# CHAPTER IV

## DATA ANALYSIS AND INTERPRETATIONS

# CHAPTER IV

## DATA ANALYSIS AND INTERPRETATIONS

### 4.0 Introduction

Data analysis is a critical component of any research study. According to the definition, "Data analysis is the act of analysing, cleansing, manipulating, and modeling data to identify usable information, to inform conclusions, and to assist in decision-making ("Data Analysis", 2021).

The study's two primary objectives were to (i) develop an ICT-based strategy for teaching ESL to standard IX students in Gujarati medium schools and (ii) assess the effectiveness of the implemented ICT-based strategy for teaching ESL to standard IX students in Gujarati medium schools. The study's first objective was accomplished prior to implementing the strategy, as stated in the previous chapter, and the study's second objective was accomplished in this chapter. The researcher did this by analysing and interpreting percentages of data on students' academic achievements in the experimental and control groups. Two methods were used to obtain data.: (i) as scholastic achievement scores obtained from students in both groups on formative and summative tests and (ii) as opinions obtained on a 5-point Likert Scale from the experimental group regarding their perceptions of the ICT-based components implemented by the researcher throughout the teaching and learning process.

The results of formative and summative assessments taken by students were analysed and interpreted further to assess the developed strategy’s effectiveness. Due to the fact that the researcher has two distinct types of data, the analysis is also divided into two sections. Formative and summative test scores were analysed in the first section, and the second section analysed the reflections gained on the opinionniare from the experimental group's students at the end of experiment.

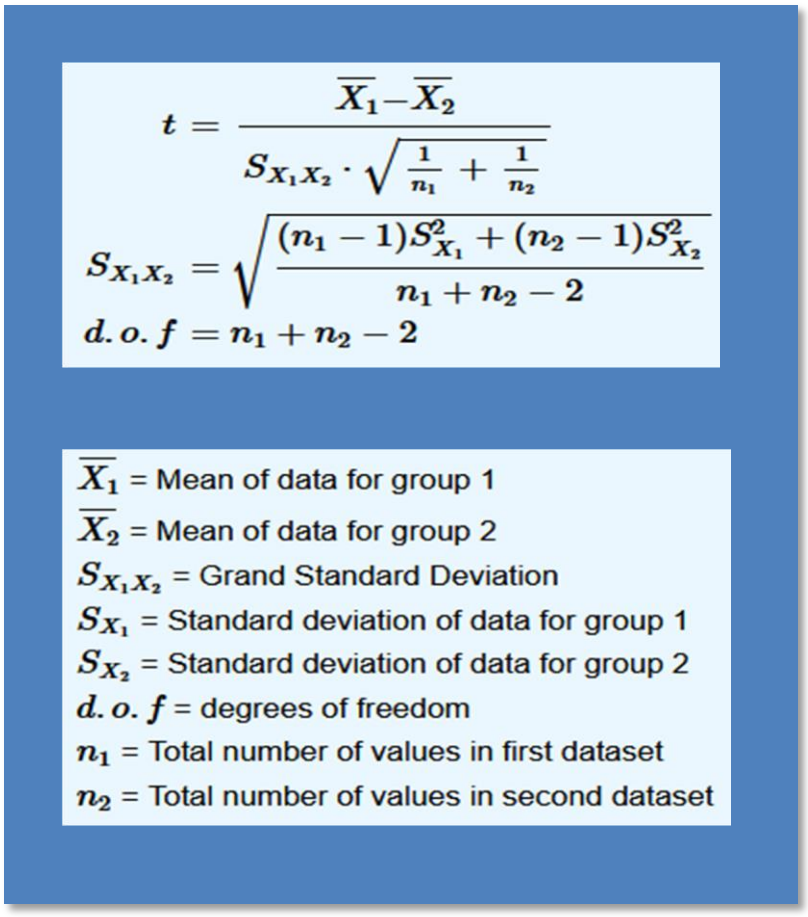
## 4.1 Analysis of the Data based on the Scholastic Achievement Scores

The researcher analysed students' scholastic achievements on formative and summative tests from both groups. The first section analysed and interpreted data collected in the form of students' scholastic achievements using statistical methods to determine the significance of the developed strategy. The second section evaluates the strategy's success using a graphical interpretation of the data acquired in the form of scholastic achievements for both groups.

### 4.1.1 Statistical Analysis and Interpretation of Achievement Scores on Formative and Summative Tests

Students from two groups of IX standard at Vidyut Board Vidyalay Gujarati Medium School consisted sample for this study. The group 'E' was instructed using the researcher's developed ICT-based strategy for units 1–9 in the first semester of 2013–14, whereas the group 'C' was instructed using the traditional method by the regular school teacher. The researcher and the regular school teacher used the same time period and administered the identical formative and summative tests developed by the researcher.

The researcher conducted the formative test at the completion of each unit and the summative test at the completion of the experiment to the experimental group 'E,' while the regular English teacher was given the same formative test to administer at the completion of each unit and the same summative test to administer after all nine units to the control group 'C.' The scholastic achievement scores of both the groups on formative and summative tests covering units 1 to 9 were analysed and interpreted using statistical measures such as percentage, mean, SD, degrees of freedom, t-value, and P-Value.




These statistics were utilised to compare the two groups' achievement scores to comprehend and evaluate the impact of the developed strategy based on the performance of both groups' students. Calculations were made with the help of an online calculator at https://www.mathportal.org/calculators/statistics-calculator/t-test-calculator.php.

The T-value and p-value were calculated using the formula mentioned above. The scholastic achievement scores of both the groups on the formative test for each unit were given below, along with the corresponding percentage of each score of scholastic achievement.

#### 4.1.1.1 Scholastic Achievement Scores of the Formative tests

The experimental and control group's scholastic achievement scores on the formative test were as follows.

**Table 4.1.1.1.1 Scholastic achievement scores of Unit 1.**

| Unit Count | Unit Test 1 | | | |
|---|---|---|---|---|
| Total Marks | /20 | | | |
| | Experimental Group | | Control Group | |
| SL No. | Obtained Marks | Percentage of Marks (%) | Obtained Marks | Percentage of Marks (%) |
| 1 | 17 | 85 | 14 | 70 |
| 2 | 10 | 50 | 6 | 30 |
| 3 | 10 | 50 | 10 | 50 |
| 4 | 14 | 70 | 9 | 45 |
| 5 | 16 | 80 | 10 | 50 |
| 6 | 16 | 80 | 11 | 55 |
| 7 | 17 | 85 | 10 | 50 |
| 8 | 10 | 50 | 9 | 45 |
| 9 | 14 | 70 | 12 | 60 |
| 10 | 14 | 70 | 12 | 60 |
| 11 | 17 | 85 | 11 | 55 |
| 12 | 19 | 95 | 11 | 55 |
| 13 | 14 | 70 | 12 | 60 |
| 14 | 15 | 75 | 7 | 35 |
| 15 | 16 | 80 | 9 | 45 |
| 16 | 17 | 85 | 13 | 65 |
| 17 | 15 | 75 | 10 | 50 |
| 18 | 14 | 70 | 14 | 70 |
| 19 | 18 | 90 | 15 | 75 |
| 20 | 9 | 45 | 10 | 50 |
| 21 | 16 | 80 | 9 | 45 |
| 22 | 10 | 50 | 11 | 55 |
| 23 | 13 | 65 | 10 | 50 |
| 24 | 11 | 55 | 8 | 40 |
| 25 | 17 | 85 | 15 | 75 |
| 26 | 13 | 65 | 11 | 55 |
| 27 | 17 | 85 | 9 | 45 |
| 28 | 14 | 70 | 9 | 45 |
| 29 | 17 | 85 | 7 | 35 |
| 30 | 15 | 75 | 10 | 50 |
| 31 | 10 | 50 | 10 | 50 |
| 32 | 17 | 85 | 11 | 55 |
| 33 | 10 | 50 | 11 | 55 |
| 34 | 16 | 80 | 10 | 50 |
| 35 | 18 | 90 | 8 | 40 |
| 36 | 12 | 60 | 10 | 50 |
| 37 | 8 | 40 | 9 | 45 |
| 38 | 11 | 55 | 10 | 50 |
| 39 | 15 | 75 | 13 | 65 |
| 40 | 12 | 60 | 11 | 55 |

| | | | | |
|---|---|---|---|---|
| 41 | 17 | 85 | 10 | 50 |
| 42 | 13 | 65 | 9 | 45 |
| 43 | 10 | 50 | 8 | 40 |
| 45 | 12 | 60 | 9 | 45 |
| 46 | 9 | 45 | 9 | 45 |
| 47 | 19 | 95 | 12 | 60 |
| 48 | 16 | 80 | 16 | 80 |
| 49 | 13 | 65 | 15 | 75 |
| 50 | 17 | 85 | 13 | 65 |
| 51 | 16 | 80 | 10 | 50 |
| 52 | 11 | 55 | 11 | 55 |
| 53 | 14 | 70 | 10 | 50 |
| 54 | 17 | 85 | 6 | 30 |
| 55 | 17 | 85 | 9 | 45 |
| 56 | 13 | 65 | 8 | 40 |
| 57 | 10 | 50 | 10 | 50 |
| 58 | 17 | 85 | 10 | 50 |
| 59 | 14 | 70 | 5 | 25 |
| 60 | 12 | 60 | 9 | 45 |
| 61 | 14 | 70 | 4 | 20 |
| 62 | 14 | 70 | 12 | 60 |
| 63 | 18 | 90 | 8 | 40 |
| 64 | 16 | 80 | 8 | 40 |
| 65 | | | 6 | 30 |
| 66 | | | 9 | 45 |
| 67 | | | 11 | 55 |
| 68 | | | 6 | 30 |
| Total | | 4465 | | 3350 |

**Table 4.1.1.1.1.1 Analysis of the formative test of unit 1**

| **Unit Count** | **Unit Test 1** | |
|---|---|---|
| **Total Marks** | **20** | |
| **Groups** | **Experimental Group** | **Control Group** |
| **Mean** | **70.87** | **50** |
| **SD** | **8.75** | **12.27** |
| **T Value** | **11.09** | |
| **P Value** | **< 0.05** | |

**Table 4.1.1.1.2 Scholastic achievement scores of Unit 2.**

| Unit Count | Unit Test 2 | | | |
|---|---|---|---|---|
| Total Marks | 20 | | | |
| | Experimental Group | | Control Group | |
| SL No. | Obtained Marks | Percentage of Marks (%) | Obtained Marks | Percentage of Marks (%) |
| 1 | 15 | 75 | 9 | 45 |
| 2 | 14 | 70 | 10 | 50 |
| 3 | 16 | 80 | 16 | 80 |
| 4 | 13 | 65 | 10 | 50 |
| 5 | 13 | 65 | 9 | 45 |
| 6 | 13 | 65 | 8 | 40 |
| 7 | 15 | 75 | 9 | 45 |
| 8 | 16 | 80 | 11 | 55 |
| 9 | 17 | 85 | 11 | 55 |
| 10 | 17 | 85 | 10 | 50 |
| 11 | 14 | 70 | 10 | 50 |
| 12 | 17 | 85 | 17 | 85 |
| 13 | 13 | 65 | 17 | 85 |
| 14 | 17 | 85 | 7 | 35 |
| 15 | 17 | 85 | 11 | 55 |
| 16 | 16 | 80 | 10 | 50 |
| 17 | 18 | 90 | 10 | 50 |
| 18 | 16 | 80 | 13 | 65 |
| 19 | 13 | 65 | 11 | 55 |
| 20 | 14 | 70 | 10 | 50 |
| 21 | 15 | 75 | 13 | 65 |
| 22 | 13 | 65 | 17 | 85 |
| 23 | 16 | 80 | 15 | 75 |
| 24 | 18 | 90 | 10 | 50 |
| 25 | 15 | 75 | 6 | 30 |
| 26 | 17 | 85 | 11 | 55 |
| 27 | 18 | 90 | 10 | 50 |
| 28 | 17 | 85 | 9 | 45 |
| 29 | 16 | 80 | 15 | 75 |
| 30 | 18 | 90 | 15 | 75 |
| 31 | 14 | 70 | 13 | 65 |
| 32 | 17 | 85 | 9 | 45 |
| 33 | 15 | 75 | 9 | 45 |
| 34 | 18 | 90 | 8 | 40 |
| 35 | 17 | 85 | 11 | 55 |
| 36 | 16 | 80 | 12 | 60 |
| 37 | 14 | 70 | 9 | 45 |
| 38 | 16 | 80 | 12 | 60 |
| 39 | 17 | 85 | 13 | 65 |
| 40 | 13 | 65 | 7 | 35 |

| | | | | |
|---|---|---|---|---|
| **41** | 14 | 70 | 10 | 50 |
| **42** | 17 | 85 | 18 | 90 |
| **43** | 15 | 75 | 17 | 85 |
| **45** | 17 | 85 | 13 | 65 |
| **46** | 16 | 80 | 10 | 50 |
| **47** | 17 | 85 | 10 | 50 |
| **48** | 12 | 60 | 8 | 40 |
| **49** | 15 | 75 | 8 | 40 |
| **50** | 15 | 75 | 11 | 55 |
| **51** | 14 | 70 | 10 | 50 |
| **52** | 16 | 80 | 9 | 45 |
| **53** | 16 | 80 | 10 | 50 |
| **54** | 17 | 85 | 13 | 65 |
| **55** | 16 | 80 | 8 | 40 |
| **56** | 17 | 85 | 12 | 60 |
| **57** | 17 | 85 | 12 | 60 |
| **58** | 12 | 60 | 9 | 45 |
| **59** | 13 | 65 | 11 | 55 |
| **60** | 13 | 65 | 10 | 50 |
| **61** | 12 | 60 | 9 | 45 |
| **62** | 17 | 85 | 10 | 50 |
| **63** | 14 | 70 | | |
| **64** | 15 | 75 | | |
| **65** | 14 | 70 | | |
| **66** | 16 | 80 | | |
| **Total** | | 5005 | | 3355 |

**Table 4.1.1.1.2.1 Analysis of the formative test of unit 2**

| **Unit Count** | **Unit Test 2** | |
|---|---|---|
| **Total Marks** | **20** | |
| **Groups** | **Experimental Group** | **Control Group** |
| **Mean** | **77** | **55** |
| **SD** | **8.49** | **13.61** |
| **T Value** | **10.95** | |
| **P Value** | **< 0.05** | |

**Table 4.1.1.1.3 Scholastic achievement scores of Unit 3.**

| Unit Count | Unit Test 3 | | | |
|---|---|---|---|---|
| Total Marks | 20 | | | |
| | Experimental Group | | Control Group | |
| SL No. | Obtained Marks | Percentage of Marks (%) | Obtained Marks | Percentage of Marks (%) |
| 1 | 15 | 75 | 16 | 80 |
| 2 | 12 | 60 | 11 | 55 |
| 3 | 13 | 65 | 16 | 80 |
| 4 | 16 | 80 | 10 | 50 |
| 5 | 15 | 75 | 13 | 65 |
| 6 | 16 | 80 | 11 | 55 |
| 7 | 17 | 85 | 13 | 65 |
| 8 | 16 | 80 | 12 | 60 |
| 9 | 15 | 75 | 11 | 55 |
| 10 | 16 | 80 | 10 | 50 |
| 11 | 15 | 75 | 9 | 45 |
| 12 | 14 | 70 | 16 | 80 |
| 13 | 12 | 60 | 16 | 80 |
| 14 | 16 | 80 | 8 | 40 |
| 15 | 12 | 60 | 9 | 45 |
| 16 | 12 | 60 | 16 | 80 |
| 17 | 13 | 65 | 11 | 55 |
| 18 | 15 | 75 | 12 | 60 |
| 19 | 12 | 60 | 16 | 80 |
| 20 | 17 | 85 | 11 | 55 |
| 21 | 14 | 70 | 10 | 50 |
| 22 | 16 | 80 | 12 | 60 |
| 23 | 13 | 65 | 10 | 50 |
| 24 | 15 | 75 | 16 | 80 |
| 25 | 16 | 80 | 11 | 55 |
| 26 | 17 | 85 | 16 | 80 |
| 27 | 13 | 65 | 11 | 55 |
| 28 | 14 | 70 | 6 | 30 |
| 29 | 13 | 65 | 9 | 45 |
| 30 | 13 | 65 | 9 | 45 |
| 31 | 17 | 85 | 9 | 45 |
| 32 | 16 | 80 | 16 | 80 |
| 33 | 12 | 60 | 10 | 50 |
| 34 | 16 | 80 | 16 | 80 |
| 35 | 14 | 70 | 14 | 70 |
| 36 | 13 | 65 | 12 | 60 |

| | | | | |
|---|---|---|---|---|
| 37 | 12 | 60 | 11 | 55 |
| 38 | 14 | 70 | 10 | 50 |
| 39 | 17 | 85 | 12 | 60 |
| 40 | 13 | 65 | 17 | 85 |
| 41 | 12 | 60 | 16 | 80 |
| 42 | 13 | 65 | 16 | 80 |
| 43 | 12 | 60 | 10 | 50 |
| 45 | 14 | 70 | 18 | 90 |
| 46 | 12 | 60 | 18 | 90 |
| 47 | 16 | 80 | 11 | 55 |
| 48 | 12 | 60 | 10 | 50 |
| 49 | 14 | 70 | 8 | 40 |
| 50 | 15 | 75 | 9 | 45 |
| 51 | 13 | 65 | 9 | 45 |
| 52 | 16 | 80 | 10 | 50 |
| 53 | 16 | 80 | 9 | 45 |
| 54 | 16 | 80 | 16 | 80 |
| 55 | 17 | 85 | 13 | 65 |
| 56 | 12 | 60 | 9 | 45 |
| 57 | 16 | 80 | 8 | 40 |
| 58 | 15 | 75 | 11 | 55 |
| 59 | 15 | 75 | 10 | 50 |
| 60 | 14 | 70 | 17 | 85 |
| 61 | 13 | 65 | 13 | 65 |
| 62 | 15 | 75 | 11 | 55 |
| 63 | 16 | 80 | 11 | 55 |
| 64 | 14 | 70 | 10 | 50 |
| 65 | 14 | 70 | 10 | 50 |
| 66 | | | 16 | 80 |
| 67 | | | 15 | 75 |
| Total | | 4595 | | 3990 |

**Table 4.1.1.1.3.1 Analysis of the formative test of unit 3**

| Unit Count | Unit Test 3 | |
|---|---|---|
| Total Marks | 20 | |
| Groups | Experimental Group | Control Group |
| Mean | 71.79 | 60.45 |
| SD | 8.26 | 14.91 |
| T Value | 5.33 | |
| P Value | < 0.05 | |

**Table 4.1.1.1.4 Scholastic achievement scores of Unit 4.**

| Unit Count | Unit Test 4 | | | |
|---|---|---|---|---|
| Total Marks | 20 | | | |
| | Experimental Group | | Control Group | |
| SL No. | Obtained Marks | Percentage of Marks (%) | Obtained Marks | Percentage of Marks (%) |
| 1 | 14 | 70 | 6 | 30 |
| 2 | 14 | 70 | 9 | 45 |
| 3 | 11 | 55 | 8 | 40 |
| 4 | 11 | 55 | 8 | 40 |
| 5 | 11 | 55 | 11 | 55 |
| 6 | 14 | 70 | 9 | 45 |
| 7 | 11 | 55 | 10 | 50 |
| 8 | 11 | 55 | 12 | 60 |
| 9 | 12 | 60 | 7 | 35 |
| 10 | 13 | 65 | 10 | 50 |
| 11 | 11 | 55 | 9 | 45 |
| 12 | 12 | 60 | 11 | 55 |
| 13 | 11 | 55 | 9 | 45 |
| 14 | 11 | 55 | 10 | 50 |
| 15 | 11 | 55 | 11 | 55 |
| 16 | 12 | 60 | 6 | 30 |
| 17 | 12 | 60 | 7 | 35 |
| 18 | 11 | 55 | 8 | 40 |
| 19 | 13 | 65 | 9 | 45 |
| 20 | 11 | 55 | 7 | 35 |
| 21 | 13 | 65 | 9 | 45 |
| 22 | 12 | 60 | 8 | 40 |
| 23 | 14 | 70 | 10 | 50 |
| 24 | 12 | 60 | 9 | 45 |
| 25 | 12 | 60 | 10 | 50 |
| 26 | 11 | 55 | 7 | 35 |
| 27 | 12 | 60 | 8 | 40 |
| 28 | 14 | 70 | 6 | 30 |
| 29 | 15 | 75 | 7 | 35 |
| 30 | 14 | 70 | 10 | 50 |
| 31 | 14 | 70 | 9 | 45 |
| 32 | 13 | 65 | 7 | 35 |
| 33 | 14 | 70 | 4 | 20 |
| 34 | 15 | 75 | 4 | 20 |
| 35 | 11 | 55 | 6 | 30 |
| 36 | 11 | 55 | 8 | 40 |
| 37 | 15 | 75 | 11 | 55 |
| 38 | 15 | 75 | 9 | 45 |
| 39 | 11 | 55 | 10 | 50 |
| 40 | 11 | 55 | 9 | 45 |

| | | | | |
|---|---|---|---|---|
| 41 | 15 | 75 | 8 | 40 |
| 42 | 14 | 70 | 8 | 40 |
| 43 | 11 | 55 | 9 | 45 |
| 45 | 11 | 55 | 7 | 35 |
| 46 | 11 | 55 | 10 | 50 |
| 47 | 11 | 55 | 13 | 65 |
| 48 | 12 | 60 | 9 | 45 |
| 49 | 14 | 70 | 11 | 55 |
| 50 | 15 | 75 | 10 | 50 |
| 51 | 14 | 70 | 11 | 55 |
| 52 | 14 | 70 | 4 | 20 |
| 53 | 11 | 55 | 8 | 40 |
| 54 | 12 | 60 | 10 | 50 |
| 55 | 12 | 60 | 9 | 45 |
| 56 | 14 | 70 | 9 | 45 |
| 57 | 15 | 75 | 10 | 50 |
| 58 | 15 | 75 | 6 | 30 |
| 59 | 14 | 70 | 4 | 20 |
| 60 | 15 | 75 | 6 | 30 |
| 61 | 15 | 75 | 9 | 45 |
| 62 | 12 | 60 | 7 | 35 |
| 63 | 11 | 55 | 6 | 30 |
| 64 | | | 8 | 40 |
| 65 | | | 9 | 45 |
| 66 | | | 13 | 65 |
| 67 | | | 8 | 40 |
| 68 | | | 4 | 20 |
| Total Marks | | 3920 | | 2820 |

**Table 4.1.1.1.4.1 Analysis of the formative test of unit 4**

| Unit Count | Unit Test 4 | |
|---|---|---|
| Total Marks | 20 | |
| Groups | Experimental Group | Control Group |
| Mean | 63.22 | 42.08 |
| SD | 7.67 | 10.29 |
| T Value | 13.13 | |
| P Value | < 0.05 | |

**Table 4.1.1.1.5 Scholastic achievement scores of Unit 5.**

| Unit count | Unit test 5 | | | |
|---|---|---|---|---|
| Total Marks | 20 | | | |
| | Experimental Group | | Control Group | |
| SL No. | Obtained Marks | Percentage of Marks (%) | Obtained Marks | Percentage of Marks (%) |
| 1 | 13 | 65 | 6 | 30 |
| 2 | 12 | 60 | 1 | 5 |
| 3 | 9 | 45 | 3 | 15 |
| 4 | 10 | 50 | 5 | 25 |
| 5 | 11 | 55 | 10 | 50 |
| 6 | 11 | 55 | 3 | 15 |
| 7 | 13 | 65 | 5 | 25 |
| 8 | 11 | 55 | 2 | 10 |
| 9 | 10 | 50 | 11 | 55 |
| 10 | 9 | 45 | 5 | 25 |
| 11 | 10 | 50 | 11 | 55 |
| 12 | 14 | 70 | 6 | 30 |
| 13 | 11 | 55 | 4 | 20 |
| 14 | 13 | 65 | 8 | 40 |
| 15 | 11 | 55 | 10 | 50 |
| 16 | 9 | 45 | 2 | 10 |
| 17 | 10 | 50 | 4 | 20 |
| 18 | 9 | 45 | 2 | 10 |
| 19 | 10 | 50 | 3 | 15 |
| 20 | 10 | 50 | 3 | 15 |
| 21 | 8 | 40 | 10 | 50 |
| 22 | 10 | 50 | 7 | 35 |
| 23 | 11 | 55 | 6 | 30 |
| 24 | 9 | 45 | 1 | 5 |
| 25 | 10 | 50 | 4 | 20 |
| 26 | 11 | 55 | 8 | 40 |
| 27 | 13 | 65 | 9 | 45 |
| 28 | 11 | 55 | 10 | 50 |
| 29 | 12 | 60 | 10 | 50 |
| 30 | 10 | 50 | 11 | 55 |
| 31 | 10 | 50 | 1 | 5 |
| 32 | 11 | 55 | 4 | 20 |
| 33 | 10 | 50 | 10 | 50 |
| 34 | 14 | 70 | 4 | 20 |
| 35 | 14 | 70 | 6 | 30 |
| 36 | 11 | 55 | 8 | 40 |
| 37 | 11 | 55 | 5 | 25 |
| 38 | 14 | 70 | 10 | 50 |
| 39 | 13 | 65 | 8 | 40 |

| | | | | |
|---|---|---|---|---|
| 40 | 10 | 50 | 10 | 50 |
| 41 | 10 | 50 | 11 | 55 |
| 42 | 13 | 65 | 14 | 70 |
| 43 | 12 | 60 | 13 | 65 |
| 45 | 11 | 55 | 16 | 80 |
| 46 | 10 | 50 | 8 | 40 |
| 47 | 14 | 70 | 11 | 55 |
| 48 | 13 | 65 | 10 | 50 |
| 49 | 15 | 75 | 9 | 45 |
| 50 | 16 | 80 | 9 | 45 |
| 51 | 12 | 60 | 13 | 65 |
| 52 | 14 | 70 | 12 | 60 |
| 53 | 13 | 65 | 11 | 55 |
| 54 | 12 | 60 | 10 | 50 |
| 55 | 13 | 65 | 11 | 55 |
| 56 | 10 | 50 | 13 | 65 |
| 57 | 12 | 60 | 11 | 55 |
| 58 | 14 | 70 | 9 | 45 |
| 59 | 16 | 80 | 8 | 40 |
| 60 | 16 | 80 | 10 | 50 |
| 61 | 15 | 75 | 9 | 45 |
| 62 | 15 | 75 | 8 | 40 |
| 63 | 12 | 60 | 7 | 35 |
| 64 | 11 | 55 | 8 | 40 |
| 65 | 11 | 55 | 5 | 25 |
| 66 | | | 7 | 35 |
| Total Marks | | 3745 | | 2495 |

**Table 4.1.1.1.5.1 Analysis of the formative test of unit 5**

| Unit Count | Unit Test 5 | |
|---|---|---|
| Total Marks | 20 | |
| Groups | Experimental Group | Control Group |
| Mean | 58.51 | 38.38 |
| SD | 9.70 | 17.58 |
| T Value | 8.03 | |
| P Value | < 0.05 | |

**Table 4.1.1.1.6 Scholastic achievement scores of Unit 6.**

| Unit count | Unit test 6 | | | |
|---|---|---|---|---|
| Total Marks | 20 | | | |
| | Experimental Group | | Control Group | |
| SL No. | Obtained Marks | Percentage of Marks (%) | Obtained Marks | Percentage of Marks (%) |
| 1 | 11 | 55 | 6 | 30 |
| 2 | 13 | 65 | 2 | 10 |
| 3 | 12 | 60 | 0 | 0 |
| 4 | 10 | 50 | 9 | 45 |
| 5 | 13 | 65 | 4 | 20 |
| 6 | 10 | 50 | 0 | 0 |
| 7 | 13 | 65 | 10 | 50 |
| 8 | 14 | 70 | 9 | 45 |
| 9 | 12 | 60 | 3 | 15 |
| 10 | 11 | 55 | 4 | 20 |
| 11 | 10 | 50 | 7 | 35 |
| 12 | 10 | 50 | 7 | 35 |
| 13 | 9 | 45 | 6 | 30 |
| 14 | 9 | 45 | 6 | 30 |
| 15 | 13 | 65 | 7 | 35 |
| 16 | 10 | 50 | 5 | 25 |
| 17 | 14 | 70 | 5 | 25 |
| 18 | 10 | 50 | 8 | 40 |
| 19 | 11 | 55 | 10 | 50 |
| 20 | 10 | 50 | 5 | 25 |
| 21 | 8 | 40 | 3 | 15 |
| 22 | 10 | 50 | 12 | 60 |
| 23 | 9 | 45 | 6 | 30 |
| 24 | 11 | 55 | 2 | 10 |
| 25 | 10 | 50 | 5 | 25 |
| 26 | 14 | 70 | 1 | 5 |
| 27 | 13 | 65 | 2 | 10 |
| 28 | 7 | 35 | 2 | 10 |
| 29 | 11 | 55 | 2 | 10 |
| 30 | 11 | 55 | 4 | 20 |
| 31 | 13 | 65 | 2 | 10 |
| 32 | 12 | 60 | 2 | 10 |
| 33 | 11 | 55 | 4 | 20 |
| 34 | 9 | 45 | 2 | 10 |
| 35 | 11 | 55 | 4 | 20 |
| 36 | 13 | 65 | 6 | 30 |
| 37 | 15 | 75 | 10 | 50 |
| 38 | 12 | 60 | 9 | 45 |
| 39 | 10 | 50 | 12 | 60 |
| 40 | 14 | 70 | 14 | 70 |
| 41 | 11 | 55 | 10 | 50 |

| | | | | |
|---|---|---|---|---|
| 42 | 13 | 65 | 7 | 35 |
| 43 | 11 | 55 | 9 | 45 |
| 45 | 10 | 50 | 11 | 55 |
| 46 | 10 | 50 | 13 | 65 |
| 47 | 13 | 65 | 10 | 50 |
| 48 | 10 | 50 | 7 | 35 |
| 49 | 11 | 55 | 9 | 45 |
| 50 | 10 | 50 | 5 | 25 |
| 51 | 11 | 55 | 12 | 60 |
| 52 | 13 | 65 | 9 | 45 |
| 53 | 10 | 50 | 9 | 45 |
| 54 | 10 | 50 | 11 | 55 |
| 55 | 11 | 55 | 10 | 50 |
| 56 | 14 | 70 | 9 | 45 |
| 57 | 10 | 50 | 11 | 55 |
| 58 | 15 | 75 | 13 | 65 |
| 59 | 11 | 55 | 10 | 50 |
| 60 | 14 | 70 | 9 | 45 |
| 61 | 14 | 70 | 10 | 50 |
| 62 | 13 | 65 | 11 | 55 |
| 63 | 10 | 50 | 8 | 40 |
| 64 | 10 | 50 | 9 | 45 |
| 65 | 13 | 65 | 10 | 50 |
| 66 | 14 | 70 | | |
| 67 | 12 | 60 | | |
| Total | | 3765 | | 2245 |

**Table 4.1.1.1.6.1 Analysis of the formative test of unit 6**

| Unit Count | Unit Test 6 | |
|---|---|---|
| Total Marks | 20 | |
| Groups | Experimental Group | Control Group |
| Mean | 57.04 | 35.07 |
| SD | 8.83 | 17.88 |
| T Value | 8.91 | |
| P Value | < 0.05 | |

**Table 4.1.1.1.7 Scholastic achievement scores of Unit 7.**

| Unit Count | Unit Test 7 | | | |
|---|---|---|---|---|
| Total Marks | 20 | | | |
| | Experimental Group | | Control Group | |
| SL No. | Obtained Marks | Percentage of Marks (%) | Obtained Marks | Percentage of Marks (%) |
| 1 | 11 | 55 | 5 | 25 |
| 2 | 10 | 50 | 5 | 25 |
| 3 | 10 | 50 | 9 | 45 |
| 4 | 12 | 60 | 5 | 25 |
| 5 | 14 | 70 | 7 | 35 |
| 6 | 8 | 40 | 7 | 35 |
| 7 | 8 | 40 | 5 | 25 |
| 8 | 11 | 55 | 9 | 45 |
| 9 | 8 | 40 | 9 | 45 |
| 10 | 8 | 40 | 9 | 45 |
| 11 | 8 | 40 | 6 | 30 |
| 12 | 9 | 45 | 10 | 50 |
| 13 | 9 | 45 | 5 | 25 |
| 14 | 9 | 45 | 7 | 35 |
| 15 | 10 | 50 | 7 | 35 |
| 16 | 11 | 55 | 12 | 60 |
| 17 | 8 | 40 | 7 | 35 |
| 18 | 10 | 50 | 4 | 20 |
| 19 | 8 | 40 | 8 | 40 |
| 20 | 13 | 65 | 9 | 45 |
| 21 | 11 | 55 | 3 | 15 |
| 22 | 9 | 45 | 9 | 45 |
| 23 | 11 | 55 | 10 | 50 |
| 24 | 10 | 50 | 3 | 15 |
| 25 | 9 | 45 | 8 | 40 |
| 26 | 8 | 40 | 7 | 35 |
| 27 | 8 | 40 | 2 | 10 |
| 28 | 9 | 45 | 8 | 40 |
| 29 | 10 | 50 | 2 | 10 |
| 30 | 7 | 35 | 5 | 25 |
| 31 | 8 | 40 | 8 | 40 |
| 32 | 11 | 55 | 7 | 35 |
| 33 | 11 | 55 | 10 | 50 |
| 34 | 10 | 50 | 9 | 45 |
| 35 | 9 | 45 | 4 | 20 |
| 36 | 8 | 40 | 2 | 10 |
| 37 | 10 | 50 | 5 | 25 |
| 38 | 12 | 60 | 3 | 15 |
| 39 | 9 | 45 | 7 | 35 |
| 40 | 11 | 55 | 4 | 20 |
| 41 | 10 | 50 | 8 | 40 |

| | | | | |
|---|---|---|---|---|
| 42 | 9 | 45 | 4 | 20 |
| 43 | 10 | 50 | 9 | 45 |
| 45 | 12 | 60 | 5 | 25 |
| 46 | 13 | 65 | 10 | 50 |
| 47 | 12 | 60 | 5 | 25 |
| 48 | 10 | 50 | 8 | 40 |
| 49 | 10 | 50 | 9 | 45 |
| 50 | 11 | 55 | 11 | 55 |
| 51 | 9 | 45 | 7 | 35 |
| 52 | 8 | 40 | 5 | 25 |
| 53 | 10 | 50 | 4 | 20 |
| 54 | 11 | 55 | 9 | 45 |
| 55 | 13 | 65 | 10 | 50 |
| 56 | 12 | 60 | 6 | 30 |
| 57 | 11 | 55 | 8 | 40 |
| 58 | 13 | 65 | 3 | 15 |
| 59 | 12 | 60 | 9 | 45 |
| 60 | 10 | 50 | 11 | 55 |
| 61 | 9 | 45 | 10 | 50 |
| 62 | 13 | 65 | 8 | 40 |
| 63 | 14 | 70 | 9 | 45 |
| 64 | 12 | 60 | 7 | 35 |
| 65 | 12 | 60 | 10 | 50 |
| 66 | 11 | 55 | 8 | 40 |
| 67 | 11 | 55 | 5 | 25 |
| 68 | 10 | 50 | 5 | 25 |
| Total | | 3420 | | 2320 |

**Table 4.1.1.1.7.1 Analysis of the formative test of unit 7**

| Unit Count | Unit Test 7 | |
|---|---|---|
| Total Marks | 20 | |
| Groups | Experimental Group | Control Group |
| Mean | 51.04 | 34.62 |
| SD | 8.35 | 12.37 |
| T Value | 8.99 | |
| P Value | < 0.05 | |

**Table 4.1.1.1.8 Scholastic achievement scores of Unit 8.**

| Unit Count | Unit Test 8 | | | |
|---|---|---|---|---|
| Total Marks | 20 | | | |
| | Experimental Group | | Control Group | |
| SL No. | Obtained Marks | Percentage of Marks (%) | Obtained Marks | Percentage of Marks (%) |
| 1 | 15 | 75 | 5 | 25 |
| 2 | 15 | 75 | 16 | 80 |
| 3 | 11 | 55 | 11 | 55 |
| 4 | 12 | 60 | 12 | 60 |
| 5 | 11 | 55 | 12 | 60 |
| 6 | 12 | 60 | 16 | 80 |
| 7 | 12 | 60 | 10 | 50 |
| 8 | 12 | 60 | 15 | 75 |
| 9 | 15 | 75 | 8 | 40 |
| 10 | 11 | 55 | 8 | 40 |
| 11 | 11 | 55 | 8 | 40 |
| 12 | 15 | 75 | 6 | 30 |
| 13 | 11 | 55 | 7 | 35 |
| 14 | 11 | 55 | 14 | 70 |
| 15 | 11 | 55 | 9 | 45 |
| 16 | 11 | 55 | 7 | 35 |
| 17 | 12 | 60 | 13 | 65 |
| 18 | 12 | 60 | 10 | 50 |
| 19 | 12 | 60 | 12 | 60 |
| 20 | 12 | 60 | 5 | 25 |
| 21 | 11 | 55 | 10 | 50 |
| 22 | 14 | 70 | 16 | 80 |
| 23 | 12 | 60 | 16 | 80 |
| 24 | 12 | 60 | 14 | 70 |
| 25 | 14 | 70 | 12 | 60 |
| 26 | 11 | 55 | 8 | 40 |
| 27 | 11 | 55 | 13 | 65 |
| 28 | 14 | 70 | 11 | 55 |
| 29 | 14 | 70 | 7 | 35 |
| 30 | 16 | 80 | 6 | 30 |
| 31 | 15 | 75 | 8 | 40 |
| 32 | 15 | 75 | 8 | 40 |
| 33 | 14 | 70 | 8 | 40 |
| 34 | 13 | 65 | 6 | 30 |
| 35 | 15 | 75 | 8 | 40 |
| 36 | 15 | 75 | 8 | 40 |
| 37 | 16 | 80 | 11 | 55 |
| 38 | 16 | 80 | 10 | 50 |
| 39 | 14 | 70 | 9 | 45 |
| 40 | 16 | 80 | 10 | 50 |
| 41 | 14 | 70 | 10 | 50 |

| | | | | |
|---|---|---|---|---|
| 42 | 15 | 75 | 11 | 55 |
| 43 | 16 | 80 | 13 | 65 |
| 45 | 13 | 65 | 13 | 65 |
| 46 | 14 | 70 | 10 | 50 |
| 47 | 16 | 80 | 9 | 45 |
| 48 | 13 | 65 | 8 | 40 |
| 49 | 16 | 80 | 10 | 50 |
| 50 | 14 | 70 | 7 | 35 |
| 51 | 16 | 80 | 8 | 40 |
| 52 | 14 | 70 | 9 | 45 |
| 53 | 16 | 80 | 9 | 45 |
| 54 | 12 | 60 | 10 | 50 |
| 55 | 12 | 60 | 12 | 60 |
| 56 | 14 | 70 | 9 | 45 |
| 57 | 13 | 65 | 10 | 50 |
| 58 | 12 | 60 | 15 | 75 |
| 59 | 14 | 70 | 12 | 60 |
| 60 | 13 | 65 | 10 | 50 |
| 61 | 16 | 80 | 9 | 45 |
| 62 | 13 | 65 | 9 | 45 |
| 63 | 15 | 75 | 7 | 35 |
| 64 | 13 | 65 | 7 | 35 |
| 65 | 13 | 65 | 7 | 35 |
| 66 | 12 | 60 | 11 | 55 |
| 67 | 11 | 55 | 7 | 35 |
| 68 | 11 | 55 | | |
| Total | | 4465 | | 3275 |

**Table 4.1.1.1.8.1 Analysis of the formative test of unit 8**

| Unit Count | Unit Test 8 | |
|---|---|---|
| Total Marks | 20 | |
| Groups | Experimental Group | Control Group |
| Mean | 66.64 | 49.62 |
| SD | 8.65 | 13.93 |
| T Value | 8.47 | |
| P Value | < 0.05 | |

**Table 4.1.1.1.9 Scholastic achievement scores of Unit 9.**

| Unit Count | Unit Test 9 | | | |
|---|---|---|---|---|
| Total Marks | 20 | | | |
| | Experimental Group | | Control Group | |
| SL No. | Obtained Marks | Percentage of Marks (%) | Obtained Marks | Percentage of Marks (%) |
| 1 | 15 | 75 | 10 | 50 |
| 2 | 13 | 65 | 13 | 65 |
| 3 | 12 | 60 | 13 | 65 |
| 4 | 11 | 55 | 10 | 50 |
| 5 | 12 | 60 | 9 | 45 |
| 6 | 12 | 60 | 16 | 80 |
| 7 | 15 | 75 | 11 | 55 |
| 8 | 12 | 60 | 17 | 85 |
| 9 | 15 | 75 | 9 | 45 |
| 10 | 16 | 80 | 10 | 50 |
| 11 | 16 | 80 | 13 | 65 |
| 12 | 16 | 80 | 10 | 50 |
| 13 | 15 | 75 | 9 | 45 |
| 14 | 13 | 65 | 8 | 40 |
| 15 | 11 | 55 | 5 | 25 |
| 16 | 16 | 80 | 10 | 50 |
| 17 | 12 | 60 | 11 | 55 |
| 18 | 11 | 55 | 12 | 60 |
| 19 | 15 | 75 | 12 | 60 |
| 20 | 14 | 70 | 10 | 50 |
| 21 | 13 | 65 | 10 | 50 |
| 22 | 14 | 70 | 13 | 65 |
| 23 | 12 | 60 | 17 | 85 |
| 24 | 14 | 70 | 6 | 30 |
| 25 | 15 | 75 | 11 | 55 |
| 26 | 12 | 60 | 14 | 70 |
| 27 | 11 | 55 | 10 | 50 |
| 28 | 14 | 70 | 12 | 60 |
| 29 | 12 | 60 | 8 | 40 |
| 30 | 12 | 60 | 9 | 45 |
| 31 | 14 | 70 | 10 | 50 |
| 32 | 11 | 55 | 14 | 70 |
| 33 | 15 | 75 | 15 | 75 |
| 34 | 14 | 70 | 13 | 65 |
| 35 | 13 | 65 | 12 | 60 |
| 36 | 15 | 75 | 11 | 55 |
| 37 | 14 | 70 | 10 | 50 |
| 38 | 16 | 80 | 10 | 50 |
| 39 | 17 | 85 | 13 | 65 |
| 40 | 15 | 75 | 12 | 60 |

| | | | | |
|---|---|---|---|---|
| 41 | 15 | 75 | 10 | 50 |
| 42 | 17 | 85 | 9 | 45 |
| 43 | 16 | 80 | 11 | 55 |
| 45 | 16 | 80 | 9 | 45 |
| 46 | 14 | 70 | 12 | 60 |
| 47 | 15 | 75 | 11 | 55 |
| 48 | 17 | 85 | 10 | 50 |
| 49 | 16 | 80 | 12 | 60 |
| 50 | 14 | 70 | 11 | 55 |
| 51 | 12 | 60 | 13 | 65 |
| 52 | 11 | 55 | 10 | 50 |
| 53 | 14 | 70 | 10 | 50 |
| 54 | 16 | 80 | 8 | 40 |
| 55 | 15 | 75 | 9 | 45 |
| 56 | 12 | 60 | 10 | 50 |
| 57 | 11 | 55 | 7 | 35 |
| 58 | 16 | 80 | 9 | 45 |
| 59 | 15 | 75 | 10 | 50 |
| 60 | 13 | 65 | 11 | 55 |
| 61 | 13 | 65 | 8 | 40 |
| 62 | 12 | 60 | 8 | 40 |
| 63 | 12 | 60 | 5 | 25 |
| 64 | 13 | 65 | 4 | 20 |
| 65 | | | 8 | 40 |
| Total | | 4350 | | 3365 |

**Table 4.1.1.1.9.1 Analysis of the formative test of unit 9**

| Unit Count | Unit Test 9 | |
|---|---|---|
| Total Marks | 20 | |
| Groups | Experimental Group | Control Group |
| Mean | 69.04 | 52.57 |
| SD | 8.90 | 12.74 |
| T Value | 8.42 | |
| P Value | < 0.05 | |

#### 4.1.1.1.10 Interpretation of Scholastic Achievement Scores based on Formative tests

The experimental group's and control group's scholastic achievement scores for units 1 to 9 are interpreted as follows.

**Formative test of Unit 1 –**

Mean of the experimental group's achievement scores of the unit 1 was higher at 70.87 whereas the control group's mean was only 50. SD of the experimental group was low at 8.75 which meant that the data were clustered around the mean whereas the SD of the control group was high at 12.27 which meant that the data were more spread out. T-value of both the groups was also higher at 11.09. It showed that there is a significant achievement gap between the two groups. From this data analysis it can be interpreted that the implemented combined strategy of O.H.P. and internet enabled computers of the developed ICT-based strategy was effective in teaching the content of unit 1.

**Formative test of Unit 2 –**

Mean of the experimental group's achievement scores of the unit 2 was very high at 77 whereas the control group's mean of the achievement score was only 55. SD of the experimental group was low at 8.49 which meant that the data were clustered around the mean whereas the SD of the control group was high at 13.61 which meant that the data were more spread out. T-value of both the groups was also higher at 10.95. It showed that there is a significant achievement gap between the two groups. From this data analysis it can be interpreted that the implemented combined strategy of O.H.P. and internet enabled computers of the developed ICT-based strategy was effective in teaching the content of unit 2.

**Formative test of Unit 3 –**

Mean of the experimental group's achievement scores of the unit 3 was very high at 71.79 whereas the control group's mean was only 60.45. SD of the experimental group was low at 8.26 which meant that the data were clustered around the mean whereas the SD of the control group was high at 14.91 which meant that the data were more spread out. T-value of both the groups was also higher at 5.33. It showed that there is a significant achievement gap between the two groups. From this data analysis it can be

interpreted that the implemented combined strategy of O.H.P. and internet enabled computers of the developed ICT-based strategy was effective in teaching the content of unit 3.

**Formative test of Unit 4 –**

Mean of the experimental group's achievement scores of the unit 4 was very high at 63.22 whereas the control group's mean was only 42.08. SD of the experimental group was low at 7.67 which meant that the data were clustered around the mean whereas the SD of the control group was high at 10.29 which meant that the data were more spread out. T-value of both the groups was also higher at 13.13. It showed that there is a significant achievement gap between the two groups. From this data analysis it can be interpreted that the implemented combined strategy of O.H.P. and tape recorder of the developed ICT-based strategy was effective in teaching the content of unit 4.

**Formative test of Unit 5 –**

Mean of the experimental group's achievement scores of the unit 5 was very high at 58.51 whereas the control group's mean was only 38.38. SD of the experimental group was low at 9.70 which meant that the data were clustered around the mean whereas the SD of the control group was high at 17.58 which meant that the data were more spread out. T-value of both the groups was also higher at 8.03. It showed that there is a significant achievement gap between the two groups. From this data analysis it can be interpreted that the implemented combined strategy of YouTube and O.H.P of the developed ICT-based strategy was effective in teaching the content of unit 5.

**Formative test of Unit 6 –**

Mean of the experimental group's achievement scores of the unit 6 was very high at 57.04 whereas the control group's mean was only 35.07. SD of the experimental group was low at 8.83 which meant that the data were clustered around the mean whereas the SD of the control group was high at 17.88 which meant that the data were more spread out. T-value of both the groups was also higher at 8.91. It showed that there is a significant achievement gap between the two groups. From this data analysis it can be

interpreted that the implemented combined strategy of YouTube and O.H.P. of the developed ICT-based strategy was effective in teaching the content of unit 6.

**Formative test of Unit 7 –**

Mean of the experimental group's achievement scores of the unit 7 was very high at 51.04 whereas the control group's mean was only 34.62. SD of the experimental group was low at 8.35 which meant that the data were clustered around the mean whereas the SD of the control group was high at 12.37 which meant that the data were more spread out. T-value of both the groups was also higher at 8.99. It showed that there is a significant achievement gap between the two groups. From this data analysis it can be interpreted that the implemented single strategy of LCD T.V. of the developed ICT-based strategy was effective in teaching the content of unit 7.

**Formative test of Unit 8 –**

Mean of the experimental group's achievement scores of the unit 8 was very high at 66.64 whereas the control group's mean was only 49.62. SD of the experimental group was low at 8.65 which meant that the data were clustered around the mean whereas the SD of the control group was high at 13.93 which meant that the data were more spread out. T-value of both the groups was also higher at 8.47. It showed that there is a significant achievement gap between the two groups. From this data analysis it can be interpreted that the implemented combined strategy of O.H.P. and tape recorder of the developed ICT-based strategy was effective in teaching the content of unit 8.

**Formative test of Unit 9 –**

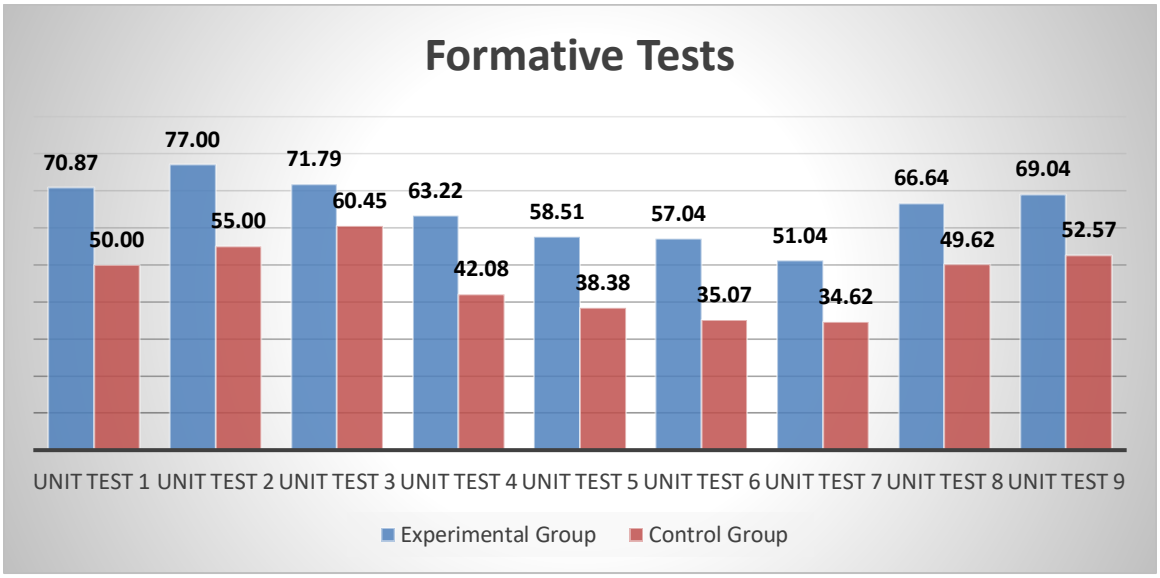
Mean of the experimental group's achievement scores of the unit 9 was very high at 69.04 whereas the control group's mean was only 52.57. SD of the experimental group was low at 8.90 which meant that the data were clustered around the mean whereas the SD of the control group was high at 12.74 which meant that the data were more spread out. T-value of both the groups was also higher at 8.42. It showed that there is a significant achievement gap between the two groups. From this data analysis it can be interpreted that the implemented combined strategy of YouTube and internet enabled

computers of the developed ICT-based strategy was effective in teaching the content of unit 9.

#### 4.1.1.1.11 Graphical Representation of all the formative tests of both the groups

The following graph illustrates the experimental and control group's achievement scores on all formative tests from units 1 to 9.

**Graph 4.1.1.1.11 Graphical Representation of Formative tests**




#### 4.1.1.1.11.1 Interpretation of Graphical Representation of all the formative tests of both the groups

Above visual representation of the achievement scores of the individual formative tests of the units 1 to 9, indicated that the experimental group's achievement scores was higher in all the 9 units than that of group 'C'. Looking at the graph, it can also be interpreted that in the units 1, 2, 3, 8 and 9 both the groups had higher scores than in the rest of the units. In the units 1, 2 and 3 the combined strategy of O.H.P. and internet enabled computers of the developed ICT-based strategy was implemented in the classroom where as in the unit 8 the combined strategy of O.H.P. and tape recorder was implemented and in the unit 9 the combined strategy of YouTube and internet enabled computers was implemented.

### 4.1.1.2 Scholastic Achievement Scores of the Summative test

The researcher had administered summative test at the completion of the experiment on the experimental group while the regular English teacher of the school was given the same test to administer at the same time on the control group. The scholastic achievement scores of both groups on the summative test were as follows-

**Table 4.1.1.2 Scholastic Achievement Scores of the Summative test**

| Unit count | Summative test | | | |
|---|---|---|---|---|
| **Total Marks** | 100 | | | |
| | **Experimental Group** | | **Control Group** | |
| **SL No.** | **Obtained Marks** | **Percentage of Marks (%)** | **Obtained Marks** | **Percentage of Marks (%)** |
| **1** | **85** | **85.00** | **40** | **40.00** |
| **2** | **65** | **65.00** | **66** | **66.00** |
| **3** | **70** | **70.00** | **45** | **45.00** |
| **4** | **65** | **65.00** | **60** | **60.00** |
| **5** | **70** | **70.00** | **70** | **70.00** |
| **6** | **75** | **75.00** | **68** | **68.00** |
| **7** | **80** | **80.00** | **42** | **42.00** |
| **8** | **67** | **67.00** | **62** | **62.00** |
| **9** | **78** | **78.00** | **40** | **40.00** |
| **10** | **66** | **66.00** | **44** | **44.00** |
| **11** | **80** | **80.00** | **60** | **60.00** |
| **12** | **76** | **76.00** | **38** | **38.00** |
| **13** | **83** | **83.00** | **50** | **50.00** |
| **14** | **87** | **87.00** | **52** | **52.00** |
| **15** | **72** | **72.00** | **54** | **54.00** |
| **16** | **88** | **88.00** | **55** | **55.00** |
| **17** | **78** | **78.00** | **70** | **70.00** |
| **18** | **68** | **68.00** | **56** | **56.00** |
| **19** | **79** | **79.00** | **40** | **40.00** |
| **20** | **67** | **67.00** | **46** | **46.00** |
| **21** | **73** | **73.00** | **67** | **67.00** |
| **22** | **84** | **84.00** | **66** | **66.00** |
| **23** | **88** | **88.00** | **58** | **58.00** |
| **24** | **79** | **79.00** | **62** | **62.00** |
| **25** | **80** | **80.00** | **66** | **66.00** |
| **26** | **83** | **83.00** | **67** | **67.00** |
| **27** | **67** | **67.00** | **56** | **56.00** |
| **28** | **72** | **72.00** | **68** | **68.00** |
| **29** | **78** | **78.00** | **60** | **60.00** |
| **30** | **81** | **81.00** | **50** | **50.00** |
| **31** | **84** | **84.00** | **44** | **44.00** |
| **32** | **87** | **87.00** | **40** | **40.00** |

| | | | | |
|---|---|---|---|---|
| 33 | 90 | 90.00 | 65 | 65.00 |
| 34 | 83 | 83.00 | 64 | 64.00 |
| 35 | 87 | 87.00 | 65 | 65.00 |
| 36 | 78 | 78.00 | 66 | 66.00 |
| 37 | 74 | 74.00 | 66 | 66.00 |
| 38 | 84 | 84.00 | 42 | 42.00 |
| 39 | 83 | 83.00 | 67 | 67.00 |
| 40 | 79 | 79.00 | 63 | 63.00 |
| 41 | 88 | 88.00 | 60 | 60.00 |
| 42 | 82 | 82.00 | 48 | 48.00 |
| 43 | 90 | 90.00 | 68 | 68.00 |
| 45 | 74 | 74.00 | 42 | 42.00 |
| 46 | 69 | 69.00 | 74 | 74.00 |
| 47 | 73 | 73.00 | 66 | 66.00 |
| 48 | 82 | 82.00 | 71 | 71.00 |
| 49 | 87 | 87.00 | 47 | 47.00 |
| 50 | 90 | 90.00 | 64 | 64.00 |
| 51 | 85 | 85.00 | 73 | 73.00 |
| 52 | 79 | 79.00 | 66 | 66.00 |
| 53 | 86 | 86.00 | 64 | 64.00 |
| 54 | 83 | 83.00 | 55 | 55.00 |
| 55 | 78 | 78.00 | 69 | 69.00 |
| 56 | 75 | 75.00 | 75 | 75.00 |
| 57 | 83 | 83.00 | 39 | 39.00 |
| 58 | 78 | 78.00 | 44 | 44.00 |
| 59 | 82 | 82.00 | 62 | 62.00 |
| 60 | 89 | 89.00 | 47 | 47.00 |
| 61 | 76 | 76.00 | 59 | 59.00 |
| 62 | 78 | 78.00 | 64 | 64.00 |
| 63 | 83 | 83.00 | 45 | 45.00 |
| 64 | 87 | 87.00 | 39 | 39.00 |
| 65 | 67 | 67.00 | 44 | 44.00 |
| 66 | 77 | 77.00 | 40 | 40.00 |
| 67 | 87 | 87.00 | 0 | 0.00 |
| 68 | 90 | 90.00 | 0 | 0.00 |
| Total | | 5311 | | 3685.00 |

**Table 4.1.1.2.1 Analysis of the Summative test of both the groups**

| Unit Count | Summative test | |
|---|---|---|
| Total Marks | 100 | |
| Groups | Experimental Group | Control Group |
| Mean | 79.26 | 56.70 |
| SD | 7.07 | 11.01 |
| T Value | 14.05 | |
| P Value | < 0.05 | |

#### 4.1.1.2.1.1 Interpretation of Scholastic Achievement Scores of the Summative test

Interpretation of the scholastic achievement scores on the summative test (combined units of 1 to 9) of the experimental and control group was given as below.

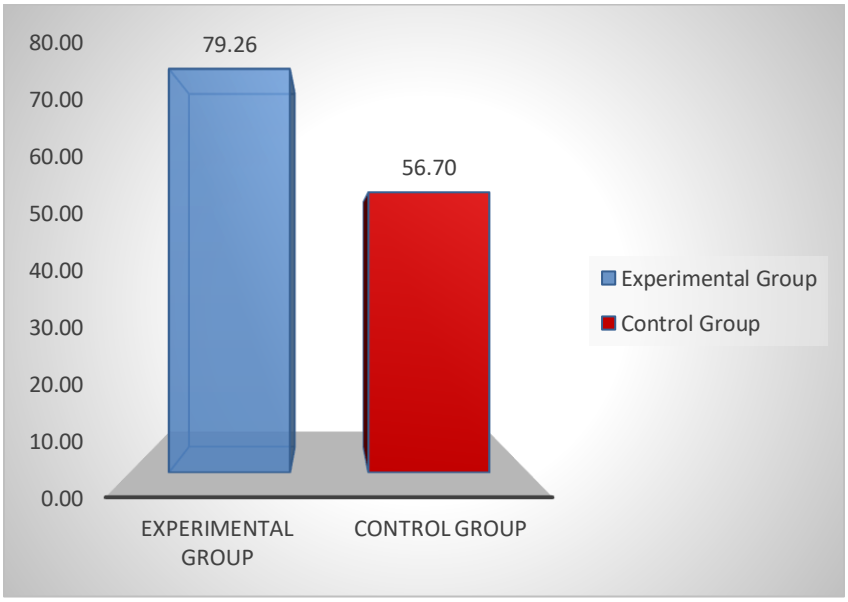
Mean of the experimental group's achievement scores on the summative test was very high at 79.26 whereas the mean of the control group's achievement scores in the same test was only 56.70. SD of the experimental group was low at 7.07 which meant that the data were clustered around the mean whereas the control group's SD was high at 11.01 which meant that the data were more spread out. T-value of both the groups was also higher at 14.05. It showed that there is a significant achievement gap between the two groups

From this data analysis it can be interpreted that the developed ICT-based strategy was effective in teaching ESL at the standard IX.

#### 4.1.1.2.1.1.1 Graphical Representation of the Scholastic Achievement Scores of the Summative test.

On the summative test for Units 1–9, the experimental and control groups were depicted graphically as follows.

**Graph 4.1.1.2.1.1.1 Graphical Representation of the Summative test**



#### 4.1.1.2.1.1.1.1 Interpretation of Graphical Representation of the summative test

According to the preceding graph, the experimental group 'E' scored higher on the summative test compared to the control group 'C', at 79.26 and 56.70, respectively. The accompanying graph demonstrates the different mean scores of the two groups.

### 4.2 Analysis and Interpretation based on 5 Point Likert Scale

The researcher discovered that the developed ICT-based strategy was quite efficient after analyzing scholastic achievements collected from formative and summative assessments. But the researcher wanted to confirm the effectiveness of each component of the implemented ICT based strategy through the students' eyes with their preferences of each component of the strategy. Hence, the researcher utilised developed opinionnaire based on 5 Point Likert scale at the end of her experiment to collect the responses of each student of the experimental group to understand their preferences (likes/dislikes) of each component of the ICT based strategy to deduce the effectiveness of each component viz. internet enabled computer, OHP, YouTube, tape recorder and LCD TV

With the help of the experts, 32 statements were finalised in the 5 Point Likert scale, which was utilized by the researcher, out of which 16 were with positive polarity and 16 were with negative polarity. On this 5 Point Likert Scale, statements of the serial no. 1, 2, 3, 6, 8, 19, 11, 13, 14, 17, 19, 22, 24, 28, 31, 32 were positive statements and statements of the serial no. 4, 5, 7, 9, 12, 15, 16, 18, 20, 21, 23, 25, 26, 27, 29, 30 were negative statements. The distribution of the points on these positive and the negative statements were utilized as follows -

**Points for Positive Polarity Statements** (Gururajan, 2013)

| Responses | Strongly Agree (SA) | Agree (A) | Undecided (U) | Disagree (D) | Strongly Disagree (SD) |
|---|---|---|---|---|---|
| Points | 5 | 4 | 3 | 2 | 1 |

**Points for Negative Polarity Statements** (Gururajan, 2013)

| Responses | Strongly Disagree (SD) | Disagree (D) | Undecided (U) | Agree (A) | Strongly Agree (SA) |
|---|---|---|---|---|---|
| Points | 5 | 4 | 3 | 2 | 1 |

### 4.2.1 Positive Polarity Statements and its Analysis –

The researcher had analysed the reflections of the students of the experimental group on 16 positive polarity statements and its statement wise graphical representation is given below.

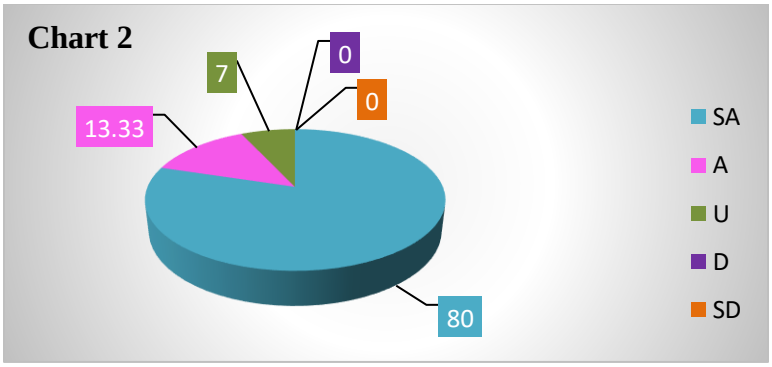
**Statement 1** (Sr.No. 1) - We developed more interest in the lesson by viewing the PPT on O.H.P. about Kiran Bedi and Vishwanathan Anand in our class.

**Table 4.2.1.1 Responses of Experimental group 'E' to the positive statement 1**

| Sl. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 60 | 60*5=300 | 80.00 |
| 2 | 4 | A | 10 | 10*4=40 | 13.33 |
| 3 | 3 | U | 5 | 5*3=15 | 7 |
| 4 | 2 | D | 0 | 0*2=0 | 0 |
| 5 | 1 | SD | 0 | 0*1=0 | 0 |
| | | | | | |
| | | **Total** | **75** | **355** | |

According to the above data, 80% of students strongly agreed, 13% agreed, 7% remained undecided, and 0% disagreed and strongly disagreed with the statement 1.

**Graph 4.2.1.1 Analysis of positive statement 1 in percentage**



As per the above graph of statement 1, 80% and 13% of experimental group's students strongly agreed and agreed, respectively, whereas 0% disagreed and strongly disagreed. Only 7% of students remained undecided on statement 1.

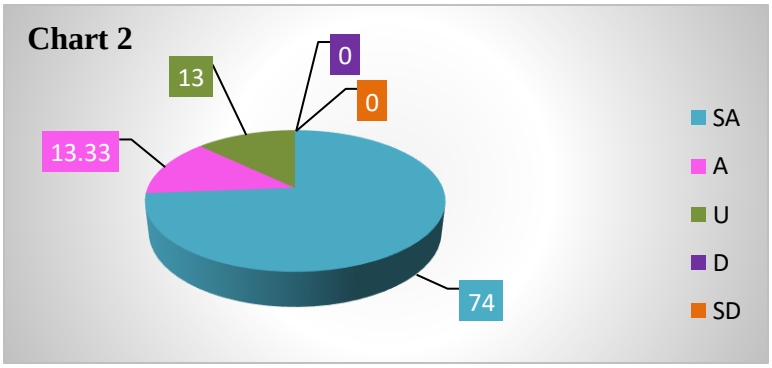
**Statement 2** (Sr.No. 2) - Pictures of old coins and currency shown on the O.H.P. helped us to gain clarity on the ancient time currency

**Table 4.2.1.2 Responses of Experimental group 'E' to the positive statement 2**

| Sl. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 60 | 60*5=300 | 74.00 |
| 2 | 4 | A | 10 | 10*4=40 | 13.33 |
| 3 | 3 | U | 5 | 5*3=15 | 13.00 |
| 4 | 2 | D | 0 | 0*2=0 | 0 |
| 5 | 1 | SD | 0 | 0*1=0 | 0 |
| | | **Total** | **75** | **355** | |

According to the above table, 74% of students strongly agreed, 13% of students agreed, while 0% of students disagreed and strongly disagreed with the statement 2. 13% experimental group's students stayed undecided with the statement 2.

**Graph 4.2.1.2 Analysis of positive statement 2 in percentage**




As per the above graph of statement 2, 74% and 13% of experimental group's students strongly agreed and agreed, respectively**,** whereas 0% disagreed and strongly disagreed Only 13% of experimental group's students stayed undecided with the statement 2.

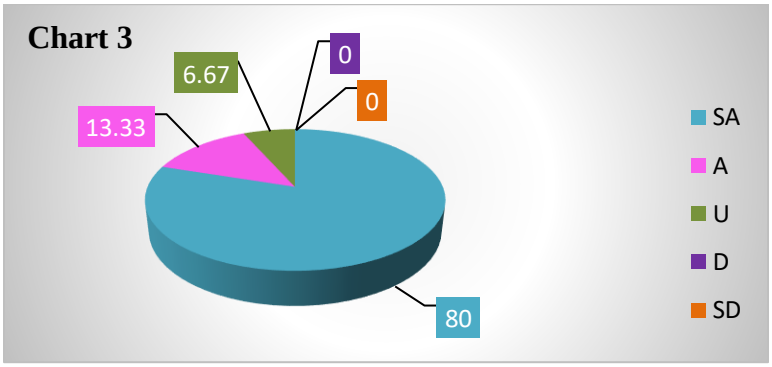
**Statement 3** (Sr.No. 3) – Pictures of the earthquake damage (26th January, 2001) on the internet connected to L.C.D. T.V. had made the lesson easy to understand.

**Table 4.2.1.3 Responses of Experimental group 'E' to the positive statement 3**

| Sl. No. | Score | Option | Number of Respondents | TotaL Score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 60 | 60*5=300 | 80 |
| 2 | 4 | A | 10 | 10*4-40 | 13.33 |
| 3 | 3 | U | 5 | 5*3=15 | 6.67 |
| 4 | 2 | D | 0 | 0*2=0 | 0 |
| 5 | 1 | SD | 0 | 0*1=0 | 0 |
| | | **Total** | **75** | **355** | |

According to the above data, 80% of students strongly agreed, 13% of students agreed, while 7% of students stayed undecided and, 0% of students stayed disagreed and strongly disagreed with the statement 3.

**Graph 4.2.1.3 Analysis of statement 3 in percentage**




As per the above graph of statement 3, 80% and 13% of experimental group's students strongly agreed or agreed, respectively**,** whereas 0% disagreed and strongly disagreed. Only 7% of experimental group's students stayed undecided with the statement 3.

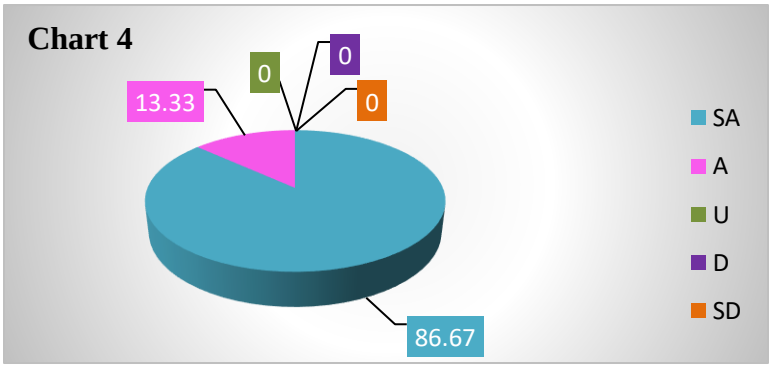
**Statement 4** (Sr.No. 6) - We improved our English pronunciation by listening to the online conversation exercises through the tape recorder.

**Table 4.2.1.4 Responses of Experimental group 'E' to the positive statement 4**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 65 | 65*5=325 | 86.67 |
| 2 | 4 | A | 10 | 10*4=40 | 13.33 |
| 3 | 3 | U | 0 | 0*3=0 | 0.00 |
| 4 | 2 | D | 0 | 0*2=0 | 0.00 |
| 5 | 1 | SD | 0 | 0*1=0 | 0.00 |
| | | **Total** | **75** | **365** | |

According to the above data, 87% of students strongly agreed, 13% of students agreed, while 0% of students stayed undecided, disagreed and strongly disagreed with the statement 4.

**Graph 4.2.1.4 Analysis of statement 4 in percentage**




As per the above graph of statement 4, 87% and 13% of experimental group's students strongly agreed or agreed, respectively, whereas 0% disagreed, strongly disagreed and stayed undecided with the statement 4.

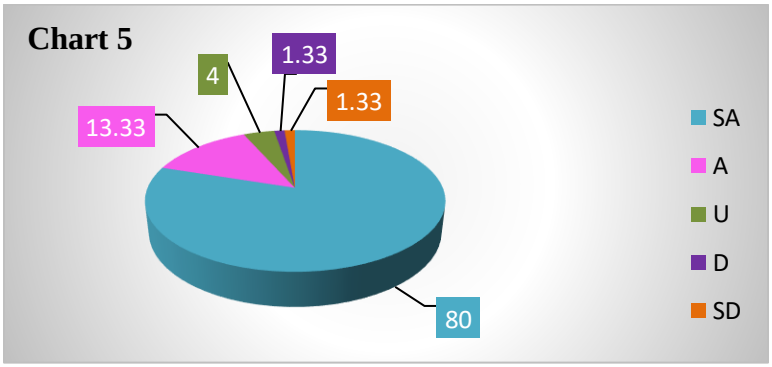
**Statement 5** (Sr.No. 8) - It was interesting to do fill in the gaps activity while learning conjunctions online in the computer lab.

**Table 4.2.1.5 Responses of Experimental group 'E' to the positive statement 5**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 60 | 60*5=300 | 80.00 |
| 2 | 4 | A | 10 | 10*4=40 | 13.33 |
| 3 | 3 | U | 3 | 3*3=9 | 4.00 |
| 4 | 2 | D | 1 | 1*2=2 | 1.33 |
| 5 | 1 | SD | 1 | 1*1=1 | 1.33 |
| | | **Total** | **75** | **352** | |

According to the above data, 80% of students strongly agreed, 13% of students agreed, while 4% of students stayed undecided with the statement 5. 1% of students disagreed and strongly disagreed with the statement 5.

**Graph 4.2.1.5 Analysis of statement 5 in percentage**




As per the above graph of statement 5, 80% and 13% of experimental group's students strongly agreed or agreed, respectively, whereas 1% disagreed, strongly disagreed and 4% of students stayed undecided with the statement 5.

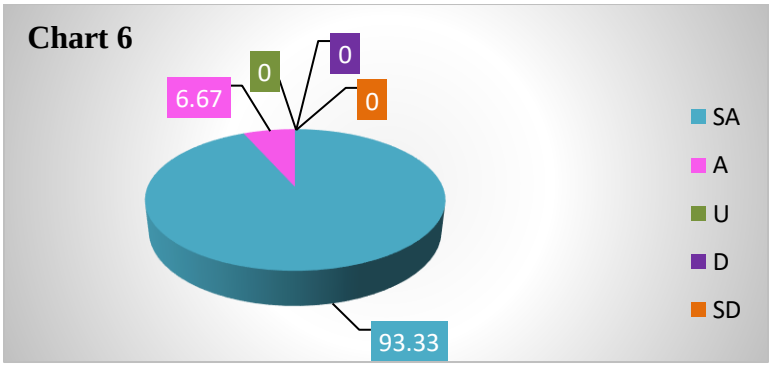
**Statement 6** (Sr.No. 10) - We had great fun in completing the online exercises on countable / uncountable nouns in the class.

**Table 4.2.1.6 Responses of Experimental group 'E' to the positive statement 6**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 70 | 70*5=350 | 93.33 |
| 2 | 4 | A | 5 | 5*4=20 | 6.67 |
| 3 | 3 | U | 0 | 0*3=0 | 0.00 |
| 4 | 2 | D | 0 | 0*2=0 | 0.00 |
| 5 | 1 | SD | 0 | 0*1=0 | 0.00 |
| | | **Total** | **75** | **370** | |

According to the above data, 93% of students strongly agreed, 7% of students agreed, while 0% of students stayed undecided, disagreed and strongly disagreed with the statement 6.

**Graph 4.2.1.6 Analysis of statement 6 in percentage**




As per the above graph of statement 6, 93% and 7% of experimental group's students strongly agreed and agreed, respectively, whereas 0% disagreed, strongly disagreed and stayed undecided with the statement 6.

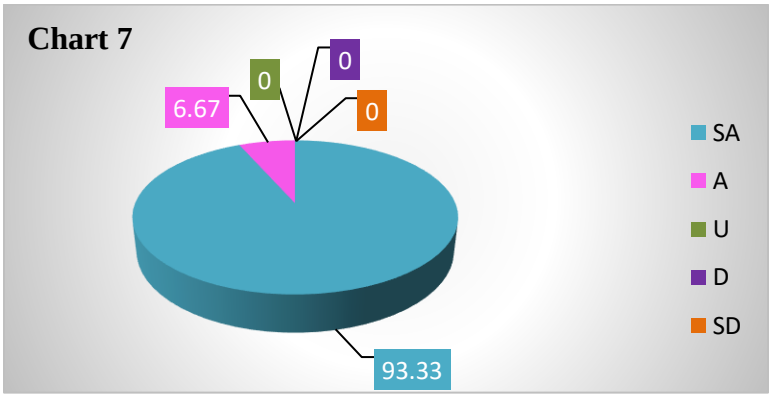
**Statement 7** (Sr.No. 11) - It was a great fun to listen to the poems on the YouTube in the lab.

**Table 4.2.1.7 Responses of Experimental group 'E' to the positive statement 7**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 70 | 70*5=350 | 93.33 |
| 2 | 4 | A | 5 | 5*4=20 | 6.67 |
| 3 | 3 | U | 0 | 0*3=0 | 0.00 |
| 4 | 2 | D | 0 | 0*2=0 | 0.00 |
| 5 | 1 | SD | 0 | 0*1=0 | 0.00 |
| | | **Total** | **75** | **370** | |

According to the above data, 93% of students strongly agreed, 7% of students agreed, while 0% of students stayed undecided, disagreed and strongly disagreed with the statement 7.

**Graph 4.2.1.7 Analysis of statement 7 in percentage**




As per the above graph of statement 7, 93% and 7% of experimental group's students strongly agreed and agreed, respectively**,** whereas 0% disagreed, strongly disagreed and stayed undecided with the statement 7.

.

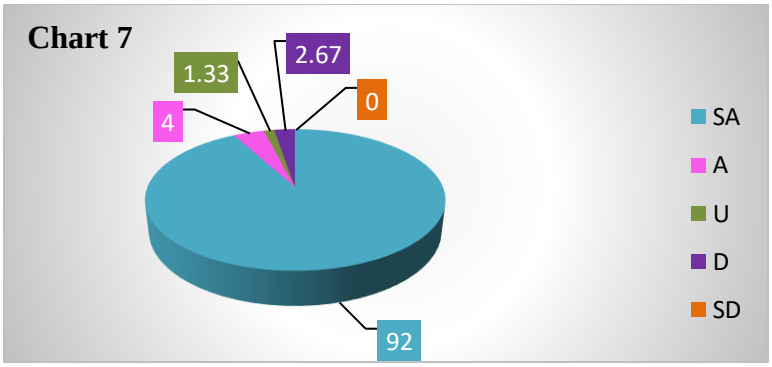
**Statement 8** (Sr.No. 13) - It was a great learning experience to listen to our own recorded conversations in the classroom.

**Table 4.2.1.8 Responses of Experimental group 'E' to the positive statement 8**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 69 | 69*5=345 | 92.00 |
| 2 | 4 | A | 3 | 3*4=12 | 4.00 |
| 3 | 3 | U | 1 | 3*1=3 | 1.33 |
| 4 | 2 | D | 2 | 2*2=4 | 2.67 |
| 5 | 1 | SD | 0 | 0*1-=0 | 0.00 |
| | | **Total** | **75** | **364** | |

According to the above data, 92% of students strongly agreed, 4% of students agreed, while 1% of students stayed undecided with the statement 8. 3% and 0% of experimental group's students disagreed and strongly disagreed, respectively, with the statement 8.

**Graph 4.2.1.8 Analysis of statement 8 in percentage**




As per the above graph of statement 8, 92% and 4% of experimental group's students strongly agreed and agreed, respectively, whereas 1% of students stayed undecided, 3% and 0% of students disagreed and strongly disagreed, respectively.

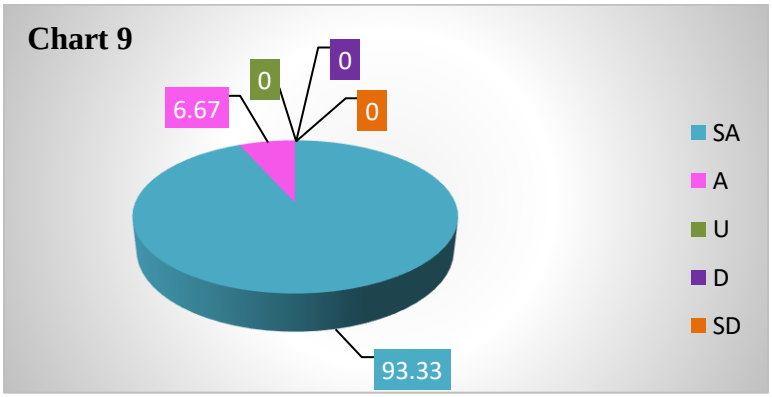
**Statement 9** (Sr.No. 14) - We had great fun in completing online exercises on Active voice and Passive Voice in the lab.

**Table 4.2.1.9 Responses of Experimental group 'E' to the positive statement 9**

| Sl. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 70 | 70*5=350 | 93.33 |
| 2 | 4 | A | 5 | 5*4=20 | 6.67 |
| 3 | 3 | U | 0 | 0*3=0 | 0 |
| 4 | 2 | D | 0 | 0*2=0 | 0 |
| 5 | 1 | SD | 0 | 0*1=0 | 0 |
| | | **Total** | **75** | **370** | |

According to the above data, 93% of students strongly agreed, 7% of students agreed, while 0% of students stayed undecided, disagreed and strongly disagreed with the statement 9.

**Graph 4.2.1.9 Analysis of statement 9 in percentage**




As per the above graph of statement 9, 99% and 7% of experimental group's students strongly agreed and agreed, respectively, whereas 0% of students stayed undecided, disagreed, and strongly disagreed.

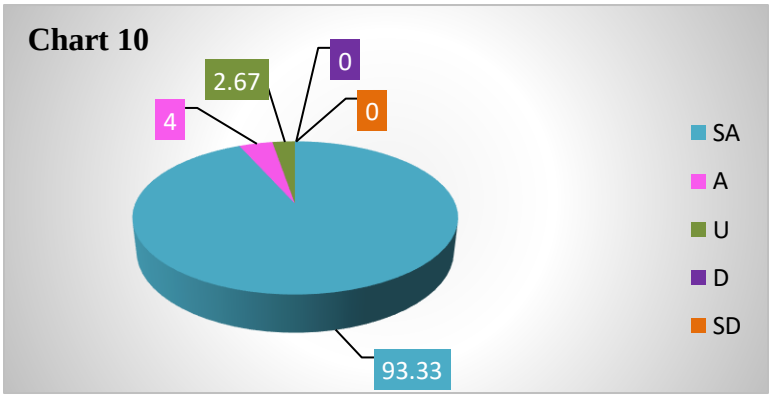
**Statement 10** (Sr.No. 17) - It was easy to learn letter writing through the O.H.P.

**Table 4.2.1.10 Responses of Experimental group 'E' to the positive statement 10**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 70 | 70*5=350 | 93.33 |
| 2 | 4 | A | 3 | 3*4=12 | 4.00 |
| 3 | 3 | U | 2 | 2*3=6 | 2.67 |
| 4 | 2 | D | 0 | 0*2=0 | 0.00 |
| 5 | 1 | SD | 0 | 0*1=0 | 0.00 |
| | | **Total** | **75** | **368** | |

According to the above data, 93% of students strongly agreed, 4% of students agreed, while 3% of students stayed undecided with the statement 10. 0% of students disagreed and strongly disagreed with the statement 10.

**Graph 4.2.1.10 Analysis of statement 10 in percentage**




As per the above graph of statement 10, 93% and 4% of experimental group's students strongly agreed and agreed, respectively**,** whereas 3% of students stayed undecided, and 0% of students remained disagreed and strongly disagreed.

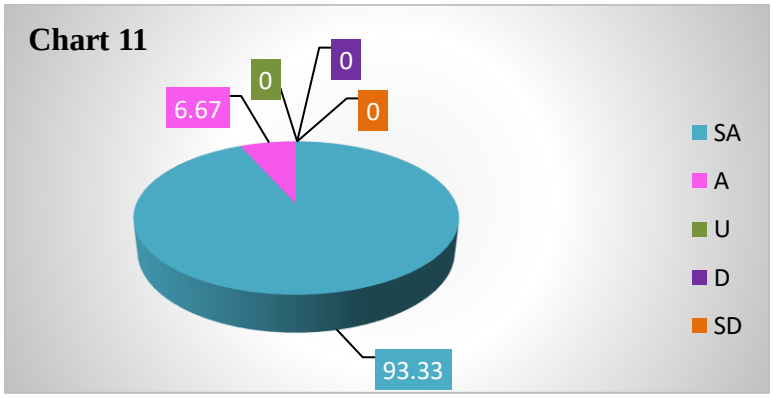
**Statement 11** (Sr.No. 19) - We enjoyed singing the poems on YouTube with music as a whole class activity by using computer lab.

**Table 4.2.1.11 Responses of Experimental group 'E' to the positive statement 11**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 70 | 70*5=350 | 93.33 |
| 2 | 4 | A | 5 | 5*4=20 | 6.67 |
| 3 | 3 | U | 0 | 0*3=0 | 0.00 |
| 4 | 2 | D | 0 | 0*2=0 | 0.00 |
| 5 | 1 | SD | 0 | 0*1=0 | 0.00 |
| | | **Total** | **75** | **370** | |

According to the above data, 93% of students strongly agreed, 7% of students agreed, while 0% of students stayed undecided, disagreed and strongly disagreed with the statement 11.

**Graph 4.2.1.11 Analysis of statement 11 in percentage**




As per the above graph of statement 11, 93% and 7% of experimental group's students strongly agreed and agreed, respectively, whereas 0% of students stayed undecided, disagreed, and strongly disagreed.

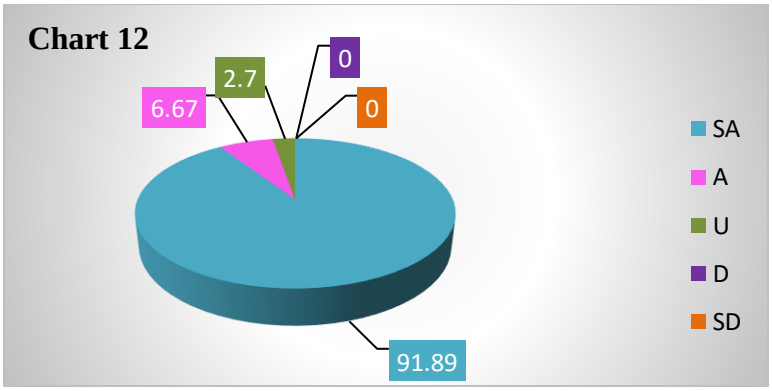
**Statement 12** (Sr.No. 22) - We expanded our vocabulary by listening to daily-conversation on the website, www.esl-lab.com, in the lab.

**Table 4.2.1.12 Responses of Experimental group 'E' to the positive statement 12**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 68 | 68*5=340 | 91.89 |
| 2 | 4 | A | 5 | 5*4=20 | 6.67 |
| 3 | 3 | U | 2 | 2*3=6 | 2.70 |
| 4 | 2 | D | 0 | 0*2=0 | 0.00 |
| 5 | 1 | SD | 0 | 0*1=0 | 0.00 |
| | | **Total** | **75** | **366** | |

According to the above data, 92% of students strongly agreed, 7% of students agreed, while 2.70% of students stayed undecided with the statement 12. 0% of students disagreed and strongly disagreed with the statement 12.

**Graph 4.2.1.12 Analysis of statement 12 in percentage**




As per the above graph of statement 12, , 92% and 7% of experimental group's students strongly agreed and agreed, respectively**,** whereas 3% of students stayed undecided, and 0% of students remained disagreed and strongly disagreed.

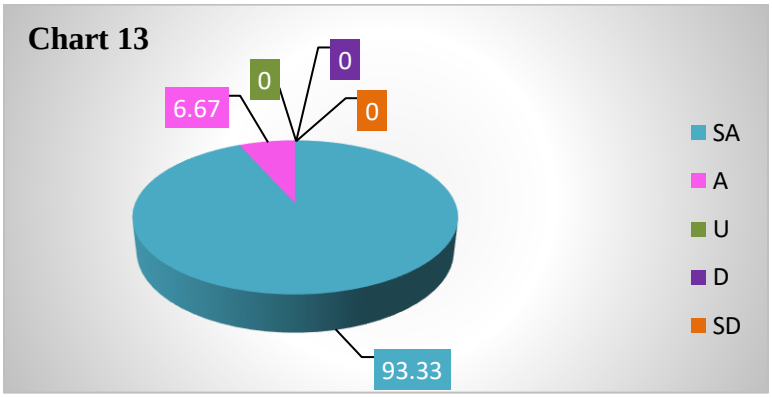
**Statement 13** (Sr.No. 24) - We enjoyed describing various pictures shown through the O.H.P.

**Table 4.2.1.13 Responses of Experimental group 'E' to the positive statement 13**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 70 | 70*5=350 | 93.33 |
| 2 | 4 | A | 5 | 5*4=20 | 6.67 |
| 3 | 3 | U | 0 | 0*3=0 | 0.00 |
| 4 | 2 | D | 0 | 0*2=0 | 0.00 |
| 5 | 1 | SD | 0 | 0*1=0 | 0.00 |
| | | **Total** | **75** | **370** | |

According to the above data, 93% of students strongly agreed, 7% of students agreed, while 0% of students stayed undecided, disagreed and strongly disagreed with the statement 13.

**Graph 4.2.1.13 Analysis of statement 13 in percentage**




As per the above graph of statement 13, 93% and 7% of experimental group's students strongly agreed and agreed, respectively, whereas 0% of students stayed undecided, disagreed, and strongly disagreed.

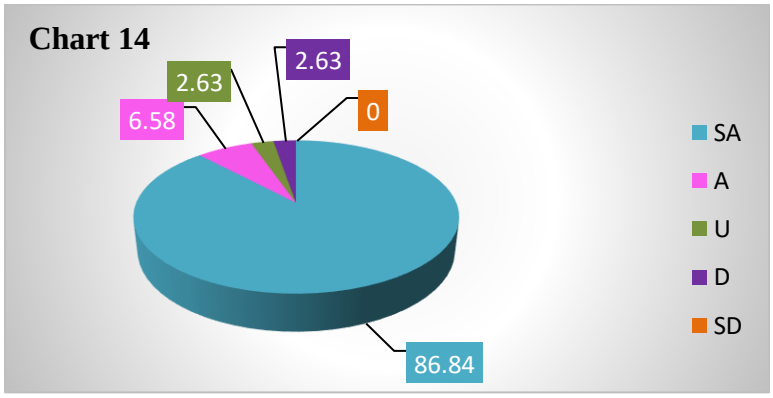
**Statement 14** (Sr.No. 28) **–** It was great fun to listen to the interview of Sachin Tendulkar on YouTube in the classroom.

**Table 4.2.1.14 Responses of Experimental group 'E' to the positive statement 14**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 66 | 66*5=330 | 86.84 |
| 2 | 4 | A | 5 | 5*4=20 | 6.58 |
| 3 | 3 | U | 2 | 2*3=6 | 2.63 |
| 4 | 2 | D | 2 | 2*2=4 | 2.63 |
| 5 | 1 | SD | 0 | 0*1=0 | 0.00 |
| | | **Total** | **75** | **360** | |

According to the above data of statement 14, 87% of students strongly agreed, 7% agreed, 3% stayed undecided and disagreed, whereas 0% strongly disagreed.

**Graph 4.2.1.14 Analysis of statement 14 in percentage**




As per the above graph of statement 14, 87% and 7% of experimental group's students strongly agreed and agreed, respectively, whereas 3% stayed undecided and disagreed, while 0% stayed strongly disagreed.

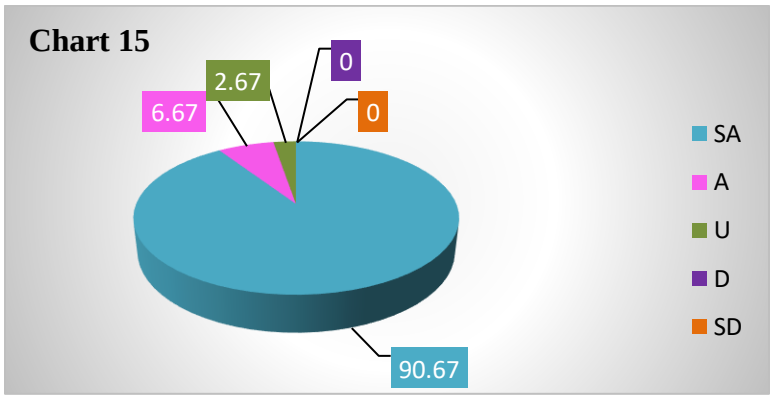
**Statement 15** (Sr.No. 31) - It was a great fun playing online quiz as a class activity.

**Table 4.2.1.15 Responses of Experimental group 'E' to the positive statement 15**

| Sl. No. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 68 | 68*5=340 | 90.67 |
| 2 | 4 | A | 5 | 5*4=20 | 6.67 |
| 3 | 3 | U | 2 | 2*3=6 | 2.67 |
| 4 | 2 | D | 0 | 0*2=0 | 0.00 |
| 5 | 1 | SD | 0 | 0*1=0 | 0.00 |
| | | **Total** | **75** | **366** | |

According to the above data, 91% of students strongly agreed, 7% of students agreed, while 2% of students stayed undecided and 0% of students disagreed, and strongly disagreed with the statement 15.

**Graph 4.2.1.15 Analysis of statement 15 in percentage**




As per the above graph of statement 15, 91% and 7% of experimental group's students strongly agreed and agreed, respectively, whereas 2% stayed undecided, and 0% disagreed, and strongly disagreed.

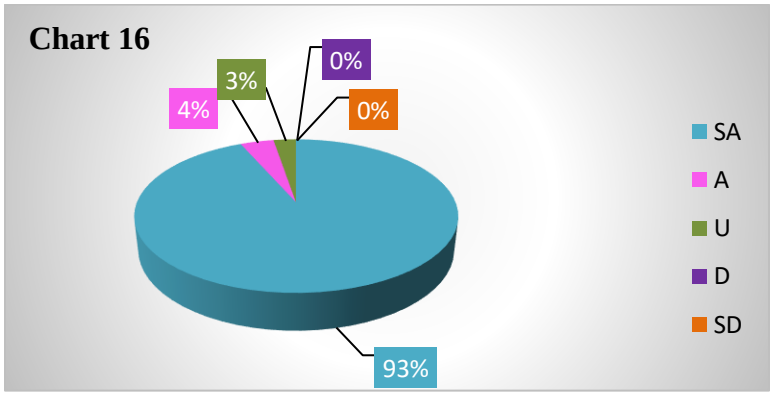
**Statement 16** (Sr.No. 32) - Documentary on Tsunami of 26th December, 2004 in the computer lab on LCD.T.V had made the lesson easy to comprehend.

**Table 4.2.1.16 Responses of Experimental group 'E' to the positive statement 16**

| Sl. | Score | Option | Number of Respondents | Total Score | Percentage of the total Score |
|---|---|---|---|---|---|
| 1 | 5 | SA | 70 | 70*5=350 | 93.33 |
| 2 | 4 | A | 3 | 3*4=12 | 4.00 |
| 3 | 3 | U | 2 | 2*3=6 | 2.67 |
| 4 | 2 | D | 0 | 0*2=0 | 0.00 |
| 5 | 1 | SD | 0 | 0*1=0 | 0.00 |
| | | **Total** | **75** | **368** | |

According to the above data, 93% of students strongly agreed, 4% of students agreed, while 3% of students stayed undecided with the statement 16. 0% of students disagreed and strongly disagreed with the statement 16.

**Graph 4.2.1.16 Analysis of statement 16 in percentage**




As per the above graph of statement 16, 93% and 4% of experimental group's students strongly agreed and agreed, respectively**,** whereas 3% of students stayed undecided, and 0% disagreed, and strongly disagreed.

### 4.2.1.17 Statement wise Interpretation of the Positive Polarity Statements

The reflections of the experimental group's students to each of the Positive polarity statements were interpreted as follows.

**Statement 1** - We developed more interest in the lesson by viewing the P.P.T. on O.H.P. about Kiran Bedi and Vishwanathan Anand in our class.

80% of the experimental group's students strongly agreed with statement 1.

**Statement 2** (Sr.No. 2) - Pictures of old coins and currency shown on the O.H.P. helped us to gain clarity on the ancient time currency.

80% of the experimental group's students strongly agreed with statement 2.

**Statement 3** (Sr.No. 3) – Pictures of the earthquake damage (26th January, 2001) on the internet connected to L.C.D. T.V. had made the lesson easy to understand.

80% of the experimental group's students strongly agreed with statement 3.

**Statement 4** (Sr.No. 6) - We improved our English pronunciation by listening to the online conversation exercises through the tape recorder.

87% of the experimental group's students strongly agreed with statement 4.

**Statement 5** (Sr.No. 8) - It was interesting to do fill in the gaps activity while learning conjunctions online in the computer lab.

80% of the experimental group's students strongly agreed with statement 5.

**Statement 6** (Sr.No. 10) - We had great fun in completing the online exercises on countable / uncountable nouns in the class.

93% of the experimental group's students strongly agreed with statement 6.

**Statement 7** (Sr.No. 11) - It was a great fun to listen to the poems on the YouTube in the lab.

93% of the experimental group's students strongly agreed with statement 7.

**Statement 8** (Sr.No. 13) - It was a great learning experience to listen to our own recorded conversations in the classroom.

92% of the experimental group's students strongly agreed with statement 8.

**Statement 9** (Sr.No. 14) - We had great fun in completing online exercises on Active voice and Passive Voice in the lab.

93% of the experimental group's students strongly agreed with statement 9.

**Statement 10** (Sr.No. 17) - It was easy to learn letter writing through the O.H.P.

93% of the experimental group's students strongly agreed with statement 10.

**Statement 11** (Sr.No. 19) - We enjoyed singing the poems on YouTube with music as a whole class activity by using computer lab.

93% of the experimental group's students strongly agreed with statement 11.

**Statement 12** (Sr.No. 22) - We expanded our vocabulary by listening to daily-conversation on the website, www.esl-lab.com, in the lab.

92% of the experimental group's students strongly agreed with statement 12.

**Statement 13** (Sr.No. 24) - We enjoyed describing various pictures shown through the O.H.P.

93% of the experimental group's students strongly agreed with statement 13.

**Statement 14** (Sr.No. 28) **–** It was great fun to listen to the interview of Sachin Tendulkar on YouTube in the classroom.

87% of the experimental group's students strongly agreed with statement 14.

**Statement 15** (Sr.No. 31) - It was a great fun playing online quiz as a class activity.

91% of the experimental group's students strongly agreed with statement 15.

**Statement 16** (Sr.No. 32) - Documentary on Tsunami of 26$^{th}$ December, 2004 in the computer lab on LCD.T.V had made the lesson easy to comprehend.

93% of the experimental group's students strongly agreed with statement 16.

### 4.2.2 Negative Polarity Statements and its Analysis –

The researcher had analysed the reflections of the experimental group on 16 negative polarity statements and its statement wise graphical representation was given below**.**

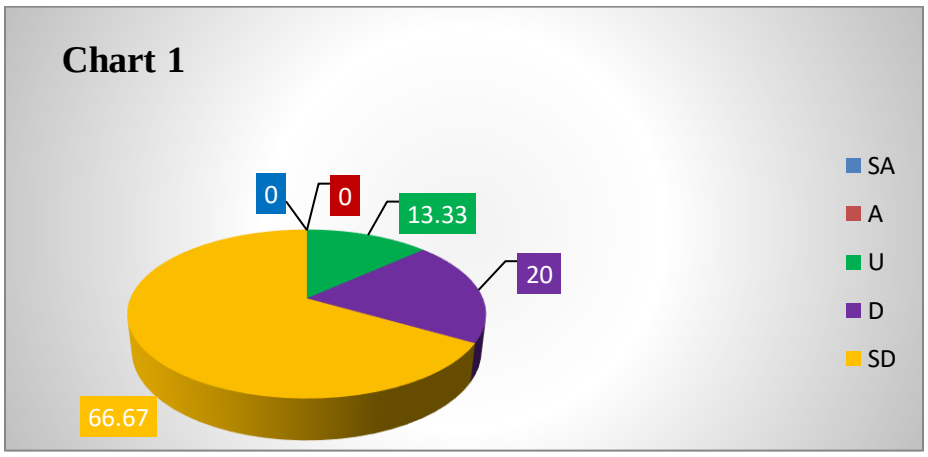
**Statement 1** (Sr.No. 4) - Viewing the pictures of the earthquake damage (26th January, 2001) on the internet connected LCD T.V., did not develop empathy towards the victims.

**Table 4.2.2.1 Responses of Experimental group 'E' to the negative statement 1**

| Sl.No. | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 0 | 0*2=0 | 0.00 |
| 3 | 3 | U | 10 | 10*3=30 | 13.33 |
| 4 | 4 | D | 15 | 15*4=60 | 20.00 |
| 5 | 5 | SD | 50 | 50*5=250 | 66.67 |
| | | **Total** | **75** | **340** | |

According to the above data, 67% of students strongly disagreed, 20% of students disagreed, while 13% of students stayed undecided with the statement 1. 0% of students agreed and strongly agreed with the statement 1.

**Graph 4.2.2.1 Analysis of negative statement 1 in percentage**




As per the above graph of statement 1, 67% and 20% of experimental group's students strongly disagreed and disagreed respectively, whereas 13% stayed undecided, and 0% agreed and strongly agreed with the statement 1.

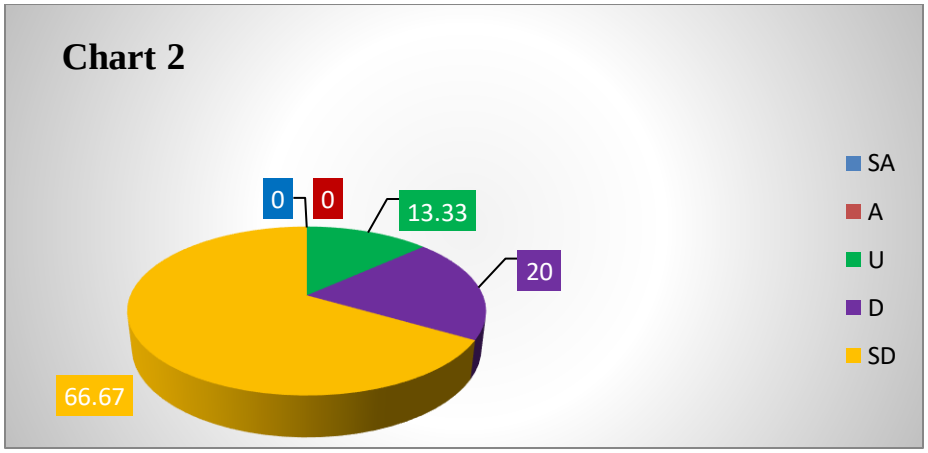
**Statement 2** (Sr.No. 5) - We were least interested to learn Active Voice and Passive Voice through online exercises.

**Table 4.2.2.2 Responses of Experimental group 'E' to the negative statement 2**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 0 | 0*2=0 | 0.00 |
| 3 | 3 | U | 10 | 10*3=30 | 13.33 |
| 4 | 4 | D | 15 | 15*4=60 | 20.00 |
| 5 | 5 | SD | 50 | 50*5=250 | 66.67 |
| | | **Total** | **75** | **335** | |

According to the above data, 67% of students strongly disagreed, 20% of students disagreed, while 13% of students stayed undecided with the statement 2. 0% of students agreed and strongly agreed with the statement 2.

**Graph 4.2.2.2 Analysis of negative statement 2 in percentage**




As per the above graph, 67% and 20% of experimental group's students strongly disagreed and disagreed, respectively, whereas 13% of students stayed undecided, and 0% of students agreed, and strongly agreed.

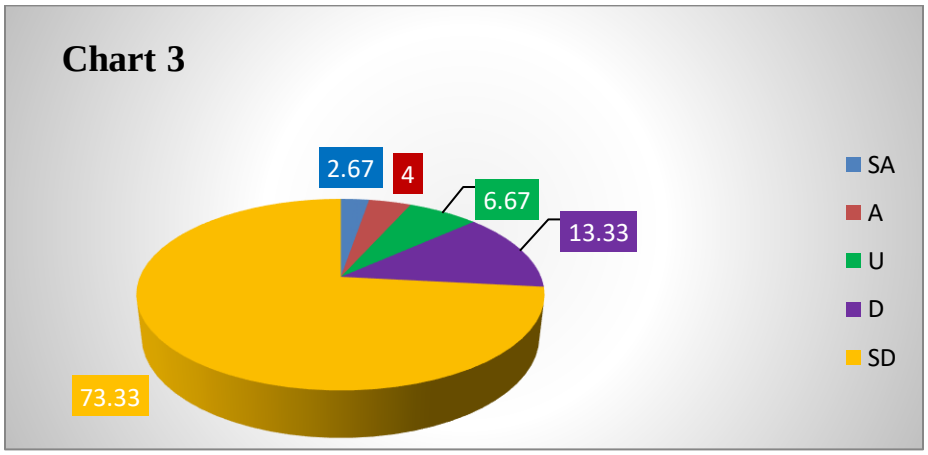
**Statement 3** (Sr.No. 7) – It was not interesting to do online exercises on conjunctions.

**Table 4.2.2.3 Responses of Experimental group 'E' to the negative statement 3**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage |
|---|---|---|---|---|---|
| 1 | 1 | SA | 2 | 2*1=2 | 2.67 |
| 2 | 2 | A | 3 | 3*2=6 | 4 |
| 3 | 3 | U | 5 | 5*3=15 | 6.67 |
| 4 | 4 | D | 10 | 10*4=40 | 13.33 |
| 5 | 5 | SD | 55 | 55*5=275 | 73.33 |
| | | **Total** | **75** | **338** | |

According to the above data, 73% of students strongly disagreed, 13% of students disagreed, while 7% of students stayed undecided with the statement 3. 4% and 3% stayed agreed and strongly agreed, respectively.

**Graph 4.2.2.3 Analysis of negative statement 3 in percentage**




As per the above graph of statement 3, 73% and 13%, strongly disagreed and disagreed with the statement 3, respectively, whereas 7% of students stayed undecided, 4% of students agreed, and 3% of students strongly agreed.

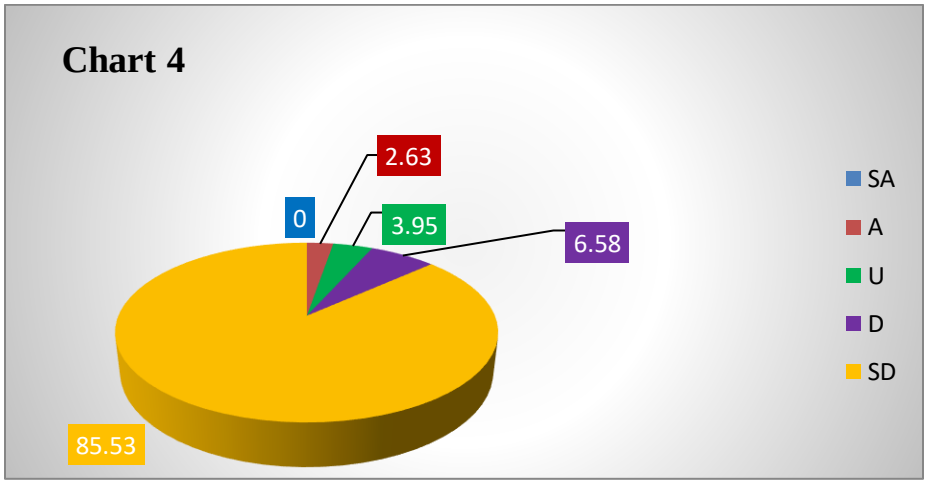
**Statement 4** (Sr.No. 9) - Pictures of old coins and currency shown on the O.H.P. did not help us to gain the clarity about the ancient time currency.

**Table 4.2.2.4 Responses of Experimental group 'E' to the negative statement 4**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*0=0 | 0.00 |
| 2 | 2 | A | 2 | 2*2=4 | 2.63 |
| 3 | 3 | U | 3 | 3*3=9 | 3.95 |
| 4 | 4 | D | 5 | 5*4=20 | 6.58 |
| 5 | 5 | SD | 65 | 65*5=325 | 85.53 |
| | | **Total** | **75** | **358** | |

According to the above data, 86% of students strongly disagreed, 7% of students disagreed, while 4% of students stayed undecided with the statement 4. 3% and 0% stayed agreed and strongly agreed, respectively.

**Graph 4.2.2.4 Analysis of negative statement 4 in percentage**




As per the above graph, the majority of students, 86% and 7%, strongly disagreed and disagreed with the statement 4, respectively**,** whereas 3% of students stayed undecided and agreed with the statement 4 and 0% of students strongly agreed with the statement 4.

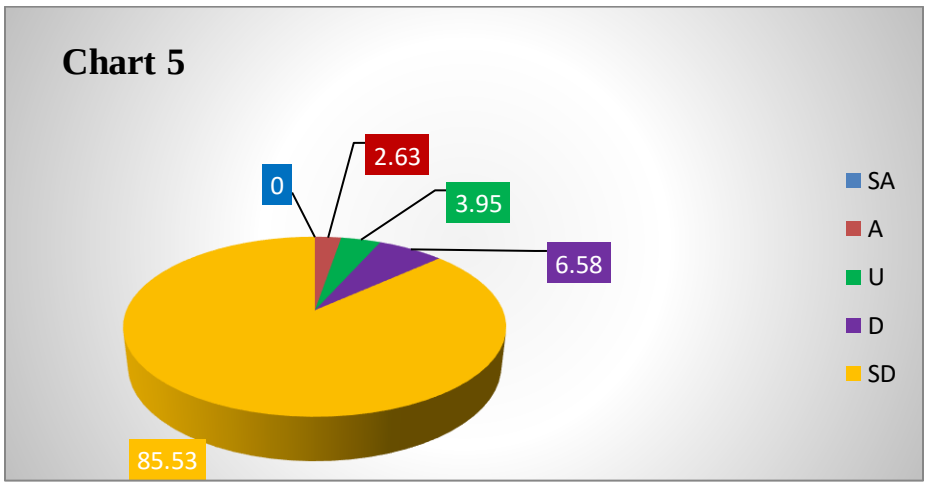
**Statement 5** (Sr.No. 12) - We were not motivated to discover information about national characters like Abdul Kalam from the Google on the internet.

**Table 4.2.2.5 Responses of Experimental group 'E' to the negative statement 5**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 0 | 0*2=0 | 0.00 |
| 3 | 3 | U | 1 | 1*3=3 | 1.33 |
| 4 | 4 | D | 10 | 10*4=40 | 13.33 |
| 5 | 5 | SD | 64 | 64*5=320 | 85.33 |
| | | **Total** | **75** | **363** | |

According to the above data, 86% of students strongly disagreed, 13% of students disagreed, while 1% of students stayed undecided with the statement 5. 0% of students agreed and strongly agreed with the statement 5.

**Graph 4.2.2.5 Analysis of negative statement 5 in percentage**




As per the above graph of the statement 5, 86% and 13% of experimental group's students strongly disagreed and disagreed, respectively, whereas 1% of students stayed undecided, and 0% of students agreed and strongly agreed.

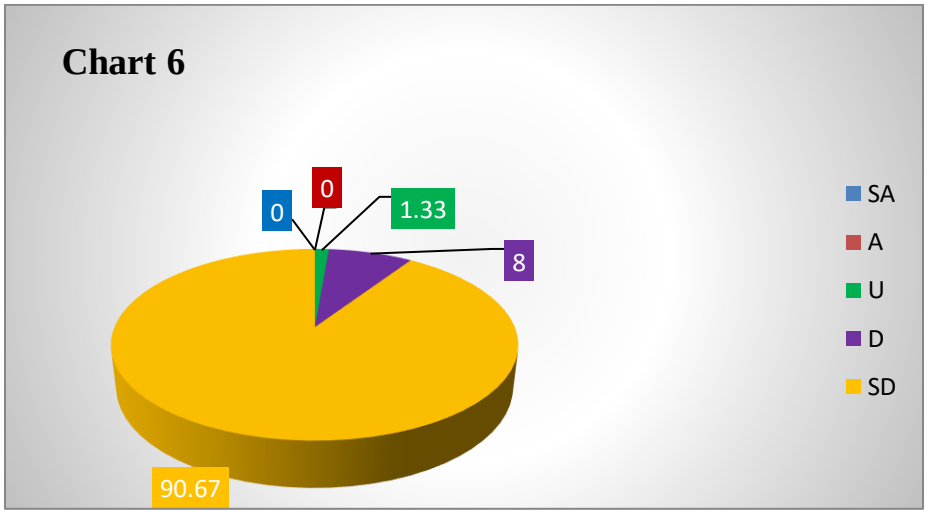
**Statement 6** (Sr.No. 15) - We did not enjoy listening to the poems on the YouTube in the lab.

**Table 4.2.2.6 Responses of Experimental group 'E' to the negative statement 6**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 0 | 0*2=0 | 0.00 |
| 3 | 3 | U | 1 | 1*3=3 | 1.33 |
| 4 | 4 | D | 6 | 6*4=24 | 8.00 |
| 5 | 5 | SD | 68 | 68*5=340 | 90.67 |
| | | **Total** | **75** | **367** | |

According to the above data, 91% of students strongly disagreed, 8% of students disagreed, and 1% of students stayed undecided while, 0% agreed, and strongly agreed.

**Graph 4.2.2.6 Analysis of negative statement 6 in percentage**




As per the above graph of statement 6, 91% and 8% of experimental group's students strongly disagreed and disagreed, respectively**,** whereas 1% of students stayed undecided, and 0% of students agreed and strongly agreed.

**Statement 7** (Sr.No. 16) - It was boring to describe the pictures through the O.H.P.

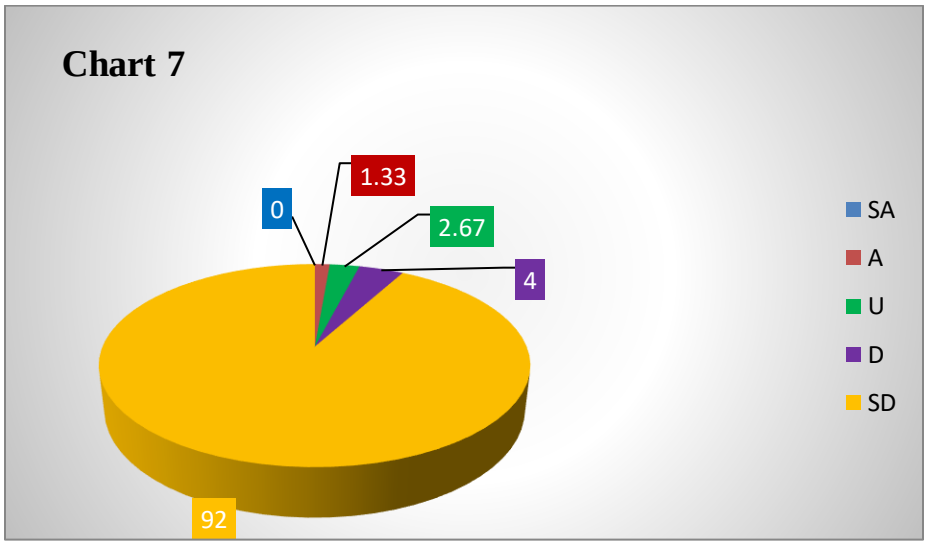
**Table 4.2.2.7 Responses of Experimental group 'E' to the negative statement 7**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 1 | 1*2=2 | 1.33 |
| 3 | 3 | U | 2 | 2*3=6 | 2.67 |
| 4 | 4 | D | 3 | 3*4=12 | 4.00 |
| 5 | 5 | SD | 69 | 69*5=345 | 92.00 |
| | | **Total** | **75** | **365** | |

According to the above data, 92% of students strongly disagreed, 4% of students disagreed, while 3% of students stayed undecided with statement 7. 1% and 0% agreed and strongly agreed, respectively.

.

**Graph 4.2.2.7 Analysis of negative statement 7 in percentage**




As per the above graph of statement7, 92% and 4% of experimental group's students strongly disagreed and disagreed, respectively**,** whereas 3% of students stayed undecided, 1% of students agreed and 0% of students strongly agreed with the statement 7.

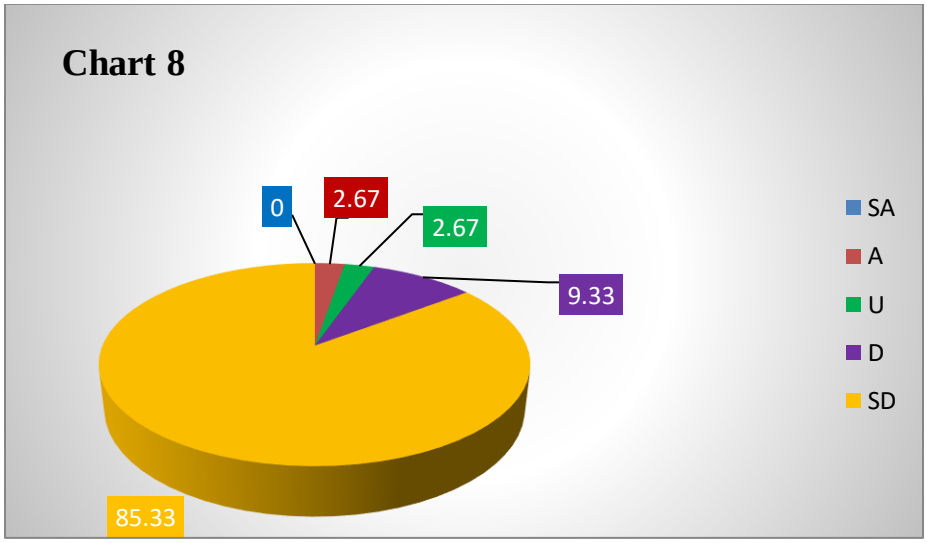
**Statement 8** (Sr.No. 18) - It was not a great fun playing online quiz as a class activity.

**Table 4.2.2.8 Responses of Experimental group 'E' to the negative statement 8**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 2 | 2*2=4 | 2.67 |
| 3 | 3 | U | 2 | 2*3=6 | 2.67 |
| 4 | 4 | D | 7 | 7*4=28 | 9.33 |
| 5 | 5 | SD | 64 | 64*5=320 | 85.33 |
| | | **Total** | **75** | **358** | |

According to the above data, 85% of students strongly disagreed, 9% of students disagreed, while 3% of students stayed undecided with the statement 8. 3% and 0% agreed and strongly agreed, respectively.

**Graph 4.2.2.8 Analysis of negative statement 8 in percentage**




As per the above graph of the statement 8, 85% and 9% of experimental group's students strongly disagreed and disagreed, respectively, whereas 3% of students stayed undecided and agreed, and 0% of students strongly agreed.

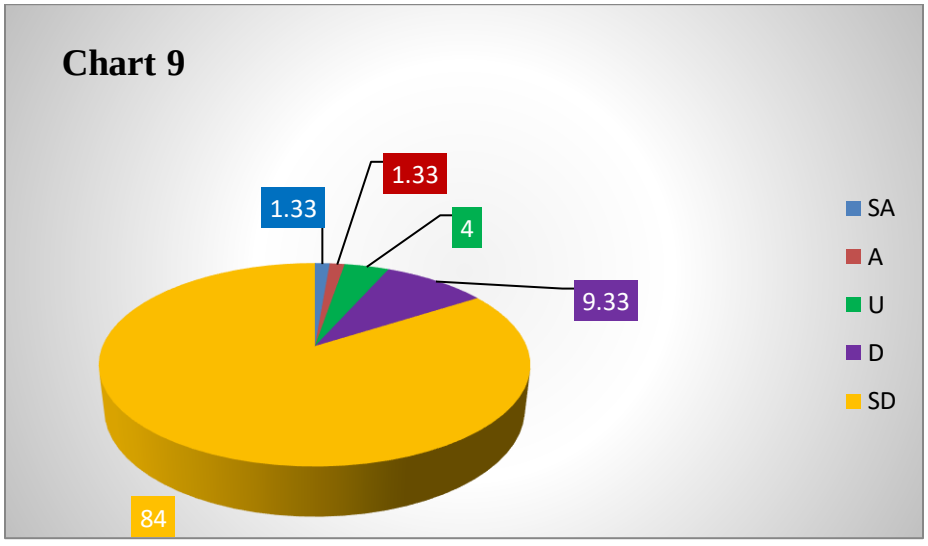
**Statement 9** (Sr.No. 20) - It was not exciting to do online exercises on Countable and Uncountable nouns on internet as a whole class activity.

**Table 4.2.2.9 Responses of Experimental group 'E' to the negative statement 9**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 1 | 1*1=1 | 1.33 |
| 2 | 2 | A | 1 | 1*2=2 | 1.33 |
| 3 | 3 | U | 3 | 3*3=9 | 4.00 |
| 4 | 4 | D | 7 | 7*4=28 | 9.33 |
| 5 | 5 | SD | 63 | 63*5=315 | 84.00 |
| | | **Total** | **75** | **355** | |

According to the above data, 84% of students strongly disagreed, 10% of students disagreed, while 4% of students stayed undecided with the statement 9. 1% of students agreed and strongly agreed with the statement 9.

**Graph 4.2.2.9 Analysis of negative statement 9 in percentage**




As per the above graph of statement 9, 84% and 10%, strongly disagreed and disagreed, respectively, whereas 4% of students stayed undecided, and 1% of students agreed and strongly agreed.

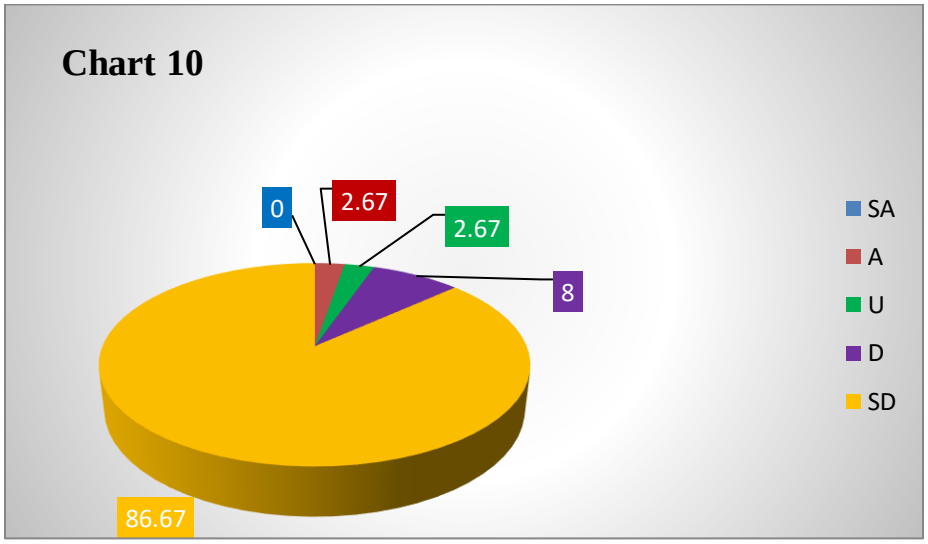
**Statement 10** (Sr.No. 21) - It was difficult to learn the format and vocabulary of letter writing through the O.H.P.

**Table 4.2.2.10 Responses of Experimental group 'E' to the negative statement 10**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 2 | 2*2=4 | 2.67 |
| 3 | 3 | U | 2 | 2*3=6 | 2.67 |
| 4 | 4 | D | 6 | 6*4=24 | 8.00 |
| 5 | 5 | SD | 65 | 65*5=325 | 86.67 |
| | | **Total** | **75** | **359** | |

According to the above data of statement 10, 86% of students strongly disagreed, 8% of students disagreed, while 3% of students stayed undecided and agreed, 0% strongly agreed.

**Graph 4.2.2.10 Analysis of negative statement 10 in percentage**




As per the above graph of statement 10, 86% and 8%, strongly disagreed and disagreed with the statement 10, respectively, whereas 3% of students stayed undecided and agreed, and 0% of students strongly agreed with the statement 10.

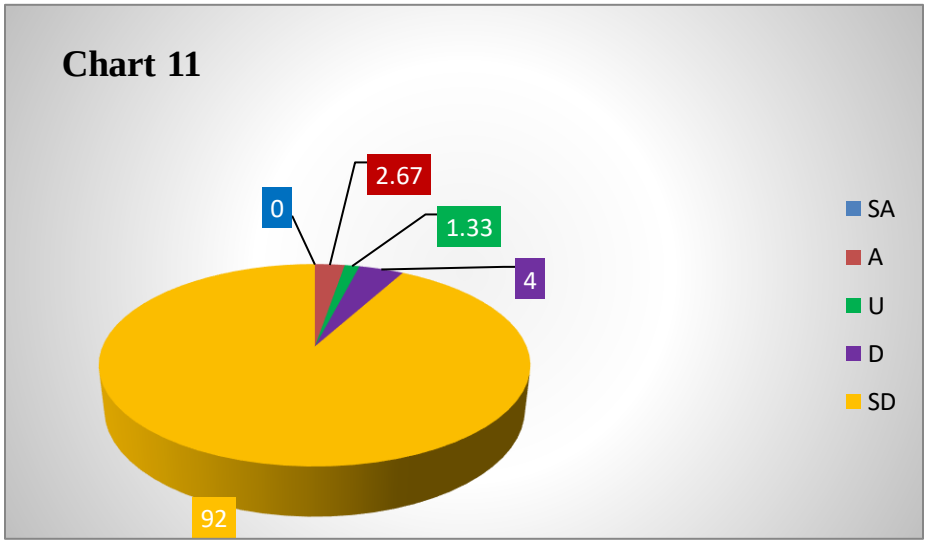
**Statement 11** (Sr.No.23) - It was uninteresting to sing the poems on YouTube with music as a whole class activity.

**Table 4.2.2.11 Responses of Experimental group 'E' to the negative statement 11**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 2 | 2*2=4 | 2.67 |
| 3 | 3 | U | 1 | 1*3=3 | 1.33 |
| 4 | 4 | D | 3 | 3*4=12 | 4.00 |
| 5 | 5 | SD | 69 | 69*5=345 | 92.00 |
| | | **Total** | **75** | **364** | |

According to the above data, 92% of students strongly disagreed, 4% of students disagreed, while 1% of students stayed undecided, whereas 3% agreed and 0% strongly agreed.

**Graph 4.2.2.11 Analysis of negative statement 11 in percentage**




As per the above graph of statement 11, 92% and 4% of experimental group's students strongly disagreed and disagreed, respectively, whereas 1% of students stayed undecided, 3% of students agreed, and 0% strongly agreed with the statement 11.

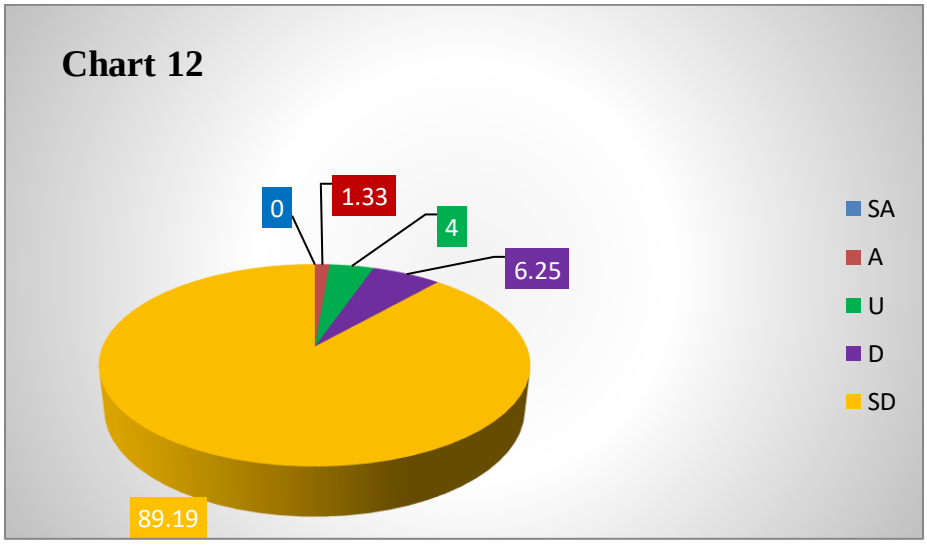
**Statement 12** (Sr.No. 25) – We did not enjoy the listening activity on 'Save Our Planet' through the tape recorder in the classroom.

**Table 4.2.2.12 Responses of Experimental group 'E' to the negative statement 12**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 1 | 1*2=2 | 1.33 |
| 3 | 3 | U | 4 | 4*3=12 | 4.00 |
| 4 | 4 | D | 4 | 4*4=16 | 6.25 |
| 5 | 5 | SD | 66 | 66*5=330 | 89.19 |
| | | **Total** | **75** | **360** | |

According to the above data, 89% of students strongly disagreed, 6% of students disagreed and 4% of students stayed undecided with the statement 12. 1% and 0% stayed agreed and strongly agreed, respectively.

**Graph 4.2.2.12 Analysis of negative statement 12 in percentage**




As per the above graph of statement 12, 89% and 6% of experimental group's students strongly disagreed and disagreed, respectively, whereas 4% of students stayed undecided and 1% and 0% agreed and strongly agreed, respectively.

.

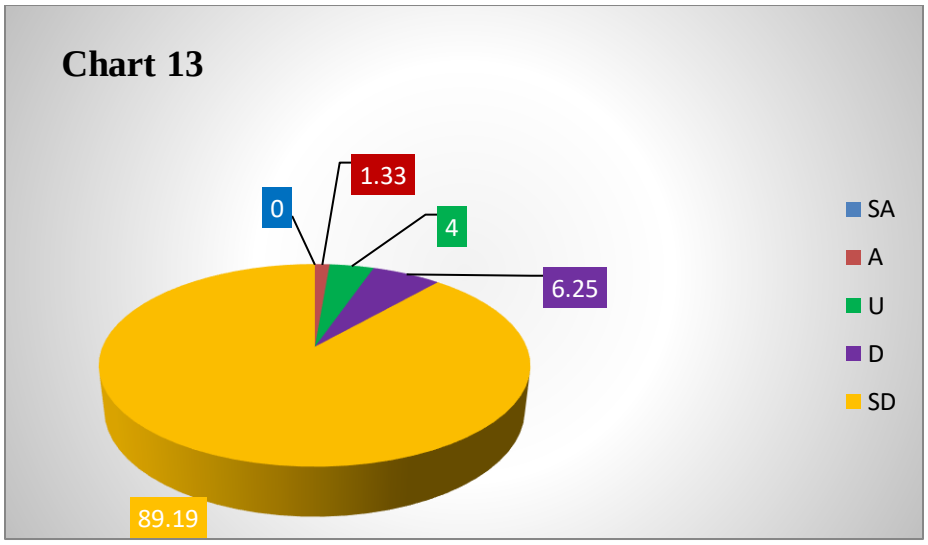
**Statement 13** (Sr.No. 26) – Listening to conversation on tape recorder could not improve our pronunciation of the words.

**Table 4.2.2.13 Responses of Experimental group 'E' to the negative statement 13**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 0 | 0*2=0 | 0.00 |
| 3 | 3 | U | 5 | 5*3=15 | 6.67 |
| 4 | 4 | D | 5 | 5*4=20 | 6.58 |
| 5 | 5 | SD | 65 | 65*5=325 | 86.67 |
| | | **Total** | **75** | **360** | |

According to the above data, 87% of students strongly disagreed, 6% of students disagreed, while 7% of students stayed undecided with the statement 10. 0% of students agreed and strongly agreed with the statement 13.

**Graph 4.2.2.13 Analysis of negative statement 13 in percentage**




As per the above graph of statement 13, 87% and 6% of experimental group's students strongly disagreed and disagreed, respectively, whereas 7% of students stayed undecided, and 0% of students agreed and strongly agreed.

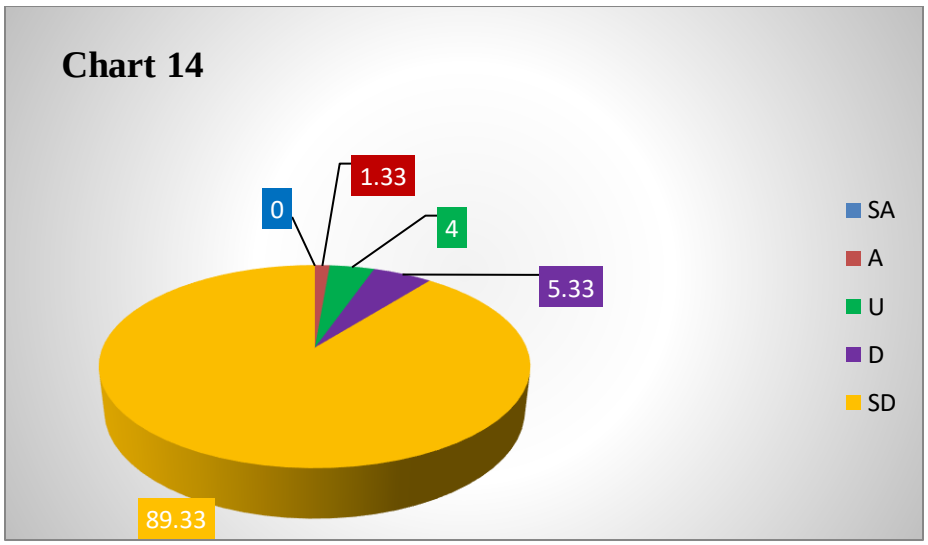
**Statement 14** (Sr.No. 27) - The 'plastic waste' documentary shown on the YouTube did not build a better understanding of the issue of plastic waste.

**Table 4.2.2.14 Responses of Experimental group 'E' to the negative statement 14**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 1 | 1*2=2 | 1.33 |
| 3 | 3 | U | 3 | 3*3=9 | 4.00 |
| 4 | 4 | D | 4 | 4*4=16 | 5.33 |
| 5 | 5 | SD | 67 | 67*5=335 | 89.33 |
| | | **Total** | **75** | **362** | |

According to the above data, 90% of students strongly disagreed, 5% of students disagreed, while 4% of students stayed undecided with the statement 14. 1% and 0% agreed and strongly agreed, respectively.

**Graph 4.2.2.14 Analysis of negative statement 14 in percentage**




As per the above graph of statement 14, 90% and 5% of experimental group's students strongly disagreed and disagreed, respectively, whereas 4% of students stayed undecided, 1% and 0% of students agreed and strongly agreed.

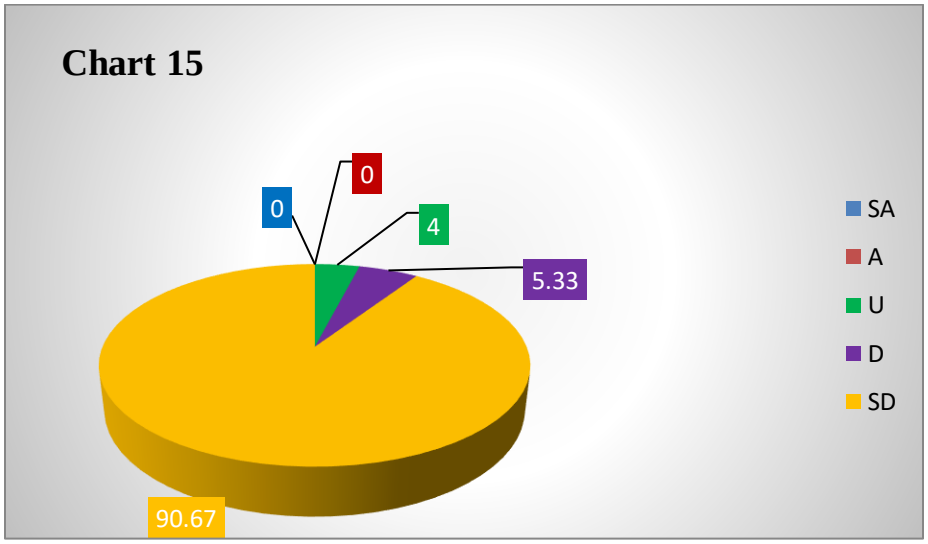
**Statement 15** (Sr.No. 29) – Viewing the PPT on O.H.P. about Kiran Bedi and Vishwanathan Anand could not generate interest in the lesson.

**Table 4.2.2.15 Responses of Experimental group 'E' to the negative statement 15**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 0 | 0*2=0 | 0.00 |
| 3 | 3 | U | 3 | 3*3=9 | 4.00 |
| 4 | 4 | D | 4 | 4*4=16 | 5.33 |
| 5 | 5 | SD | 68 | 68*5=340 | 90.67 |
| | | **Total** | **75** | **365** | |

According to the above data, 91% of students strongly disagreed, 5% of students disagreed, while 4% of students stayed undecided with the statement 15. 0% of students agreed and strongly agreed with the statement 15.

**Graph 4.2.2.15 Analysis of negative statement 15 in percentage**




As per the above graph of statement 15, 91% and 5% of experimental group's students strongly disagreed and disagreed, respectively, whereas 4% of students stayed undecided, and 0% agreed and strongly agreed with the statement 15.

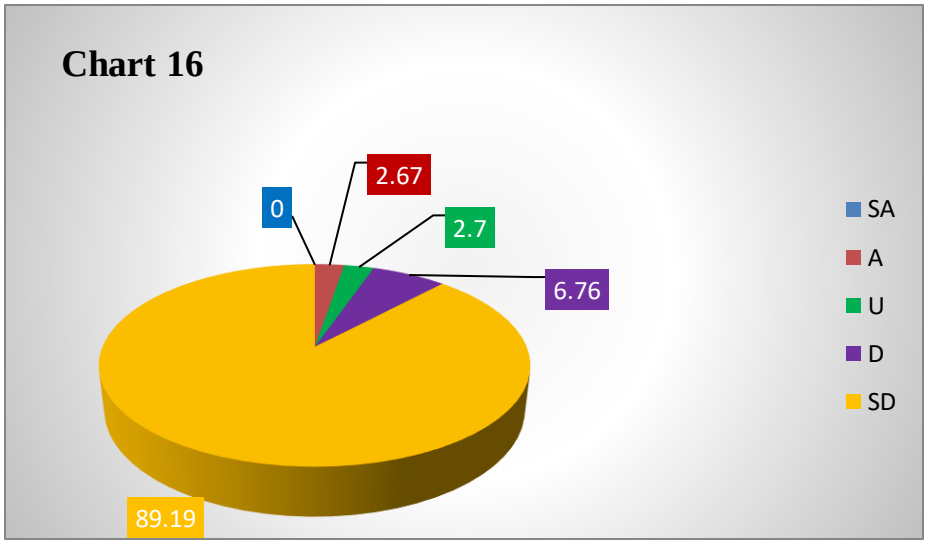
**Statement 16** (Sr.No. 30) - By viewing the damage of the earthquake (26th January, 2001), on L.C.D.T.V., we could not get a clear idea about self-protection during and after the earth quake.

**Table 4.2.2.16 Responses of Experimental group 'E' to the negative statement 16**

| Sl.No | Score | Option | Number of Respondents | Total score | Percentage of the total score |
|---|---|---|---|---|---|
| 1 | 1 | SA | 0 | 0*1=0 | 0.00 |
| 2 | 2 | A | 2 | 2*2=4 | 2.67 |
| 3 | 3 | U | 2 | 2*3=6 | 2.70 |
| 4 | 4 | D | 5 | 5*4=20 | 6.76 |
| 5 | 5 | SD | 66 | 66*5=330 | 89.19 |
| | | **Total** | **75** | **360** | |

According to the above data, 89% of students strongly disagreed, 7% of students disagreed, while 2% of students stayed undecided and agreed, whereas 0% strongly agreed.

**Graph 4.2.2.16 Analysis of negative statement 16 in percentage**




As per the above graph of statement 16, 89% and 7%, strongly disagreed and disagreed, respectively, whereas 2% of students stayed undecided, and agreed, while 0% strongly agreed.

### 4.2.2.17 Statement wise Interpretation of the Negative Polarity Statements

The responses of the experimental group's students to each of the negative polarity statements were interpreted as follows.

**Statement 1** (Sr.No. 4) - Viewing the pictures of the earthquake damage ($26^{th}$ January, 2001) on the internet connected LCD T.V., did not develop empathy towards the victims.

67% of the experimental group's students strongly agreed with statement 1.

**Statement 2** (Sr.No. 5) - We were least interested to learn Active Voice and Passive Voice through online exercises.

67% of the experimental group's students strongly agreed with statement 2.

**Statement 3** (Sr.No. 7) – It was not interesting to do online exercises on conjunctions.

73% of the experimental group's students strongly agreed with statement 3.

**Statement 4** (Sr.No. 9) - Pictures of old coins and currency shown on the O.H.P. did not help us to gain the clarity about the ancient time currency.

86% of the experimental group's students strongly agreed with statement 4.

**Statement 5** (Sr.No. 12) - We were not motivated to discover information about national characters like Abdul Kalam from the Google on the internet.

85% of the experimental group's students strongly agreed with statement 5.

**Statement 6** (Sr.No. 15) - We did not enjoy listening to the poems on the YouTube in the lab.

91% of the experimental group's students strongly agreed with statement 6.

**Statement 7** (Sr.No. 16) - It was boring to describe the pictures through the O.H.P.

92% of the experimental group's students strongly agreed with statement 7.

**Statement 8** (Sr.No. 18) - It was not a great fun playing online quiz as a class activity.

85% of the experimental group's students strongly agreed with statement 8.

**Statement 9** (Sr.No. 20) - It was not exciting to do online exercises on Countable and Uncountable nouns on internet as a whole class activity.
84% of the experimental group's students strongly agreed with statement 9.

**Statement 10** (Sr.No. 21) - It was difficult to learn the format and vocabulary of letter writing through the O.H.P.
87% of the experimental group's students strongly agreed with statement 10.

**Statement 11** (Sr.No.23) - It was uninteresting to sing the poems on YouTube with music as a whole class activity.
92% of the experimental group's students strongly agreed with statement 11.

**Statement 12** (Sr.No. 25) – We did not enjoy the listening activity on 'Save Our Planet' through the tape recorder in the classroom.
89% of the experimental group's students strongly agreed with statement 12.

**Statement 13** (Sr.No. 26) – Listening to conversation on tape recorder could not improve our pronunciation of the words.
87% of the experimental group's students strongly agreed with statement 13.

**Statement 14** (Sr.No. 27) - The 'plastic waste' documentary shown on the YouTube did not build a better understanding of the issue of plastic waste.
89% of the experimental group's students strongly agreed with statement 14.

**Statement 15** (Sr.No. 29) – Viewing the PPT on O.H.P. about Kiran Bedi and Vishwanathan Anand could not generate interest in the lesson.
91% of the experimental group's students strongly agreed with statement 15.

**Statement 16** (Sr.No. 30) - By viewing the damage of the earthquake (26th January, 2001), on L.C.D.T.V., we could not get a clear idea about self-protection during and after the earth quake.

89% of the experimental group's students strongly agreed with statement 16.

## 4.3 Discussion

The following discussion is based on the experimental and control group's scholastic achievement scores on formative and summative assessments, as well as the students' reflections on the effectiveness of each component of the developed strategy.

There were 75 students in each of the experimental and control groups, but occasionally few absentees were found in both the groups. The numbers of these absentees ranged from 9.45% to 16.21% only, so it did not become a threat to the internal validity of the experiment (Glen, 2017). Glen (2017) has cited that if the attrition rate is more than 20% then only it is a matter of concern in terms of internal validity in the experimental study.

Looking at the graph given under 4.1.1.1.11, it can be inferred that the experimental group's scholastic achievement scores were higher than the control group's on all formative tests. From this graph (given under 4.1.1.1.11), it is also observed that in the formative tests of the unit 2, 3 and 1 the experimental group scored the higher scholastic achievement scores (77.00, 71.79 and 70.87 respectively) than the scholastic achievement scores in the rest of the formative tests of unit 4,5,6,7,8, and 9. Here it is very important to mention that the researcher had implemented the combination of two components i.e., internet enabled computers and OHP of the developed ICT based strategy in the teaching-learning process of units 1, 2, and 3 in the experimental group. Hence, it can be interpreted that the impact of the implementation of these combined components (internet enabled computers and O.H.P.) of the developed ICT based strategy were more effective in achieving the higher scholastic achievement scores than the impact of the implementation of the single component or other combined components of the developed ICT based strategy.

The graph given under 4.1.1.1.11 indicated that in the formative tests of unit 4, 8, and 9 the scholastic achievement scores (63.22, 66.64, and 69.04 respectively) of the experimental group were second-highest among the scholastic achievement scores of the same group in the rest of the formative tests of unit 5, 6, and 7. The researcher had implemented the combination of the components O.H.P. and tape recorder in the unit 4 and 8, and the combination of the components YouTube and internet enabled computers in the unit 9. Hence, it can be interpreted that the impact of the combined implementation of the components OHP and tape recorder, and the combined implementation of the components YouTube and internet enabled computers of the developed ICT based strategy were less effective in achieving the higher scholastic achievement scores than the implementation of the combined components internet enabled computers and O.H.P.in the teaching-learning process of the ESL.

It is also illustrated from the given graph under 4.1.1.1.11 that in the formative tests of unit 7, 6, and 5 the scholastic achievement scores (51.04, 57.04 and 58.51 respectively) of the experimental group were the lowest than the scholastic achievement scores in the rest of the formative tests of the units 1, 2, 3, 4, 8, and 9. The researcher had implemented the combination of the components YouTube and OHP in the unit 5 and 6, and the implementation of the single component LCD T.V. in the the unit 7. Hence, it can be interpreted that the impact of the combined implementation of the components YouTube and O.H.P. as well as the implementation of the single component LCD T.V. of the developed ICT based strategy were less effective in achieving the higher scholastic achievement score compared to the implementation of the combined components internet enabled computers and OHP during the experiment.

According to the analysis of the scholastic achievement scores on all formative tests (units 1–9) and the summative test administered on the experimental group 'E' and the control group 'C' (tables 4.1.1.1.1.1 to 4.1.1.1.9.1, and 4.1.1.2.1), the experimental group's mean was higher on all formative and summative tests than the control group's mean. On the top of it, the SD of the experimental group's scholastic success scores was lower than the SD of the control group's scholastic achievement scores in all formative

and summative examinations. This reduced SD number revealed that the experimental group's accomplishment scores were grouped around the mean on all formative and summative assessments, indicating that practically all kids in the experimental group performed exceptionally well. Additionally, the researcher assessed the t-values for both groups' scholastic performance scores, and the t-values suggested that the means of both groups differed in all formative and summative assessments. This suggests that the proposed ICT-based technique was effective in teaching ESL, as the mean of the two groups differed considerably, but the researcher also calculated the p-value to ascertain the magnitude of the significant difference in the t-value. The p-value revealed that the experimental group's mean was substantially different from the control group at p 0.05 in all formative and summative examinations. As a result, it can be confidently stated that the ICT-based technique devised was effective in teaching ESL.

### 4.3.1 Summary of the Analysis of 32 Statements of 5 Point Likert Scale

To evaluate the effectiveness of each of the five components of the developed strategy, the researcher classified each of the 32 statements on the 5-point Likert scale into five categories, namely internet-enabled computers, OHP, YouTube, tape recorder, and LCD TV, and summarized the total score for all positive and negative polarity statements accordingly (Robbins & Heiberger, 2011).

#### 4.3.1.1 Summary of the Analysis of all Positive Polarity Statements

Summary of the analysis of 16 positive polarity statements were as below.

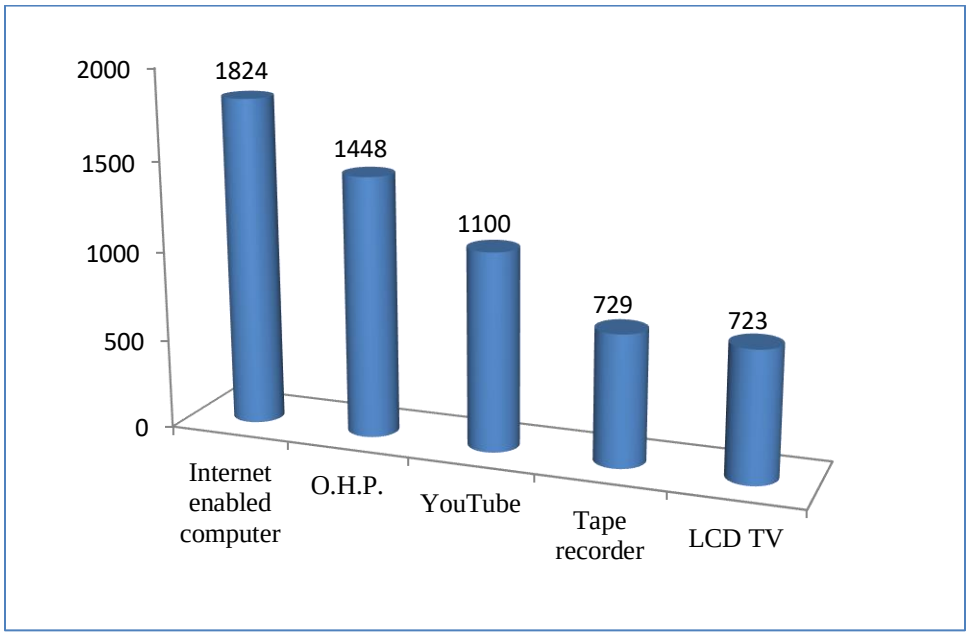
**Table 4.3.1.1 Summary of the Analysis of all Positive Polarity Statements**

| Components of the developed ICT based strategy | Total respondents | SA 5 | A 4 | UD 3 | D 2 | SD 1 | Total score |
|---|---|---|---|---|---|---|---|
| **Internet enabled computer** | | | | | | | |
| Statement 5 | 75 | 80% | 13% | 4% | 1% | 1% | 352 |
| Statement 6 | 75 | 93% | 7% | 0% | 0% | 0% | 370 |
| Statement 9 | 75 | 93% | 7% | 0% | 0% | 0% | 370 |
| Statement 12 | 75 | 92% | 7% | 3% | 0% | 0% | 366 |
| Statement 15 | 75 | 91% | 7% | 3% | 0% | 0% | 366 |
| **O.H.P.** | | | | | | | |
| **Statement 1** | 75 | 80% | 13% | 7% | 0% | 0% | 355 |
| Statement 2 | 75 | 80% | 13% | 7% | 0% | 0% | 355 |
| Statement 10 | 75 | 93% | 4% | 3% | 0% | 0% | 368 |
| Statement 13 | 75 | 93% | 7% | 0% | 0% | 0% | 370 |
| **YouTube** | | | | | | | |
| **Statement 7** | 75 | 93% | 7% | 0% | 0% | 0% | 370 |
| **Statement 11** | 75 | 93% | 7% | 0% | 0% | 0% | 370 |
| **Statement 14** | 75 | 87% | 7% | 3% | 3% | 0% | 360 |
| **Tape recorder** | | | | | | | |
| **Statement 4** | 75 | 87% | 13% | 0% | 0% | 0% | 365 |
| **Statement 8** | 75 | 92% | 4% | 1% | 3% | 0% | 364 |
| **L.C.D.T.V.** | | | | | | | |
| **Statement 3** | 75 | 80% | 13% | 7% | 0% | 0% | 355 |
| **Statement 16** | 75 | 93% | 4% | 3% | 0% | 0% | 368 |

Looking at the above table 4.3.1.1, it can be stated that most of the students were on the Strongly Agree side of the statements.

The graphical representation of the above table is given as below.

**<u>Graph 4.3.1.1</u> Graphical representation of the analysis of positive polarity statements**




Looking at the above graph (4.3.1.1), it can, clearly, be stated that the internet enabled computer is the most liked component by the students of the experimental group. Second most popular component is O.H.P. which is followed by YouTube. Tape recorder and LCD T.V. are the least preferred components by the experimental group respectively.

Researcher has categorized all the negative polarity statements into 5 categories (as per 5 components of the developed ICT based strategy) and has summarized the analysed data into the table format as below to judge the effectiveness of each component of the developed ICT based strategy.

### 4.3.1.2 Summary of the Analysis of all Negative Polarity Statements

Summary of the analysis of all (16) negative polarity statements are as below.

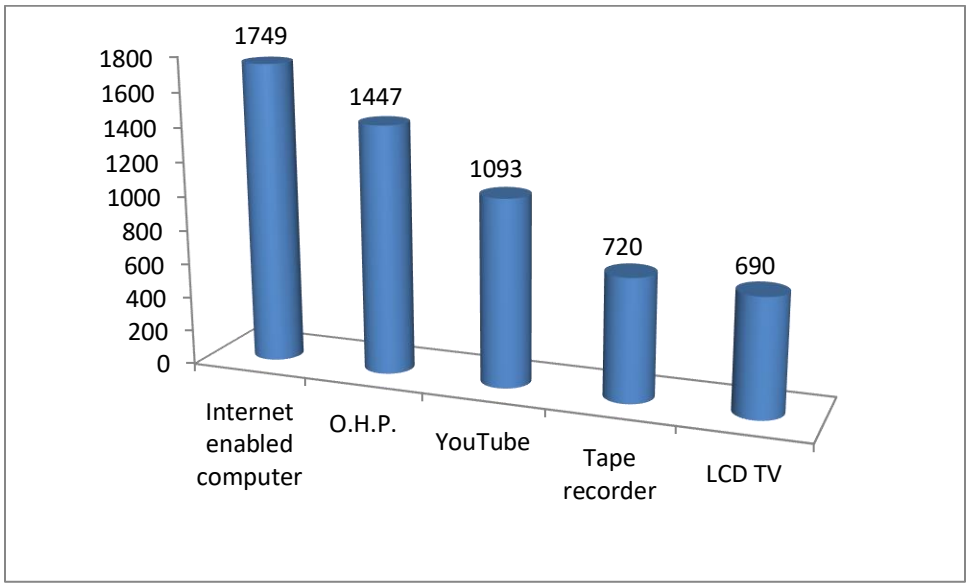
**Table 4.3.1.2 Summary of the Analysis of all Negative Polarity Statements**

| Components of the developed ICT based strategy | Total respondents | SD 5 | D 4 | UD 3 | A 2 | SA 1 | Total score |
|---|---|---|---|---|---|---|---|
| **Internet enabled computer** | | | | | | | |
| Statement 2 | 75 | 67% | 13% | 20% | 0% | 0% | 335 |
| Statement 3 | 75 | 73% | 13% | 7% | 4% | 3% | 338 |
| Statement 5 | 75 | 85% | 13% | 1% | 0% | 0% | 363 |
| Statement 8 | 75 | 85% | 9% | 3% | 3% | 0% | 358 |
| Statement 9 | 75 | 84% | 9% | 4% | 1% | 1% | 355 |
| **O.H.P.** | | | | | | | |
| Statement 4 | 75 | 86% | 7% | 4% | 3% | 0% | 358 |
| Statement 7 | 75 | 92% | 4% | 3% | 1% | 0% | 365 |
| Statement 10 | 75 | 87% | 8% | 3% | 3% | 0% | 359 |
| Statement 15 | 75 | 91% | 5% | 4% | 0% | 0% | 365 |
| **YouTube** | | | | | | | |
| Statement 6 | 75 | 91% | 8% | 1% | 0% | 0% | 367 |
| Statement 11 | 75 | 92% | 4% | 1% | 3% | 0% | 364 |
| Statement 14 | 75 | 89% | 5% | 4% | 1% | 0% | 362 |
| **Tape recorder** | | | | | | | |
| Statement 12 | 75 | 89% | 6% | 6% | 2% | 0% | 360 |
| Statement 13 | 75 | 87% | 7% | 7% | 0% | 0% | 360 |
| **L.C.D.T.V.** | | | | | | | |
| Statement 1 | 75 | 67% | 20% | 13% | 0% | 0% | 340 |
| Statement 16 | 75 | 89% | 7% | 3% | 3% | 0% | 350 |

Looking at the above table 4.3.1.2, it can be stated that most of the students were on the Strongly Disagree side of the statements.

The graphical representation of the above table is given as below.

**<u>Graph 4.3.1.2</u> Graphical representation of the analysis of all negative polarity statements**




Looking at the above graph (4.3.1.2), it can be stated that the internet enabled computer was the most liked component by the students of the experimental group. Second most popular component was OHP which was followed by YouTube. Tape recorder and LCD T.V. were the least preferred components by the experimental group, respectively.

It is very important to mention that the selected school for this experiment had a well-equipped computer lab so all the students of the experimental group had an opportunity to interact with internet enabled computers.

From the given graph under 4.3.1.1 and 4.3.1.2, it is revealed that internet enabled computer was the most preferred and first choice of the students of the experimental group. It is also interpreted that OHP was the second most enjoyed component of the ICT based strategy and YouTube was the third most liked component by the students. A few students of the experimental group appreciated the use of the LCD T.V. and tape recorder in their teaching-learning process of ESL. It is an alarming situation deduced from the

graphs (4.3.1.1 and 4.3.1.2) that tape recorder and LCD T.V. were the least preferred components of the developed ICT based strategy.

It is very important to note here that the size of the experimental group was very large (in all 75 students) and the time taken to teach the experimental group (by the researcher) and the control group (by the regular school teacher of English) was the same (one academic semester). The large size of the group and the time constrain had affected the implementation of the components of the ICT based strategy in the experimental group and in turn it also affected its effectiveness. To be more specific, while teaching a lesson on a conversation the researcher could record only 18 to 20 students' voices out of 75 students of the group. Unlike other components, she could implement the tape recorder only for 3 consecutive days in the experimental group. All these limitations (time and size of the group) might have affected their liking for this component and hence less number of students liked this component in the experiment which was revealed through their responses on the 5 point Likert scale.

Internet enabled computer is preferred by the maximum number of students of the experimental group. Because of the well-equipped computer lab of the school, the researcher could engage two students on each computer, so all students of the group had an opportunity to interact with this gadget individually and for a longer time which in turn showed more effectiveness of this component.

Few absentees occasionally remained absent during the experiment. The number of students who opted for 'undecided' in the given 5 point Likert scale, were among those who were absent on the day when the researcher had taught that particular content of the unit using some specific component.

As per the above discussion, it can be interpreted that all the technical gadgets (internet enabled computer, OHP, YouTube, LCD T.V. and tape recorder) of the developed ICT based strategy did not have an equal impact on the preferences (choices/likes/dislikes) of

learning through these components on the students of the experimental group of the Vidyut Board Vidyalay Gujarati medium school of Vadodara.

## 4.4 Conclusion

From the above discussion, the following interpretations are drawn –

1. As discussed above, the experimental group scored higher on all formative and summative tests than the control group. This demonstrates that the researcher's ICT-based strategy to teach ESL was significantly effective. Therefore the Null hypothesis $H_0$ (There will be no significant difference between the achievement scores of the Experimental group's students and the Control group's students of the study in teaching English as a Second Language through the developed ICT based strategy) is rejected.

2. The combined implementation of the components internet enabled computers and O.H.P (of the developed ICT based strategy) were the most effective combination of the strategy compared to the other combinations of the components of the developed strategy as well as the single component of the strategy in the teaching-learning process of ESL.
3. Each and every component of the developed ICT based strategy was effective in bringing the higher achievement level of the experimental group compared to that of the control group over the formative and summative tests of the units 1 to 9. Hence, each and every component of the developed ICT based strategy was effective in teaching ESL.
4. Internet enabled computer was the most liked component (by the experimental group) of the developed ICT based strategy. It could be due to the reason that it was possible to give individual interaction of each student with computer due to a large number of computers available in their computer lab.
5. O.H.P. was the second most preferred component through the eyes of the experimental group.
6. YouTube was the next most enjoyed component by the learners and

7. Tape recorder and LCD T.V. were liked by the least number of students of the experimental group i.e. 4% and 5% respectively, could be due to time constrain and size of the group (large number of students -75) which did not allow the researcher to provide the individual interaction with these gadgets to the students of the experimental group during her teaching-learning process.