first part (a)** of this section, researcher formulated the following sub hypothesis:

Null Hypothesis:

¹H_{0a}: “There is no significant effect of reading intervention on reading performance of students with reading difficulties of experimental group”.

Alternative hypothesis:

¹H_{1a}: “There is significant effect of intervention on reading performance of students with reading difficulties of experimental group”.

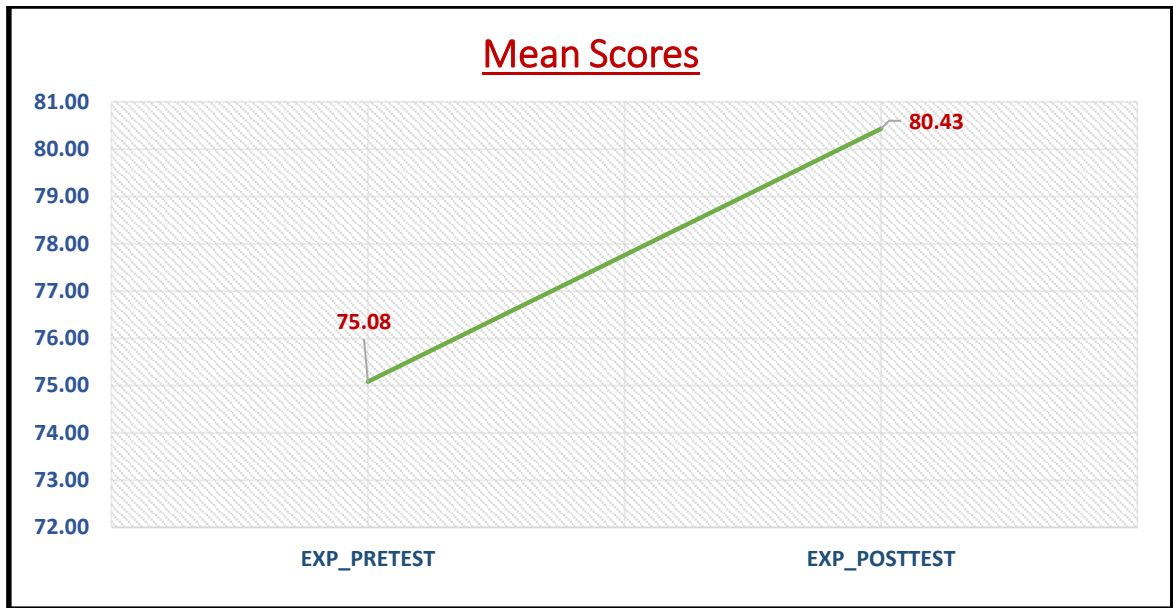
The mean of pre and post test scores of participants of experimental group are 75.0811 and 80.4324. The correlation coefficient of the scores is 0.602 at 95% level of significance which implies that the scores are positively correlated. Since the data are not independent, paired t test is the best option to test the effect of the intervention program to the students with reading difficulties in experimental group. Also the graphical representation of the pre and post test mean scores suggests that there is a significant change in scores. The mean difference is $(80.4324 - 75.0811) = 5.3513$. The following tables shows information of paired samples and result of paired t test of the pre post test scores of experimental groups.

Table – 14 : Paired Sample Correlations (Experimental Group)

Paired Samples Statistics					Correlations		
		Mean	N	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1	EXP_PRETES	75.0811	37	4.65104	.76463	.602	.000
	EXP_POSTT	80.4324	37	6.33132	1.04086		

Source : SPSS (Ver. – 25) paired sample correlations data output

The mean scores of pre test and post test of for experimental group is shown in the following diagram.



Graph – 6 : Mean Pre and Post Test Score of Experimental Group

Table – 15: Paired Sample t test (Experimental group)

Paired Samples Test								
	Paired Differences				t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper

Pair 1	EXP_PRE TEST	-5.35135	5.12194	0.84204	-7.05909	-3.64361	-6.355	36	0.0000002336
	EXP_POST TEST								

Interpretation:

The result of paired sample t test reveals that $t = -6.355$, $df = 36$, $p = 0.0000002336$. Since value of $p (=0.0000002336)$ is much lesser than $\alpha (0.05)$, we accept alternative hypothesis. So, at 95% level of significance, the test confirms that there is highly significant effect of intervention on reading performance of students with reading difficulties of experimental group.

4.4.2 Effect of Intervention on Reading skills of students with reading difficulties (For Comparison Group)

For the **second part(b)** of this section, researcher formulated the following sub hypotheses:

Null Hypothesis:

¹H_{0b}: “There is no significant changes on reading performance of students with reading difficulties of comparison group”.

Alternative hypothesis:

H_{1b}: “There is significant changes on reading performance of students with reading difficulties of comparison group”.

The mean of pre and post test scores of participants of comparison group are 74.9412 and 74.6176. The correlation coefficient of the scores is 0.885 at 95% level of significance which implies that the scores are positively correlated. Since the data are not independent, paired t test is the best option to test whether there is any change to the students with reading difficulties in comparison group. Also, the graphical representation of the pre and post-test mean scores suggests that there is a slightly change in scores. The mean difference is $(74.9412 - 74.6176) = 0.3236$. The following tables show information of paired samples and result of paired t test of the pre post test scores of experimental groups.

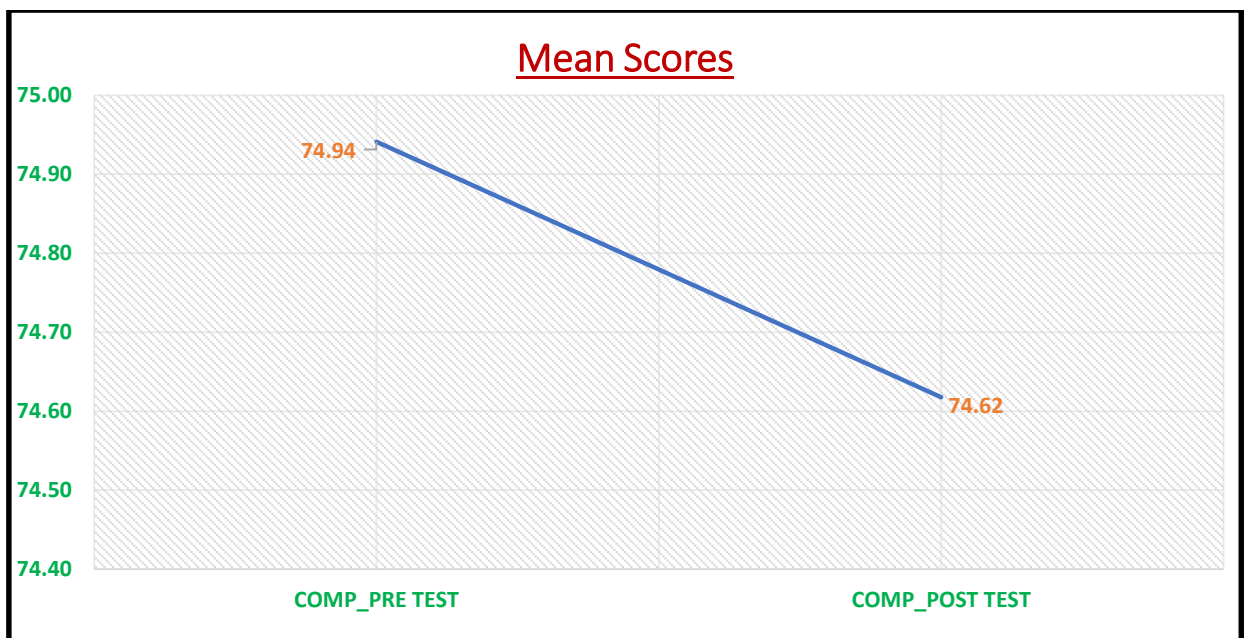
Table – 16 : Paired Sample Correlations (Control Group)

Paired Samples Statistics						Correlations	
		Mean	N	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1	COTROL_PRE TEST	74.9412	34	4.78597	0.82079	0.885	0.000
	CONTROL_PO STTEST	74.6176	34	4.83055	0.82843		

Table – 17 : Paired Sample t test (Control Group)

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	CONTROL_ PRETEST	0.32353	2.30573	0.39543	-0.48098	1.12804	0.818	33	0.419
	CONTROL_ POSTTEST								

The mean scores of pre test and post test of for comparison group is shown in the following diagram.



Graph – 7 : Mean Pre and Post Test Score of Experimental Group

Interpretation:

The result of paired sample t test reveals that $t = 0.818$, $df = 33$, $p = 0.419$. Since value of $p (=0.419)$ is greater than $\alpha (0.05)$, we accept null hypothesis. So, at 95% level of significance, the test confirms that there are no significant changes on reading performance of students with reading difficulties of comparison group.

4.4.3 Effect of Intervention on Reading skills of students with reading difficulties of experimental group with respect to comparison group

For the **third part(c)** of this section, researcher formulated the following sub hypothesis:

Null Hypothesis:

¹H_{0c}: “There is no significant effect of intervention on reading performance of students with reading difficulties of experimental group with respect to students with reading difficulties in comparison group”.

Alternative hypothesis:

¹H_{1c}: “There is significant effect of intervention on reading performance of students with reading difficulties of experimental group with respect to students with reading difficulties in comparison group”.

The mean of difference scores of pre and post test scores of participants of experimental group and comparison group are 5.929 and 6.100 respectively. Since the samples are independent, ‘Independent Sample t test’ is the best option to test the effect of the intervention program to the students with reading difficulties of experimental group with respect to the students with reading difficulties of comparison group. The following tables

shows the results of independent samples t test and group statistics of the pre post test scores of both experimental group and comparison group.

Table – 18 : Group Statistics (Experimental Vs Control)

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Difference	Experimental Group	37	5.35	5.122	0.842
	Comparison Group	34	-0.32	2.306	0.395

Table – 19 : Independent Sample t test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Difference	Equal variances assumed	30.082	.000	5.929	69	.0000001085	5.675	.957	3.766	7.584
	Equal variances not assumed			6.100	50.927	.0000001435	5.675	.930	3.807	7.543

Source : SPSS (Ver. – 25) Independent sample t test data output

Interpretation:

The result of paired sample t test reveals that $t = 5.929$, $df = 69$, $p = 0.0000001085$ assuming variances are equal. Again, when equal variances is not assumed, the test indicates that $t=6.100$, $df = 50.927$, $p = 0.0000001435$. Since value of $p (=0.0000001085, 0.0000001435)$ in both cases is much lesser than $\alpha (0.05)$, we accept alternative hypothesis. So, at 95% level of significance, the test confirms that there is significant effect of reading intervention on reading performance of students with reading difficulties

of experimental group with respect to students with reading difficulties in comparison group.

4.5 Does the effect of Intervention sustained?

The hypothesis that researcher tested here is as follows:

Null hypothesis:

²**H₀**: The effect of intervention is not significantly sustained to the students with reading difficulties.

Alternative hypothesis:

²**H₁**: The effect of the intervention is significantly sustained to the students with reading difficulties.

To test whether the intervention program has a sustainable effect on the students, the same reading assessment was administered after 22days of completion of post test. In this section, researcher had tried to show first the effect of intervention is sustained to students with reading difficulties of experimental group. The same effect was being tested in case of students of comparison group.

4.5.1 Does the effect of Intervention sustained for experimental group?

For this **part(a)** of this section, researcher formulated the following sub hypothesis:

Null Hypothesis:

¹**H_{0a}**: The effect of intervention is not significantly sustained to the students with reading difficulties of experimental group.

Alternative hypothesis:

¹**H_{1a}**: The effect of intervention is significantly sustained to the students with reading difficulties of experimental group.

The mean of post test scores and sustained scores of participants of experimental group were 80.4324 and 88 respectively. The correlation coefficient of the scores is 0.541 at 95% level of significance which implies that the scores are positively correlated. Since the data are not independent, paired t test is the best option to determine the effect of the intervention program is sustained to the students with reading difficulties in experimental group.

Table – 20 : Paired Sample Correlation (Sustained scores_Experimental)

Paired Samples Statistics						Correlations	
		Mean	N	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1	EXP_POSTTEST_SCORES	80.4324	37	6.33132	1.04086	.541	.001
	EXP_SUSTAINED_SCORES	88.0000	37	7.76030	1.27579		

Source : SPSS (Ver. – 25) Paired sample correlation data output

Table – 21 Paired sample t test (Sustained _Experimental)

Paired Samples Test		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	EXP_POSTTES T_SCORES EXP_SUSTAIN ED_SCORES	-7.56757	6.86594	1.12875	-9.85679	-5.27835	-6.704	36	0.00000008044123

Source : SPSS (Ver. – 25) Paired sample t test data output

Interpretation:

The result of paired sample t test reveals that $t = -6.704$, $df = 36$, $p = 0.00000008044123$. Since value of $p (=0.00000008044123)$ is much lesser than $\alpha (0.05)$, we accept alternative hypothesis. So, at 95% level of significance, the test confirms that there is highly significant effect of intervention on reading performance is sustained students with reading difficulties of experimental group.

4.5.2 Does the effect of Intervention sustained for comparison group?

For this **part(b)** of this section, researcher formulated the following sub hypothesis:

Null Hypothesis:

¹**H_{0b}**: The effect of intervention is not significantly sustained to the students with reading difficulties of comparison group.

Alternative hypothesis:

¹**H_{1b}**: The effect of intervention is significantly sustained to the students with reading difficulties of comparison group.

The mean of post test scores and sustained scores of participants of comparison group were 74.6176 and 72.8235 respectively. The correlation coefficient of the scores is 0.522 at 95% level of significance which implies that the scores are positively correlated. Since the data are not independent, paired t test is the best option to determine the effect of the intervention program is sustained to the students with reading difficulties in comparison group.

Table – 22: Paired sample Correlation (Sustained_Control Group)

Paired Samples Statistics					Correlations	
	Mean	N	Std. Deviation	Std. Error Mean	Correlation	Sig.

Pair 1	COMP_POSTTEST_S CORES	74.6176	34	4.83055	.82843	.522	.002
	COMP_SUSTAINED_ SCORES	72.8235	34	3.63877	.62404		

Table – 23 : Paired Sample t Test (Post test – Sustained)

Paired Samples Test									
		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	CONTROL_POSTTEST_SCORES CONTROL_SUSTAINED_SCORES	1.79412	4.26955	0.73222	0.30440	3.28383	2.450	33	0.0197470502

Interpretation:

The result of paired sample t test reveals that $t = 2.450$, $df = 33$, $p = 0.0197470502$. Since value of $p (=0.0197470502)$ is lesser than $\alpha (0.05)$, we accept alternative hypothesis. So, at 95% level of significance, the test confirms that there is significant effect of intervention on reading performance is sustained on students with reading difficulties of comparison group. Here it is seen that the both results are significant but the effect of intervention on students of experiment group is much significant than that of comparison group.

4.6 Effect of intervention on academic performance of students with reading difficulties

The hypothesis that researcher tested here is as follows:

Null hypothesis:

³H₀: There is no significant effect of reading intervention on academic performance of students with reading difficulties.

Alternative hypothesis:

³H₁: There is significant effect of reading intervention on academic performance of students with reading difficulties.

To determine whether there is effect of intervention on their academic performance, three kinds of scores were considered. These are: Before Intervention (BI) scores, During Intervention (DI) scores, After Intervention (AI) scores. Here between-subjects' factors are Groups and Exam scores. Two – way ANOVA test was used. The hypothesis was divided into following sub-hypotheses:

${}^3H_{0a}$: the mean scores of experimental group and control groups are same in all different exams. (Null hypothesis)

$$\text{i.e } {}^3H_{0a}: \mu_{BI} = \mu_{DI} = \mu_{AI}$$

${}^3H_{1a}$: the mean scores of experimental group and control groups are not same in all different exams. (Alternative hypothesis)

$$\text{i.e } {}^3H_{1a}: \mu_{BI} \neq \mu_{DI} \neq \mu_{AI}$$

Again, ${}^3H_{0b}$: the mean academic scores of all different exam are same in all different groups. (Null hypothesis)

$$\text{i.e } {}^3H_{0b}: \mu_{EG} = \mu_{CG}$$

${}^3H_{1b}$: the mean academic scores of all different exam are not same in all different groups. (Alternative hypothesis)

$$\text{i.e } {}^3H_{1b}: \mu_{EG} \neq \mu_{CG}$$

Table : 24 : Between Subject Factors

Between-Subjects Factors			
		Value Label	N
Group_academic_scores	5	Experimental G	111
	7	Comparison G	102
EXAM Scores	1	BEFORE INTERVENTION	71
	2	DURING INTERVENTION	71
	3	AFTER INTERVENTION	71

Table – 25 : Levene’s Test

Levene's Test of Equality of Error Variances^{a,b}					
		Levene Statistic	df1	df2	Sig.
ACADEMIC_SCORES	Based on Mean	2.722	5	207	.021
	Based on Median	2.381	5	207	.040
	Based on Median and with adjusted df	2.381	5	184.653	.040
	Based on trimmed mean	2.653	5	207	.024
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.					
a. Dependent variable: ACADEMIC_SCORES					
b. Design: Intercept + Group_academic_scores + EXAM + Group_academic_scores * EXAM					

Table – 26 : Two way ANOVA

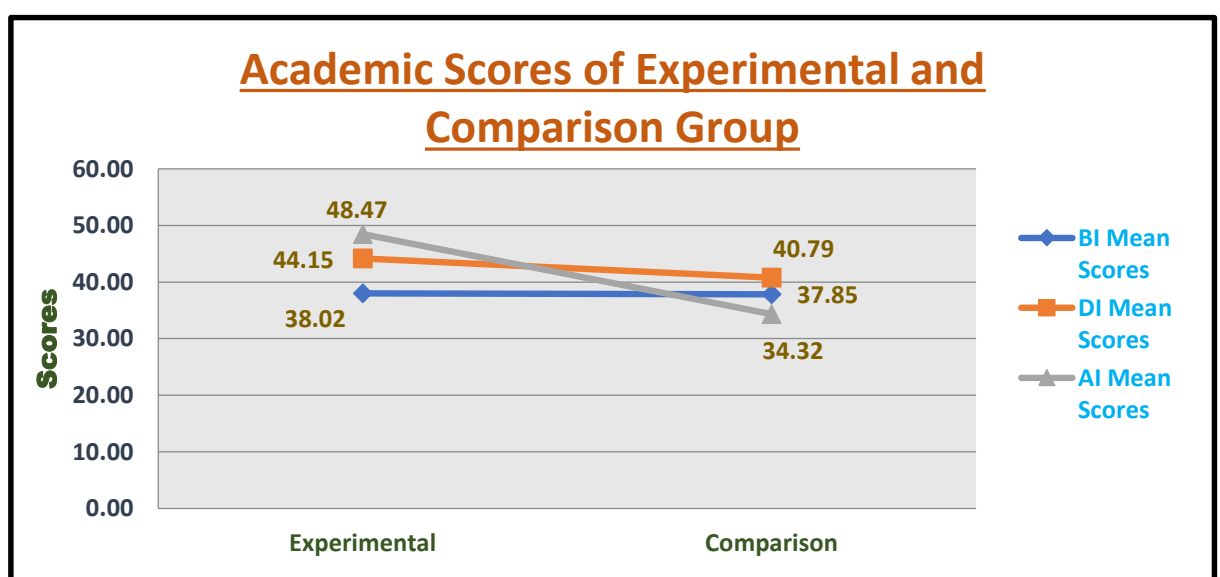
Tests of Between-Subjects Effects						
Dependent Variable: ACADEMIC_SCORES						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4602.189 ^a	5	920.438	8.524	.000	.171
Intercept	350450.211	1	350450.211	3245.294	.000	.940
Group_academic_scores	1847.746	1	1847.746	17.111	.000	.076
EXAM	795.780	2	397.890	3.685	.027	.034

Group_academic_scores EXAM *	1902.604	2	951.302	8.809	.000	.078
Error	22353.348	207	107.987			
Total	380190.137	213				
Corrected Total	26955.537	212				
a. R Squared = .171 (Adjusted R Squared = .151)						

Interpretation:

From the above table, the value of p for both group academic scores and for exam scores are very less than 0.05 (α). Therefore, alternative hypotheses should be accepted.

Thus, the mean scores of experimental group and control groups are not same in all different exams and the mean academic scores of all different exams are not same in all different groups. Combining these two facts, researcher made conclusion that there is significant effect of reading intervention on academic performance of students with reading difficulties. The following diagram shows the mean scores of each group in three exams.



Graph – 8 : Academic Scores of Experimental and Control group

Interpretation:

From the above diagram, BI scores of experimental and comparison groups are 38.02 and 34.32. In during intervention (DI) these score increases to 44.15 and 37.85 respectively. Finally, after completion of intervention, AI scores of experimental group increases to 48.47 whereas that comparison group increases to 40.79.

4.7 Discussion of results

In this segment researcher presented the results from interpretation of the tests in tabular format as follows:

Research Question	Result	Remark
<i>Research question – 1 (Effect of intervention)</i>	The effect of reading intervention was highly significant on experimental group. The effect was not significant for the comparison group. Also, on comparison of the mean difference of two groups, it shows that there is significantly high effect of reading intervention program on experimental group than comparison group.	Reading intervention program positively effective in order to gain reading fluency to the students with reading difficulties who participated in the program.
<i>Research question – 2 (Sustained effect)</i>	The sustained effect of reading intervention was highly significant on experimental group. That effect was not so significant for the comparison group. Though the changes are mean score were found	The reading intervention program succeeded to create sustained effect on experimental group, i.e. on those students with

	for comparison group. The changes that occurred may be due to impact of other variable on comparison group.	reading difficulties who were gone through the program.
Research question – 3 (Effect on academic performance)	Intervention program effect positively on academic performance of students with reading difficulties. Remarkable change in mean score of experimental group in before intervention, during intervention, after intervention exams were found where as that of comparison group was not much.	Intervention program helps those students with reading difficulties go experimental group to improve their academic performance. Though little improvement was also found for the students with reading difficulties in comparison group but that was not because of the intervention program.

References

There are no sources in the current document.