CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

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DATA ANALYSIS & INTERPRETATION

4.1 INTRODUCTION

The present analysis chapter consists of a critical evaluation of the categorized collected data. It provides the base to explore the features of the study's research problem. The comprehensive process of organizing, structuring, and giving meaning to a large amount of collected data, which has to be understood before it is interpreted, is known as data analysis. The computation of measurements and the exploration of patterns in the interactions between data groupings are referred to as "analysis." Data collection, organization, analysis, and interpretation all depend on statistical methodologies. The collection of useful and accessible data is the central objective of data analysis. Considering the limitations of the research sample and the research tools, selected and used in the research study, the concluding stage of data treatment involves systematic, logical, and critical examination of the findings obtained subsequent to the analysis. The collected data of the study must then be processed and analyzed in accordance with the framework formed to create the study plan after it has been collected. In the process of collecting, organizing, analyzing, and interpreting data, statistical methods are crucial. Regardless of whether the data is qualitative or quantitative, the data analysis describes and summarizes the information; creates links between variables; compares variables; identifies discrepancies between variables; and finally anticipates the conclusion. Succeeding the data analysis, the researcher interprets the research study's findings.

The proposed research study was experimental research in nature. A quasi-experimental design was employed in the present study by the researcher. In this study, a Music-Based Program was developed by the researcher to enhance secondary school students' grammar skills with the use of a Pre-Test and Post-Test Non-Equivalent Control Group Design. As outlined in Chapter III, the developed program was implemented by the researcher. The grammar was taught by the researcher in class IX of tribal students to enhance English grammar skills achievement through the Music-Based Program developed. The researcher implemented the Music-Based Program for grammar teaching to the experimental group of tribal students for one academic year i.e., from August 2021 to March 2022. The control

group was taught English grammar with the regular method without any treatment. Two distinct schools were used in this study as the control and experimental groups in accordance with the Pre-Test-Post-Test Non-Equivalent Control Group Design. The data collected was quantitatively analyzed to determine the effectiveness of the Music-Based Program used in the teaching of English Grammar to class IX students. The quantitative analysis was made with the use of the mean post-test scores, standard deviation, standard error of the mean, Mann-Whitney U-test, Percentage, and Intensity Index. The experimental group of students' reactions toward 25 different statements about the Music-Based Program was taken on the Likert-type five-point reaction scale.

4.2.0 DATA ANALYSIS AND INTERPRETATION:

The analysis of the collected data and interpretation have been done objective-wise. In the present study, the focus of the study was on developing a Music-Based Program and the implementation of the Music-Based Program. Hence, the objectives were framed related to the development of a Music-Based Program; the implementation of the Music-Based Program; to find out the effectiveness of the Music-Based Program; and measuring the reaction of the students towards the development of the Music-Based Program to enhance English Grammar skills.

The study comprised of four objectives. The objectives and the analyses are presented with tables and interpretations as follows:

4.2.1 DATA ANALYSIS OF OBJECTIVE-1

The study comprised objective- 1 **"To develop a Music-Based Program to enhance English grammar skills."** There were no statistics used for this objective which has been described in Chapter III

4.2.2 DATA ANALYSIS OF OBJECTIVE- 2

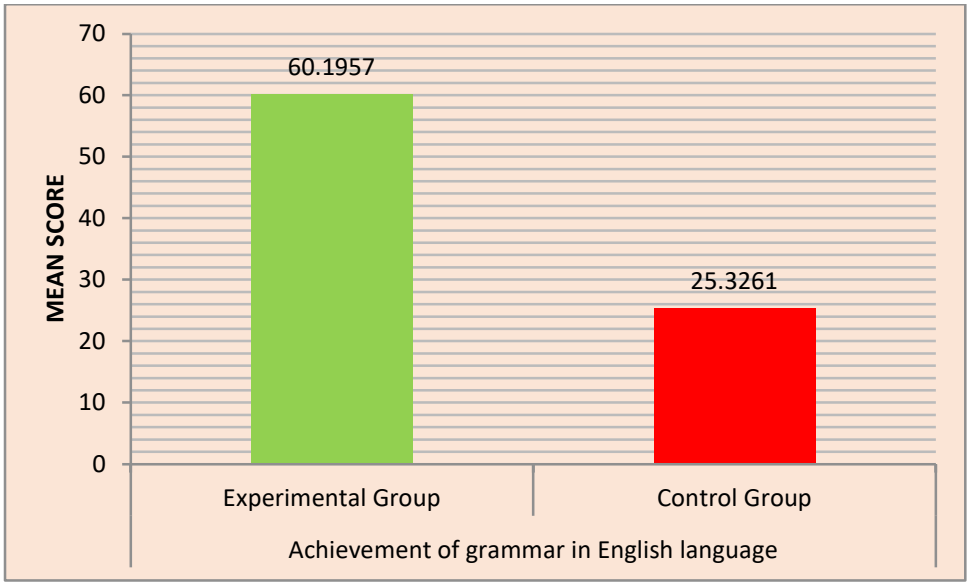
The study comprised objective- 2 **"To implement a Music-Based Program to enhance English grammar skills."** There were no statistics used for this objective which has been described in Chapter III.

4.2.3 DATA ANALYSIS OF OBJECTIVE- 3

The study comprised objective- 3 **"To find out the effectiveness of the Music-Based Program in terms of achievement in English grammar skills."** The investigator prepared 100-mark grammar skills achievement tests, and the mean of the post-test scores were calculated. It was calculated by taking the mean of the post-test scores of the students for both the experimental group and the control group. These analyses are presented with tables and interpretations as follows.

Table 4.1.1 Mean, Standard Deviation, And Standard Error of Mean of Experimental Group and Control Group for Achievement of Grammar skills in English Language.

Achievement Of Grammar Skills in English Language	N	Mean	Standard Deviation	Standard Error of Mean
Experimental Group	46	60.1957	6.39312	.94261
Control Group	46	25.3261	6.57623	.96961



From Table 1.1, it was observed that the mean score for the achievement of grammar skills in the English language of the experimental group of students was 60.19 whereas the mean score of the control group of students was 25.32. It was also seen that the standard deviation of the experimental group was 6.39 from the scores for achievement of grammar skills in the English

language; whereas 6.57 was the standard deviation of the control group from the scores for achievement of grammar skills in the English language. The standard error of the mean for the experimental was 0.94 whereas it was 0.97 for the control groups. The comparison of the means demonstrated that the mean score of the experimental group was found to be significantly higher than the mean score of the control group of the study. It is possible that the intervention of the Music-Based Program in the teaching of grammar for enhancing English grammar skills in the English language was the reason why the experimental group's mean score in the achievement of grammar skills in the English language was greater than that of the control group. To determine whether the difference in the mean was accidental or significant as well as to test the null hypothesis, i.e., **Ho, "There will be no significant difference between the mean post-test scores of students of the control and experimental group of class IX in the achievement of grammar skills in the English language.";** Mann-Whitney U test was employed as the method of convenience sampling was used by the researcher. Table no. 1.2 mentioned below, demonstrated the summary of the Mann-Whitney U test which is also followed by an interpretation.

Table 4.1.2: Summary of Mann-Whitney U-Test for The Achievement of Grammar Skills in English Language for Experimental Group and Control Group Students with the Number of Samples, Sum of Ranks, U-Value, Z-Value, and Probability

Students	N	Sum Of Ranks	U-Value	Z- Value	Probability(P)
Experimental Group	46	3197.00	000.000	-8.266	0.000
Control Group	46	1081.00			

From the table no. 1.2, it was found that the experimental group had the sum of the ranks of 3197, whereas the control group students had the sum of the ranks of 1081 in the achievement of grammar skills in the English language, with a total of 46 students in each group. In the present study, the U-value was found to be 0.00 and the z-value was found to be -8.266. According to Siegel's 1956 Table A, for normal probability, under the null hypothesis (*Ho*) of z, for z <= -8.266, the two-tailed probability in the present study was found to be 0.00, which was found to be lesser than our determined $\alpha = 0.01$. Therefore, in the present research study the null hypothesis, i.e., "There will be no significant difference between the mean post-test scores of students of control and experimental group of class IX in the achievement of grammar skills in English language." was rejected. Hence, it was clear that on account of the achievement of grammar skills in the English language, the experimental and the control group students

contrasted significantly. From Table 1.2, it was also clear that the mean scores of the experimental group were found to be greater than the mean scores of the control group, which could be attributed to the use of a Music-Based Program in the enhanced achievement of grammar skills in the English language. As a result, it can be said that the English grammar skills enhancement of the tribal students in the experimental group was statistically greater than the grammar skills enhancement of the tribal students in the control group. This outcome of the present research study was due to the intervention of the Music-Based Program.

4.2.4. DATA ANALYSIS OF OBJECTIVE- 4

The data was collected for objective 4 **"To measure the reaction of the students towards the Music-Based Program used in the teaching of English Grammar"** with the use of the Likert-type five-point reaction scale comprised of 25 statements. The reaction scale was prepared by the researcher to collect the data from the students from the experimental group only. On the reaction scale, there were five possible answers for each statement. The first option was Strongly Agree; the second was Agree; next was Undecided; followed by Disagree, and Strongly Disagree, being the last option. According to the distribution of scores, for strongly agreed 5 scores; for agreed 4 scores, for uncertain/undecided 3 scores, for disagreed 2 scores, and for strongly disagreed 1 score was given. Both, the intensity index and the percentage of responses to each statement were calculated in order to make the inferences. Using the provided formula, the intensity index for each statement on the reaction scale was determined

Table No.4. 1.3. Explanation of the Formulas of the Intensity Index and Percentage Analysis

Formulas of the Intensity Index and Percentage Analysis
▪ **Intensity Index for Each Statement (IIS)** IIS =F1*5+F2*4+F3*3+F4*2+F5*1/ N: a total number of respondents
F1:- Frequency of the Option Strongly Agree, F2:- Frequency of the Option Agree, F3:- Frequency of the Option Undecided, F4:- Frequency of the Option Disagree, F5:- Frequency of the Option Strongly Disagree N:- A Total Number of Respondents
▪ **Average Intensity Index (AII) of the Statements**
AII=Total of Intensity Indices for all Statement / n: A total number of statements
AII=IIS1+IIS2+IIS3+IIS4+IIS5+IIS6+IIS7+IIS8+IIS9+IIS10+IIS11+IIS12+IIS13+IIS14+ IIS15+IIS16+IIS17+IIS18+IIS19+IIS20+ +IIS21+IIS22+IIS23+IIS24+IIS25/25
AII:- Average Intensity Index IIS:- Intensity Index of the Statement n:- a total no of Statement Number

Table No. 4.1.4 The Reaction Scale Analysis using Percentage and Intensity Index

Strongly Agree: SA, Agree: A, Undecided: UD, Disagree: DA, Strongly Disagree: SD

No.	Statements	% SA	% A	% UD	% D	% SD	INTENSITY INDEX
1	All the grammar topics in the syllabus were covered while teaching through music.	98%	2%	0%	0%	0%	
		45	1	0	0	0	4.98
2	Teaching through music enhanced the understanding of grammar topics.	83%	17%	0%	0%	0%	
		38	8	0	0	0	4.83
3	Teaching through music effectively met the grammar learning objectives.	70%	17%	13%	0%	0%	
		32	8	6	0	0	4.57
4	The grammar songs used were very useful for learning grammar topics easily.	83%	17%	0%	0%	0%	
		38	8	0	0	0	4.83
5	Learning grammar through music is a new way to learn grammar.	87%	13%	0%	0%	0%	
		40	6	0	0	0	4.87
6	Singing the grammar songs and activity songs during classes were joyful.	85%	15%	0%	0%	0%	
		39	7	0	0	0	4.85
7	All the tunes of grammar songs were easy to sing melodiously.	93%	7%	0%	0%	0%	
		43	3	0	0	0	4.93
8	Tribal music, known to us, was used in the teaching of grammar.	98%	2%	0%	0%	0%	
		45	1	0	0	0	4.98
9	Grammar songs were easy to remember due to their familiar tune.	80%	20%	0%	0%	0%	
		37	9	0	0	0	4.80

10	The songs came to my mind automatically, even after the classes.	80% 37	20% 9	0% 0	0% 0	0% 0	 4.80
11	This was by far the most enjoyable experience in grammar learning.	80% 37	20% 9	0% 0	0% 0	0% 0	 4.80
12	All the grammar topics taught were completed in the given time period.	74% 34	15% 7	11% 5	0% 0	0% 0	 4.63
13	Adequate time was given to perform and present during the song-based activities.	70% 32	13% 6	17% 8	0% 0	0% 0	 4.52
14	Music did not create a joyful atmosphere while learning grammar.	0% 0	0% 0	0% 0	22% 10	78% 36	 4.78
15	The song-based activities were very engaging during grammar learning.	80% 37	20% 9	0% 0	0% 0	0% 0	 4.80
16	The lyrics of the songs could be understood.	78% 36	9% 4	13% 6	0% 0	0% 0	 4.65
17	The songs used in the activities were appropriate to suit the grammar topics.	78% 36	17% 8	4% 2	0% 0	0% 0	 4.74
18	The song–based activities were not interesting for me to learn grammar.	% 00	0% 0	2% 1	22% 10	76% 35	 4.74
19	The song-based activities did not motivate grammar learning.	0% 0	0% 0	0% 0	30% 14	70% 32	 4.70
20	The music used in the lessons was distracting.	0% 0	0% 0	0% 0	20% 9	80% 37	 4.80

21	There was no enhancement of grammar skills in my writing.	0%	0%	9%	20%	72%	
		0	0	4	9	33	4.63
22	There was no enhancement of grammar skills in my speaking.	0%	0%	26%	28%	46%	
		0	0	12	13	21	4.20
23	The overall teaching of grammar through music was liked.	96%	4%	0%	0%	0%	
		44	2	0	0	0	4.96
24	Grammar learning through music in the future should be continued.	98%	2%	0%	0%	0%	
		45	1	0	0	0	4.98
25	Music should be included in grammar teaching.	87%	13%	0%	0%	0%	
		40	6	0	0	0	4.87
	Average Intensity Index						**4.76**

Table No. 4.1.4.i) Graphical Representation of The Reaction Scale Analysis: Percentage

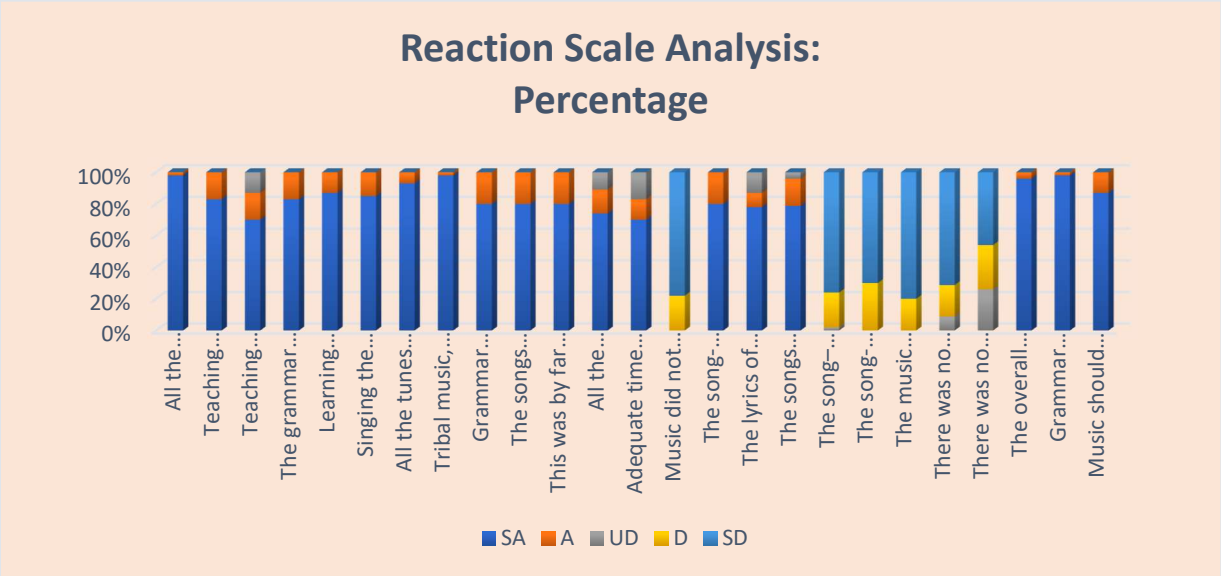
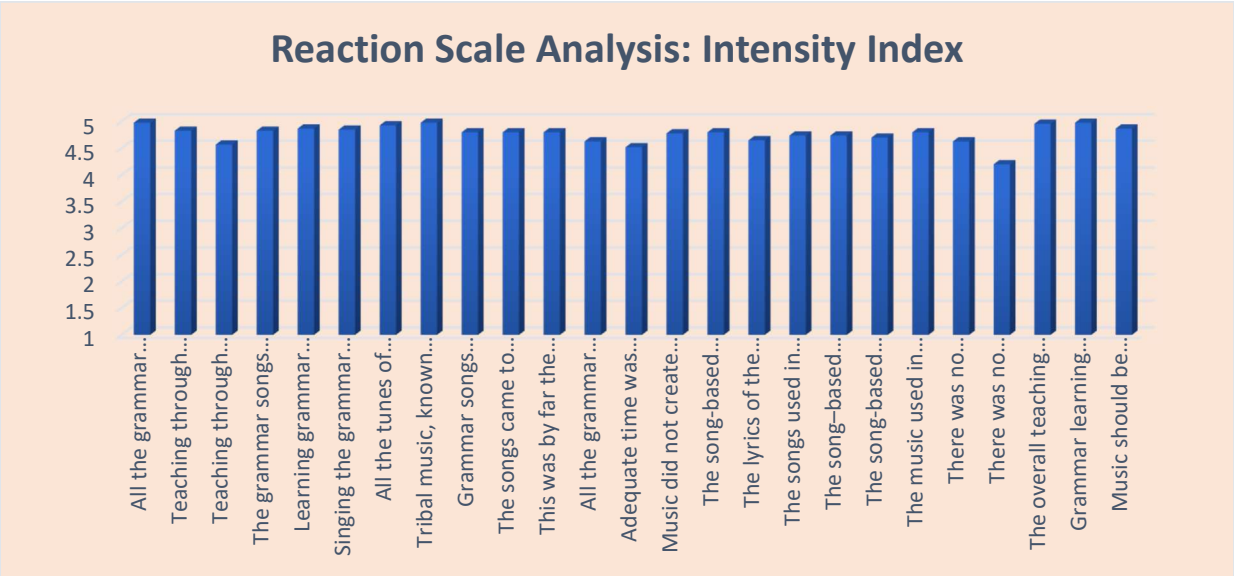


Table No. 4.1.4.ii) Graphical Representation of The Reaction Scale Analysis: Intensity Index



4.5 DATA INTERPRETATION OF THE REACTION SCALE

1. 98% of the students strongly agreed, and 2% agreed with the statement that "All the grammar topics in the syllabus were covered while teaching through music." The intensity index of 4.98 demonstrated that their reaction was favourable.

2. 83% of the students strongly agreed, and 17% of students agreed with the statement that "Teaching through music enhanced the understanding of grammar topics. "The intensity index of 4.83 demonstrated that their reaction was favourable.

3. 70% of the students strongly agreed,17% of students agreed, and 13% of students were undecided on the statement that "Teaching through music effectively met the grammar learning objectives." The intensity index of 4.57 demonstrated that their reaction was favourable.

4. 83% of the students strongly agreed, and 17% of students agreed with the statement that "The grammar songs used were very useful to learn the grammar topics easily. "The intensity index of 4.83 demonstrated that their reaction was favourable.

5. 87% of the students strongly agreed, and 13% of students agreed with the statement that "Learning grammar through music is a new way to learn grammar." The intensity index of 4.87 demonstrated that their reaction was favourable.

6. 85% of the students strongly agreed, and 15% of students agreed with the statement that "Singing the grammar songs and activity songs during classes were joyful." The intensity index of 4.85 demonstrated that their reaction was favourable.

7. 93% of the students strongly agreed, and 7% of students agreed with the statement that" All the tunes of grammar songs were easy to sing melodiously." The intensity index of 4.93 demonstrated that their reaction was favourable.

8. 98% of the students strongly agreed, and 2% of students agreed with the statement that "Tribal music, known to us, was used in the teaching of grammar." The intensity index of 4.98 demonstrated that their reaction was favourable.

9. 80% of the students strongly agreed, and 20% of students agreed with the statement that "Grammar songs were easy to remember due to their familiar tune." The intensity index of 4.80 demonstrated that their reaction was favourable.

10. 80% of the students strongly agreed, and 20% of students agreed with the statement that "The songs came into the mind automatically even after the classes."The intensity index of 4.80 demonstrated that their reaction was favourable.

11. 80% of the students strongly agreed, and 20% of students agreed with the statement that "This was by far the most enjoyable experience in grammar learning."The intensity index of 4.80 demonstrated that their reaction was favourable.

12. 74% of the students strongly agreed, 15% of students agreed, and 11% of students marked for undecided on the statement that "All the grammar topics teaching was completed in the given period." The intensity index was found of 4.63 demonstrating that their reaction was favourable.

13. 70% of the students responded for strongly agreed, 13% for agreed,17% students replied for undecided on the statement that "Adequate time was given to perform and present

during the song-based activities." The intensity index of 4.52 demonstrated that their reaction was favourable.

14. 78%of the students strongly disagreed, and 22% of students disagreed with the statement that "Music did not create a joyful atmosphere while learning grammar." The intensity index of 4.78 demonstrated that their reaction was in favor that the Music is creating a Joyful atmosphere while learning grammar.

15. 80% of the students strongly agreed, and 20% of students agreed with the statement that "The song-based activities were very engaging during grammar learning." The intensity index of 4.80 demonstrated that their reaction was favourable.

16. 78% of the students strongly agreed, and 9% of students agreed 13% marked for undecided on the statement that "The lyrics of the songs could be understood." The intensity index found for the was 4.65 which demonstrated that their reaction was favourable.

17. 78% of the students responded to the option strongly agreed, 17% of students agreed and 4% reacted undecided on the statement that "The songs used in the activities were appropriate to suit the grammar topics." The intensity index of 4.74 demonstrated that their reaction was favourable.

18. 76% of the students strongly disagreed, 22% of students disagreed, and 2% were unable to decide with the statement that "The song–based activities were not interesting for me to learn grammar." The intensity index of 4.74 demonstrated that their reaction was in favor of the song–based activities that were interesting for me to learn grammar.

19. 70% of the students strongly disagreed, and 30% of students disagreed with the statement

that "The song-based activities did not motivate grammar learning." The intensity index of 4.70 demonstrated that their reaction was in favor of the song-based activities that motivated grammar learning.

20. 80% of the students strongly disagreed, and 20% of students agreed with the statement that "The music used in the lessons was distracting." The intensity index of 4.80 demonstrated that their reaction was in favor of the statement that "They did not feel distracted from learning due to music used in the lessons".

21. 72% of the students strongly disagreed, 20% of students agreed, and 9% of students were undecided on the statement that "There was no enhancement of grammar skills in my writing."The intensity index of 4.63 demonstrated that their reaction was in favor that they find enhancement in their grammar skills.

22. 46% of the students strongly disagreed, 28% of students disagreed, and 26% of students marked undecided on the statement that "There was no enhancement of grammar skills in the speaking." The intensity index of 4.20 demonstrated that their reaction was in favor that they found enhancement of grammar skills in the speaking skill.

23. 96% of the students strongly agreed, and 4% agreed of students were on the statement that "The overall teaching of grammar through music was liked by them." The intensity index of 4.96 demonstrated that their reaction was favourable.

24. 98% of the students strongly agreed, and 2% of students agreed on the statement that "The grammar learning through music should be continued in future also." The intensity index of 4.98 demonstrated that their reaction was favorable.

25. 87% of the students strongly agreed, and 13% agreed with the statement that "Music should be included in grammar teaching." The intensity index of 4.87 demonstrated that their reaction was favorable.

The analysis of the study reaction scale revealed that the average intensity index score was 4.76. It was the average intensity index of all the reactions of all 25 statements of the reaction scale. The reaction of students was found favorable towards all the positive statements about the program in the reaction scale prepared for the teaching of grammar skills through music. The reaction of students was found unfavorable towards all the negative statements about the program in the reaction scale prepared for the teaching of grammar skills through music. It demonstrated that the reaction of the students was favorable toward the Music-Based Program for English grammar teaching.

VISUAL REPRESENTATION