CHAPTER IV – DATA ANALYSIS

The analysis of the collected data was done using different statistical tools. The marks obtained in the pre-test and post-test in control and experimental tests were tabulated in SPSS in accordance with the variables like schools, districts, age, medium, locality, class and subjects of the students. Percentage of students against the total sample was calculated in every variable. Later, data was analysed based on these variables making different clusters. In every cluster the performance of students of control and experimental group were compared. In both pre-test and post-test mean score was measured using the below formula.

$$\bar{x} = \frac{\sum x}{n}$$

Here, $\bar{x}$ is the mean; $x$ be the marks scored by students; $n$ be the total number of students.

To understand whether the distribution is spread out over a broad range or bunched up closely around the mean, standard deviation was calculated, for the scores of pre-test and post-test in both control and experimental group using following formula.

$$\sigma = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}}$$

Here, $\sigma$ is standard deviation; $x$ be the marks scored by students.

To find out the association between the scores of pre-test and post-test Pearson correlation was calculated using the following formula

$$r = \frac{Cov(X,Y)}{\sigma_x \cdot \sigma_y} = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sigma_x \cdot \sigma_y}$$
Here, $r$ is coefficient of correlation, $\text{Cov}(X,Y)$ be the covariance between $x$ and $y$, $\sigma_x$ and $\sigma_y$ are standard deviation for $x$ and $y$, respectively. The results of Pearson correlation falls between +1 and −1. Where 1 is total positive correlation, 0 is no correlation, and −1 is total negative correlation between variables. In every cluster, in the table details of the marks obtained in pre-test and post-test in both control and experimental group is given, along with the mean, standard deviation, maximum, minimum marks and Pearson correlation.

4.1 RESULTS OF EXPERIMENTAL STUDY

Table 01: Distribution of Study Sample according to Districts

<table>
<thead>
<tr>
<th>District</th>
<th>No. of Students</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bengaluru</td>
<td>167</td>
<td>31%</td>
</tr>
<tr>
<td>Dakshina Kannada</td>
<td>120</td>
<td>22%</td>
</tr>
<tr>
<td>Bidar</td>
<td>121</td>
<td>22%</td>
</tr>
<tr>
<td>Chamaraja Nagara</td>
<td>136</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>544</td>
<td>100%</td>
</tr>
</tbody>
</table>

The above table shows the distribution of sample according to the district they belong. Out of 544, the total number of students, 31% of them belong to Bengaluru district. Dikshnana Kananda and Bidar district had 22% each. 25% of the students were from Chamaraja Nagara district.

Table 02: Distribution of Study Sample according to the School

<table>
<thead>
<tr>
<th>School</th>
<th>No. of Students</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Govt. primary school, Thippenahalli, Bengaluru</td>
<td>83</td>
<td>15%</td>
</tr>
<tr>
<td>Prjna Vidya Nikethana, Byatarayanapura, Bengaluru</td>
<td>84</td>
<td>16%</td>
</tr>
<tr>
<td>School Name</td>
<td>No. of Students</td>
<td>Percentage</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-----------------</td>
<td>------------</td>
</tr>
<tr>
<td>Govt. primary school, Hokkadigoli, Dakshina Kananada</td>
<td>49</td>
<td>9%</td>
</tr>
<tr>
<td>Akshra Bharathi Vidyalaya, Vamadapadavu, Dakshina Kananda</td>
<td>71</td>
<td>13%</td>
</tr>
<tr>
<td>Govt. primary school, Haradanahalli, Chamara Nagara</td>
<td>65</td>
<td>12%</td>
</tr>
<tr>
<td>Universal Learning School, Chamara Nagara</td>
<td>71</td>
<td>13%</td>
</tr>
<tr>
<td>Govt. primary school, Nuabad, Bidar</td>
<td>51</td>
<td>9%</td>
</tr>
<tr>
<td>Jnana Sudha English Medium School, Bidar</td>
<td>70</td>
<td>13%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>544</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The above table illustrates the distribution of sample according to the school. 15% of the students in sample group were from Govt. Primary school, Bengaluru and 16% of them were belonging to Prjna Vidya Nikethana, Byatarayanapura, Bengaluru. While 9% of the students belong to Govt. primary school, Hokkadigoli and 13% were from Akshra Bharathi Vidyalaya, Vamadapadavu of Dakshina Kananda. From Chamarajanagara district Govt. primary school, Haradanahalli and Universal learning school was selected for the study. It contained 12% and 13% of the sample respectively. Whereas, 9% of the total sample were from Govt. Primary school Naubad and 13% were from Jnana Sudha English Medium School.
Table 03: Distribution of Study Sample according to Class

<table>
<thead>
<tr>
<th>District</th>
<th>No. of Students</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second</td>
<td>174</td>
<td>32%</td>
</tr>
<tr>
<td>Fourth</td>
<td>184</td>
<td>34%</td>
</tr>
<tr>
<td>Sixth</td>
<td>186</td>
<td>34%</td>
</tr>
<tr>
<td>Total</td>
<td>544</td>
<td>100%</td>
</tr>
</tbody>
</table>

The above table shows out of total students 32% of them were studying in second standard. And 34% each were studying in fourth and sixth standard.

Table 04: Distribution of Study Sample according to the Medium of Instruction

<table>
<thead>
<tr>
<th>Medium</th>
<th>No. of Students</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kannada</td>
<td>251</td>
<td>54%</td>
</tr>
<tr>
<td>English</td>
<td>293</td>
<td>46%</td>
</tr>
<tr>
<td>Total</td>
<td>544</td>
<td>100%</td>
</tr>
</tbody>
</table>

The above table demonstrates that 54% of the sample groups were studying in Kananda medium schools and 46% of them are in perusing their primary education in English medium schools. It can be stated here that in the sample all the Kananda medium student belong to government schools and English medium students were studying in private schools.

Table 05: Distribution of Study Sample according to the Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>No. of Students</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>284</td>
<td>52%</td>
</tr>
<tr>
<td>Female</td>
<td>260</td>
<td>48%</td>
</tr>
<tr>
<td>Total</td>
<td>544</td>
<td>100%</td>
</tr>
</tbody>
</table>
As shown in the table out of 544 students 52% of the sample group was male and 48% of them were female.

Table 06: Distribution of Study Sample according to Locality

<table>
<thead>
<tr>
<th>Locality</th>
<th>No. of Students</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>197</td>
<td>64%</td>
</tr>
<tr>
<td>Rural</td>
<td>347</td>
<td>36%</td>
</tr>
<tr>
<td>Total</td>
<td>544</td>
<td>100%</td>
</tr>
</tbody>
</table>

The study was conducted among the sample group who belong to both urban and rural Localities. 64% of the students in the sample belong to urban, where as 36% of the students live in rural area.

Table 07: Distribution of Study Sample according to Teaching Method

<table>
<thead>
<tr>
<th>Teaching Method</th>
<th>No. of Students</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chalk and Talk</td>
<td>271</td>
<td>49.81%</td>
</tr>
<tr>
<td>With Animation</td>
<td>273</td>
<td>50.19%</td>
</tr>
<tr>
<td>Total</td>
<td>544</td>
<td>100%</td>
</tr>
</tbody>
</table>

The above table demonstrates both control groups, where chalk and talk method is used and experiment group, where animation was used in teaching had almost equal number of students. Control group had 49.81% share of sample and experimental group had 50.19%.
4.1.1: Study results of Control and Experimental Group in Second Standard of Govt Primary School, Tippenahalli in Banagalore district.

Table 08: Details of Marks obtained by Second Standard Students of Govt. Primary School, Tippenahalli.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>11</td>
<td>17</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Student 2</td>
<td>12</td>
<td>15</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Student 3</td>
<td>9</td>
<td>12</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Student 4</td>
<td>12</td>
<td>16</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 5</td>
<td>15</td>
<td>10</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 6</td>
<td>9</td>
<td>11</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Student 7</td>
<td>12</td>
<td>17</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Student 8</td>
<td>15</td>
<td>18</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Student 9</td>
<td>11</td>
<td>16</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 10</td>
<td>12</td>
<td>16</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 11</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Student 12</td>
<td>10</td>
<td>13</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Student 13</td>
<td>6</td>
<td>14</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Student 14</td>
<td>16</td>
<td>12</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Mean</td>
<td>11.43</td>
<td>14.14</td>
<td>9.07</td>
<td>10.42</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>2.68</td>
<td>2.63</td>
<td>3.41</td>
<td>3.77</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>6</td>
<td>10</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>16</td>
<td>18</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.122</td>
<td></td>
<td>0.876</td>
<td></td>
</tr>
</tbody>
</table>

In control group, an average of 11.43 marks was obtained by students in pre-test with the standard deviation of 2.68 and the mean score in post-test was 14.14 with the standard deviation of 2.63. In experimental group, they got mean score of 9.07 in pre-test with
standard deviation of 3.41 and in post-test average marks obtained by students was 10.42 with the standard deviation of 3.77. Both, control and experimental group had 14 students each. The correlation between the scores of pre-test and post-test in control group is 0.122. In experimental group, it is 0.876. The correlation results show that students in experimental group had high positive correlation compared to control group.

Fig 05: Comparison of Performance of Second Standard Students in Control and Experimental Groups in Govt. Primary School, Tippenahalli.

4.1.2: Study Result of Control and Experimental Groups in Second Standard of Prajna Vidya Nikethan, Byataraynapura, in Banagalore District.

Table 09: Details of Marks obtained by Second Standard Students of Prajna Vidya Nikethan, Byataraynapura, in Bengaluru District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Student 2</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Student 3</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 4</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>-------</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Student 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 6</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Student 7</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Student 8</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Student 9</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Student 10</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Student 11</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Student 12</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Student 13</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Student 14</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>Mean</td>
<td>8.14</td>
<td>8.64</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>2.68</td>
<td>2.97</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.440</td>
<td></td>
</tr>
</tbody>
</table>

The above table shows in control group, students scored an average of 8.14 in pre-test with the standard deviation of 2.68. In post-test, they got mean score of 8.64 with the standard deviation of 2.97. Students in experimental group got mean score of 11.71 in pre-test with standard deviation of 2.30. In post-test, mean score were 12.57 with the Standard deviation of 3.40. The correlation between the scores of pre-test and post-test in control group is 0.440, and in experimental group, it is 0.734, where animation is used in teaching.
Fig 06: Comparison of Performance of Second Standard Students in Control and Experimental Groups Prajna Vidya Nikethan, Bytarayanapura, Bengaluru.

4.1.3: Study Result of Control and Experimental Groups in Second Standard of Govt Primary School, Hokkadigoli in Dakshina Kananada District.

Table 10: Details of Marks obtained by Second Standard Students of Govt. Primary School, Hokkadigoli.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Student 2</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Student 3</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Student 4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Student 5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Student 6</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Student 7</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Student 8</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Student 9</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Mean</td>
<td>10.89</td>
<td>11.55</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3.57</td>
<td>2.51</td>
</tr>
</tbody>
</table>
In an average, 10.89 marks were obtained by students in pre-test with the standard deviation of 3.57 and the mean score was 11.55 in post-test with the standard deviation of 2.51. In experimental group, they got mean score of 10.33 in pre-test with standard deviation of 3.67 and in post-test average marks obtained by students was 12.33 with the standard deviation of 2.82. The correlation between the scores of pre-test and post-test in control group is 0.550, but in experimental group, it is 0.886. Both, the control and experimental group had 9 students each.

Fig 07: Comparison of Performance of Second Standard Students in Control and Experimental Groups in Govt Primary School, Hokkadigoli.
4.1.4: Study Result of Control and Experimental Groups in Second Standard of Akshara Bharathi Vidyalaya, Yamada Padvu in Dakshina Kananada District.

Table 11: Details of Marks obtained by Second Standard Students of Akshara Bharathi Vidyalaya, Yamada Padvu.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>9</td>
<td>8</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Student 2</td>
<td>7</td>
<td>11</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Student 3</td>
<td>7</td>
<td>10</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Student 4</td>
<td>6</td>
<td>12</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Student 5</td>
<td>5</td>
<td>10</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Student 6</td>
<td>3</td>
<td>7</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Student 7</td>
<td>4</td>
<td>14</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Student 8</td>
<td>8</td>
<td>9</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Student 9</td>
<td>12</td>
<td>16</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Student 10</td>
<td>10</td>
<td>15</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Student 11</td>
<td>5</td>
<td>11</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Student 12</td>
<td>3</td>
<td>12</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Student 13</td>
<td>8</td>
<td>12</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Student 14</td>
<td>13</td>
<td>14</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Mean</td>
<td>7.14</td>
<td>11.5</td>
<td>6.14</td>
<td>8.79</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3.12</td>
<td>2.62</td>
<td>2.14</td>
<td>4.06</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>13</td>
<td>16</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.481</td>
<td></td>
<td></td>
<td>0.681</td>
</tr>
</tbody>
</table>

Mean score secured by the second standard students of Aksharabharathi school was 7.14 in control group with the standard deviation of 3.12 in pre-test and 11.5 with the standard deviation of 2.62 in post-test. In experimental group, they obtained mean score of 6.14 in pre-
test with standard deviation of 2.14. In Post-test, mean score was 8.79 with standard deviation of 4.06. In Control and experimental, both the groups had 14 students each. The correlation between the scores of pre-test and post-test in control group is 0.481. But in experimental group, it is 0.681, where animation was used in teaching.

Fig 08: Comparison of Performance of Second Standard Students in Control and Experimental Groups in Akshara Bharathi Vidyalaya, Vamada Padvu.

4.1.5: Study Result of Control and Experimental Groups in Second Standard of Govt. Primary School, Naubad in Bidar district.

Table 12: Details of Marks obtained by Second Standard Students of Govt. Primary School, Naubad.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Student 2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Student 4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Student 5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Student 6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 7</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Student 8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Student 9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>0.57</td>
<td>0.57</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>0.53</td>
<td>0.53</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>No. of Students</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.417</td>
<td></td>
</tr>
</tbody>
</table>

As shown in the above table, control and experimental group had 7 and 9 students respectively. Mean score of students in pre and post-test was the same 0.57 in control group with standard deviation of 0.53. But, in pre-test of experimental group students mean score was 0.33 with standard deviation of 0.50 and in post-test, performance was slightly better with the mean of 1 and standard deviation of 0.86. The correlation between the scores of pre-test and post-test in control group is 0.417, and in experimental group, it is 0.577. This shows correlation between the scores in experimental group was slightly better where animation was used in teaching.
Fig 09: Comparison of Performance of Second Standard Students in Control and Experimental Groups in Govt. Primary School, Naubad.

4.1.6: Study Result of Control and Experimental Groups in Second Standard of Jnana Sudha English Medium School, in Bidar District.

Table 13: Details of Marks obtained by Second Standard Students of Jnana Sudha English Medium School, Bidar.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Student 2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 3</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Student 4</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Student 5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Student 6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 7</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Student 8</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Student 9</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Student 10</td>
<td>6</td>
<td>11</td>
</tr>
</tbody>
</table>
In control group, students mean score was 5.36 with the standard deviation of 3.17 in pre-test and 7.18 with the standard deviation of 3.18 in post-test. In experimental group, they obtained mean score of 1 in pre-test with standard deviation of 1.52. In Post-test, mean score was 3.14 with standard deviation of 2.60. Control and experimental group had 7 students each. The correlation between the scores of pre-test and post-test in control group is 0.280, and in experimental group, it is 0.920, where animation content was used.

Fig 10: Comparison of Performance of Second Standard Students in Control and Experimental Groups in Jnana Sudha English Medium School, Bidar.
4.1.7: Study Result of Control and Experimental Groups in Second Standard of Govt. Primary School, Hardanahalli in Chamarja Nagara district.

Table 14: Details of Marks obtained by Second Standard Students of Govt. Primary School, Hardanahalli.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Student 2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Student 3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Student 4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Student 6</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Student 7</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Student 8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>1.56</td>
<td>1</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>0.92</td>
<td>1.06</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.000</td>
<td>0.307</td>
</tr>
</tbody>
</table>

As shown in the above table in control group students got mean score of 1.56 with the standard deviation of 0.92 in pre-test and mean score of 1 with the standard deviation of 1.06 in post-test. In experimental group, they obtained mean score of 0.75 in pre-test with standard deviation of 1.83. In post-test, mean score was slightly more, i.e, 3.13; with the standard deviation of 2.70. Control and experimental, both groups had 8 students each. The correlation between the scores of pre-test and post-test in control group is 0.000. But in experimental group, it is 0.307. Control and experimental, both groups had 8 students each.
The correlation between the scores of pre-test and post-test in control group is 0. While in experimental group, it is 0.307. Comparing two groups’, the experimental group, where animation was used for teaching has high positive correlation.

Fig 10: Comparison of Performance of Second Standard Students in Control and Experimental Groups in Govt. Primary School, Hardanahalli.

4.1.8: Study Result of Control and Experimental Groups in Second Standard of Universal Learning School, Chamaraja Nagar in Chamarja Nagara District.

Table 15: Details of Marks obtained by Second Standard Students of Universal Learning School, Chamaraja Nagar.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Student 2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 5</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Student 6</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Student 7</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Student 8</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>
Second standard students of Universal learning school, Chamarajanagara got mean score of 2.36 in control group with the standard deviation of 1.75 in pre-test and it was 5.9 in post-test with the standard deviation of 2.66. In experimental group, they got mean score of 1.18 in pre-test with standard deviation of 1.47. In Post-test, mean score was 4.54 with the Standard deviation of 2.66. Both, control and experimental group had 11 students each. The correlation between the scores of pre-test and post-test in control group is 0.007. In experimental group, it is 0.100. It shows that scores of students in experimental group has slightly high positive correlation compared to control group.

Fig 11: Comparison of Performance of Second Standard Students in Control and Experimental Groups in Universal Learning School, Chamaraja Nagar
4.1.9: Study Result of Schools of Bengaluru District in Control And Experimental Groups in Second Standard.

Table 16: Details of Marks obtained by Second Standard Students of Bengaluru District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Student 2</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Student 3</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Student 4</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Student 5</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Student 6</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Student 7</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>Student 8</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Student 9</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Student 10</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Student 11</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Student 12</td>
<td>10</td>
<td>13</td>
</tr>
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<td>Student 13</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 14</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Student 15</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Student 16</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Student 17</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 18</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Student 19</td>
<td>16</td>
<td>12</td>
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<td>Student 20</td>
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<td>10</td>
</tr>
<tr>
<td>Student 21</td>
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<td>9</td>
</tr>
<tr>
<td>Student 22</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Student 23</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Student 23</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Student 24</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>
In control group, students mean score was 9.79 with the standard deviation of 3.12 in pre-test and it was 11.39 in post-test with the standard deviation of 3.93. In experimental group, students got mean score of 10.39 in pre-test with standard deviation of 3.15. In Post-test, mean score was 11.5 with the Standard deviation of 4.07. The control and experimental group had 28 students each and the correlation between the scores of pre-test and post-test in control group is 0.554, but in experimental group, it is quite high, i.e, 0.804, where animation is used in teaching.

Fig 12: Comparison of Performance of Second Standard Students in Control and Experimental Groups Bengaluru District.
### 4.1.10: Study Result of Schools of Dakshina Kannada District in Control and Experimental Groups in Second Standard.

Table 17: Details of Marks Obtained by Second Standard Students of Dakshina Kannada District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Student 2</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Student 3</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Student 4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Student 5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Student 6</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Student 7</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Student 8</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Student 9</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Student 10</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Student 11</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Student 12</td>
<td>7</td>
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</tr>
<tr>
<td>Student 13</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Student 14</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Student 15</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Student 16</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Student 17</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Student 18</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Student 19</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Student 20</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Student 21</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Student 22</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Student 23</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Student 23</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>
An average of 8.61 marks obtained by second standard students in Dakshina Kannada district in pre-test with the standard deviation of 3.73 and the mean score was 11.52 in post-test with the standard deviation of 2.52. In experimental group, they got mean score of 7.78 in pre-test with standard deviation of 3.46 and in post-test average marks obtained by students was 10.17 with the standard deviation of 3.97. Total number of students who attended the class in control and experimental group was 23 each. The correlation between the scores of pre-test and post-test in control group is 0.444. But in experimental group, it is 0.763. Both the groups have positive correlation, but in experimental group correlation are quite high compared to control group.

Fig 13: Comparison of Performance of Second Standard Students in Control and Experimental Groups in Dakshina Kannanda District.
4.1.11: Study Result of Schools of Bidar District in Control and Experimental Groups in Second Standard.

Table 18: Details of Marks Obtained by Second Standard Students of Bidar District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
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<tr>
<td>Student 3</td>
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<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Student 4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Student 5</td>
<td>1</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Student 6</td>
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<td>0</td>
</tr>
<tr>
<td>Student 7</td>
<td>0</td>
<td>1</td>
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<td>0</td>
</tr>
<tr>
<td>Student 8</td>
<td>8</td>
<td>10</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Student 9</td>
<td>2</td>
<td>4</td>
<td>0</td>
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</tr>
<tr>
<td>Student 10</td>
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<td>11</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 11</td>
<td>7</td>
<td>8</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Student 12</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 13</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Student 14</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Student 15</td>
<td>12</td>
<td>7</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Student 16</td>
<td>6</td>
<td>11</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 17</td>
<td>6</td>
<td>11</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Student 18</td>
<td>2</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>3.5</td>
<td>4.61</td>
<td>0.63</td>
<td>1.93</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3.43</td>
<td>4.13</td>
<td>1.09</td>
<td>2.08</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>12</td>
<td>11</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.682</td>
<td></td>
<td>0.873</td>
<td></td>
</tr>
</tbody>
</table>
As illustrated in the above table, in control group, an average of 3.5 marks was obtained by second standard students in Bidar district in pre-test with the standard deviation of 3.43 and the mean score was 4.61 in post-test with the standard deviation of 4.13. In experimental group, they got mean score of 0.63 in pre-test with standard deviation of 1.09 and in post-test average marks obtained by students was 1.93 with the standard deviation of 2.08. The correlation between the scores of pre-test and post-test in control group is 0.682 and in experimental group, it is 0.873. Both the groups have positive correlation, but in experimental group, it is quite high, where animation is used as a tool of communication in teaching.

Fig 14: Comparison of Performance of Second Standard Students in Control and Experimental Groups in Bidar District.
4.1.12: Study Result of Schools of Chamaraj Nagara District in Control and Experimental Groups in Second Standard.

Table 19: Details of marks obtained by Second Standard students of Chamaraja Nagara district.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 3</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Student 4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 5</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 6</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Student 7</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Student 8</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Student 9</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 10</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Student 11</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Student 12</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 13</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 14</td>
<td>4</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Student 15</td>
<td>0</td>
<td>10</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Student 16</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 17</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Student 18</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Student 19</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Mean</td>
<td>2</td>
<td>3.84</td>
<td>1</td>
<td>3.95</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>1.49</td>
<td>3.37</td>
<td>1.45</td>
<td>2.34</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>6</td>
<td>10</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.221</td>
<td>0.196</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In control group, students mean score was 2 with the standard deviation of 1.49 in pre-test in Chamaraja Nagara district and it was 3.84 in post-test with the standard deviation of 3.37. In experimental group, they got mean score of 1 in pre-test with standard deviation of 1.45. In Post-test, mean score was 3.95 with the Standard deviation of 2.34. Total number of students who attended the class in control and experimental group was 19 each. The correlation between the scores of pre-test and post-test in control group is 0.221. But in experimental group, it is 0.196. Both the groups have positive correlation, but in control group where traditional method is used in class room for teaching, correlation are significantly high.

Fig 15: Comparison of Performance of Second Standard Students in Control and Experimental Groups in Chamaraja Nagara District.
4.1.13: Study Result of Control and Experimental Groups in Fourth Standard of Govt.
Primary School, Tippenahalli in Bangalore District.

Table 20: Details of Marks obtained by Fourth Standard Students of Govt. Primary School, Tippenahalli.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Student 2</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Student 3</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Student 4</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Student 5</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Student 6</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>Student 7</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Student 8</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Student 9</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Student 10</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Student 11</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Student 12</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Student 13</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Student 14</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Student 15</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Mean</td>
<td>10.67</td>
<td>12.73</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3.02</td>
<td>3.41</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.289</td>
<td></td>
</tr>
</tbody>
</table>

As shown in the above table in control group, fourth year students of Govt. primary school scored an average of 10.67 marks in pretest with the standard deviation of 3.02 and it was 12.73 in post-test with the standard deviation of 3.41. In experimental group, they got mean
score of 11.43 in pre-test with standard deviation of 3.20. In Post-test, mean score was 13.64 with the Standard deviation of 3.34. The correlation between the scores of pre-test and post-test in control group is 0.289. But in experimental group, it is 0.712. Both the groups have positive correlation, but in experimental group it is quite high when compared to control group.

Fig 16: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Govt Primary School, Tippenahalli.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Student 2</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Student 3</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Student 4</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Student 5</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Student 6</td>
<td>14</td>
<td>12</td>
</tr>
</tbody>
</table>

4.1.14: Study Result of Control and Experimental Groups in Fourth Standard of Prajna Vidya Nikethan, Byatarayanapura, in Bangalore District.

Table 21: Details of Marks obtained by Fourth Standard Students of Prajna Vidya Nikethan, Byatarayanapura, in Banagalore District.
<table>
<thead>
<tr>
<th>Student</th>
<th>6</th>
<th>13</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 8</td>
<td>3</td>
<td>8</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Student 9</td>
<td>7</td>
<td>11</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Student 10</td>
<td>7</td>
<td>13</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 11</td>
<td>7</td>
<td>16</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Student 12</td>
<td>6</td>
<td>10</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Student 13</td>
<td>6</td>
<td>10</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Student 14</td>
<td>11</td>
<td>12</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Mean</td>
<td>7.57</td>
<td>11.93</td>
<td>7.14</td>
<td>8.36</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3.03</td>
<td>2.2</td>
<td>2.89</td>
<td>2.84</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>3</td>
<td>8</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>14</td>
<td>6</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.410</td>
<td>0.782</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In fourth standard of Prina vidyanekethana Bengaluru, the control and experimental group had 14 students each. Mean score obtained by students pre-test was the same 7.57 with standard deviation of 3.03. In post-test they scored 11.93 marks with standard deviation of 2.2. But, in pre-test of experimental group students mean score was 7.14 with standard deviation of 2.89 and in post-test, performance was slightly better with the mean of 8.36 with the standard deviation of 2.84. The association between the scores of pre-test and post-test in control group is 0.410, but in experimental group, it is 0.782. Both the groups have positive correlation in students’ performance, but it is significantly higher in experimental group.
Fig 17: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Prajna Vidya Nikethan, Bytarayanapura.

4.1.15: Study Result of Control and Experimental Groups in Fourth Standard of Govt Primary School, Hokkadigoli in Dakshina Kananada District.

Table 22: Details of Marks obtained by Fourth Standard Students of Govt. Primary School, Hokkadigoli.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Student 2</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Student 3</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Student 4</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Student 5</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Student 6</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>Student 7</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Student 8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>11.43</td>
<td>13.43</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>2.30</td>
<td>3.10</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Pearson</td>
<td>0.437</td>
<td>0.577</td>
</tr>
</tbody>
</table>
Mean score of students of Govt Primary School, Hokkadigoli in pre and post-test 11.43 and 13.43. In pre-test standard deviation was 2.30 and in post-test it was 3.10. But, in pre-test of experimental group students mean score was 13.5 with standard deviation of 1.93 and in post-test, the mean score was of 17.25 with the standard deviation of 1.67. The correlation between the scores of pre-test and post-test in control group is 0.437, in experimental group, it is 0.577. This shows that the experimental group, where animation is used, has slightly high positive correlation than the control group.

Fig 18: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Govt Primary School, Hokkadigoli.
4.1.16: Study Result of Control and Experimental Groups in Fourth Standard of Akshara Bharathi Vidyalaya, Vamada Padvu In Dakshina Kananada District.

Table 23: Details of Marks obtained by Fourth Standard Students of Akshara Bharathi Vidyalaya, Vamada Padvu.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th></th>
<th></th>
<th>Experimental Group</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 1</td>
<td>9</td>
<td>10</td>
<td>6</td>
<td>7</td>
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<td></td>
</tr>
<tr>
<td>Student 2</td>
<td>14</td>
<td>14</td>
<td>6</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 3</td>
<td>6</td>
<td>9</td>
<td>10</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 4</td>
<td>7</td>
<td>6</td>
<td>8</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 5</td>
<td>3</td>
<td>7</td>
<td>15</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 6</td>
<td>7</td>
<td>12</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 7</td>
<td>7</td>
<td>17</td>
<td>11</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 8</td>
<td>13</td>
<td>14</td>
<td>11</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 9</td>
<td>9</td>
<td>13</td>
<td>6</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 10</td>
<td>7</td>
<td>9</td>
<td>13</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 11</td>
<td>8</td>
<td>9</td>
<td>12</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 12</td>
<td>6</td>
<td>11</td>
<td>13</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>8</td>
<td>10.91</td>
<td>9.58</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3.02</td>
<td>3.20</td>
<td>3.5</td>
<td>4.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Marks</td>
<td>14</td>
<td>17</td>
<td>15</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.546</td>
<td></td>
<td></td>
<td>0.718</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In control group, students mean score was 8 with the standard deviation of 3.02 in pre-test and it was 10.91 in post-test with the standard deviation of 3.20. In experimental group, they got mean score of 9.58 in pre-test with standard deviation of 3.5. In Post-test, mean score was 13 with the Standard deviation of 4.95. Total number of students who attended the class in control and experimental group was 12 each. The correlation between the scores of pre-test
and post-test in control group is 0.546. But in experimental group it is significantly high i.e. 0.718.

Fig 19: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Akshara Bharathi Vidyalaya, Vamada Padvu.

4.1.17: Study Result of Control and Experimental Groups in Fourth Standard of Govt. Primary School, Naubad in Bidar District.

Table 24: Details of Marks Obtained by Fourth Standard Students of Govt. Primary School, Naubad.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Student 2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 4</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Student 5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Student 6</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Mean</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>0.89</td>
<td>1.67</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.535</td>
<td></td>
</tr>
</tbody>
</table>

In control group of fourth standard of Govt. primary school, Naubad, students mean score was 2 with the standard deviation of 0.89 and it was 4 in post-test with the standard deviation of 1.67. In experimental group, they got mean score of 2.6 in pre-test with standard deviation of 2.19. In Post-test, mean score was 5.8 with the Standard deviation of 2.04. Total number of students who attended the class in control and experimental group was 5 and 6 respectively. The correlation between the scores of pre-test and post-test in control group is 0.535. But in experimental group, it is 0.813. The results show both the groups have positive correlation, but in experimental group correlation is significantly high compared to control group.

Fig 20: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Govt. Primary School, Naubad.
<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Student 2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Student 3</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Student 4</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Student 5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 6</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Student 7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 8</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Student 9</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Student 10</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Student 11</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Student 12</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Student 13</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Student 14</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>7.46</td>
<td>7.38</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>4.63</td>
<td>5.32</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.768</td>
<td></td>
</tr>
</tbody>
</table>

In control group, students mean score was 7.46 with the standard deviation of 4.63 in pre-test and it was 7.38 in post-test with the standard deviation of 5.32. In experimental group, they got mean score of 6 in pre-test with the standard deviation of 3.88. In Post-test, mean
score was 8.78 with the Standard deviation of 4.72. Total number of students who attended the class in control was 13 and in experimental group it was 14. The correlation between the scores of pre-test and post-test in control group is 0.768. But in experimental group, it is 0.780. The results show that there is a negligible difference in the correlation of two groups.

Fig 21: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Jnana Sudha English Medium School, Bidar.

4.1.19: Study Result of Control and Experimental Groups in Fourth Standard of Govt. primary School, Hardanahalli in Chamarja Nagara District.

Table 26: Details Of Marks obtained by Fourth Standard Students of Govt. Primary School, Hardanahalli.

<p>| Details | Control Group | | | Experimental Group | |
|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Student 1 | 4 | 4 | 8 | 9 |
| Student 2 | 4 | 19 | 10 | 15 |
| Student 3 | 8 | 13 | 8 | 13 |
| Student 4 | 8 | 12 | 8 | 9 |
| Student 5 | 5 | 10 | 4 | 7 |
| Student 6 | 4 | 12 | 8 | 11 |</p>
<table>
<thead>
<tr>
<th>Student 7</th>
<th>2</th>
<th>6</th>
<th>1</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 8</td>
<td>7</td>
<td>18</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Student 9</td>
<td>8</td>
<td>12</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Student 10</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Student 11</td>
<td>2</td>
<td>6</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Student 12</td>
<td>6</td>
<td>14</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Student 13</td>
<td>5</td>
<td>16</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Mean</td>
<td>5.15</td>
<td>11.38</td>
<td>6.23</td>
<td>11</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>2.12</td>
<td>4.08</td>
<td>2.61</td>
<td>3.14</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>8</td>
<td>19</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.502</td>
<td>0.568</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On an average, 5.15 marks obtained by students in pre-test with the standard deviation of 2.12 and the mean score was 11.38 in post-test with the standard deviation of 4.08. In experimental group, they got mean score of 6.23 in pre-test with standard deviation of 2.61 and in post-test average marks obtained by students was 11 with the standard deviation of 3.14. Both, the control and experimental group had 13 students each. The correlation between the scores of pre-test and post-test in control group is 0.502, but in experimental group, it is 0.568. This shows that the Pearson correlation in both the groups is positive, but it is slightly higher in experimental group.
Fig 22: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Govt. Primary School, Hardanahalli.

4.1.20: Study Result of Control and Experimental Groups in Fourth Standard of Universal Learning School, Chamaraja Nagar in Chamaraja Nagar District.

Table 27: Details of Marks obtained by Fourth Standard Students of Universal Learning School, Chamaraja Nagar.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Student 3</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Student 4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 5</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 6</td>
<td>4</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Student 7</td>
<td>0</td>
<td>10</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Student 8</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 9</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Student 10</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Student 11</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Student 12</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>
The above table throws light on the performance of fourth standard students of Universal learning school in control and experimental group. In control group, students scored in an average of 4.54 in pre-test with the standard deviation of 2.81 and the mean score was 5.27 in post-test with the standard deviation of 3.19. In experimental group, they got mean score of 4.85 in pre-test with standard deviation of 2.23 and average marks obtained by students in post-test was 10 with the standard deviation of 3.65. The correlation between the scores of pre-test and post-test in control group is 0.283, but in experimental group, it is 0.786. This shows that the Pearson correlations in both the groups are positive, but it is higher in experimental group.

Fig 23: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Universal Learning School, Chamaraja Nagar.


### 4.1.21: Study Result of Schools of Bengaluru District in Control and Experimental Groups in Fourth Standard.

Table 28: Details of Marks obtained by Fourth Standard Students of Bengaluru District

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Student 2</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Student 3</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Student 4</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Student 5</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Student 6</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>Student 7</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Student 8</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Student 9</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Student 10</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Student 11</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Student 12</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Student 13</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Student 14</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Student 15</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Student 16</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Student 17</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Student 18</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Student 19</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Student 20</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Student 21</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Student 22</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Student 23</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Student 24</td>
<td>7</td>
<td>11</td>
</tr>
</tbody>
</table>
As shown in the table, in control group students scored in an average of 9.11 marks in pre-test with the standard deviation of 3.40 and the mean score was 12.36 in the post-test with the standard deviation of 2.92. In experimental group, they got mean score of 9.3 in pre-test with standard deviation of 3.7 and average marks obtained by students in post-test was 11 with the standard deviation of 4.06. Both the groups had 28 students each. The correlation between the scores of pre-test and post-test in control group is 0.357 and in experimental group, it is 0.840, which shows that the Pearson correlation in both the groups is positive, but it is higher in experimental group, where animation is used for teaching.

Fig 24: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups Bengaluru District.
4.1.22: Study Result of Schools of Dakshina Kannada District in Control and Experimental Groups in Fourth Standard.

Table 29: Details of Marks obtained by Fourth Standard students of Dakshina Kananda Standard

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Student 2</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Student 3</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Student 4</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Student 5</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Student 6</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>Student 7</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Student 8</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Student 9</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Student 10</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Student 11</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Student 12</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Student 13</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Student 14</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Student 15</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>Student 16</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Student 17</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Student 18</td>
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<tr>
<td>Student 19</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Student 20</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Mean</td>
<td>9.35</td>
<td>11.85</td>
</tr>
<tr>
<td>Std. Deviation</td>
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<td>3.23</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>
As illustrated in the above table, students achieved mean of 9.35 marks in pre-test of control group with the standard deviation of 3.13 and the mean score was 11.185 in post-test with the standard deviation of 3.23. In experimental group, they got mean score of 11.15 in pre-test with standard deviation of 3.51 and in post-test average marks obtained by students was 14.7 with the standard deviation of 4.45. Both, the control and experimental group had 20 students each. The correlation between the scores of pre-test and post-test in control group is 0.598, but in experimental group, it is 0.774, which shows that the Pearson correlation in both the groups are positive, but it is higher in experimental group, where animation is used as tool of communication in teaching.

Fig 25: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Dakshina Kannada District.
4.1.23: Study Result of Schools of Bidar District in Control and Experimental Groups in Fourth Standard.

Table 30: Details of Marks obtained by Fourth Standard Students of Bidar District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Student 2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 4</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Student 5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Student 6</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Student 7</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Student 8</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Student 9</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Student 10</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Student 11</td>
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<td>0</td>
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<tr>
<td>Student 12</td>
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</tr>
<tr>
<td>Student 13</td>
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</tr>
<tr>
<td>Student 14</td>
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<td>7</td>
</tr>
<tr>
<td>Student 15</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Student 16</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Student 17</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Student 18</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Student 19</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Mean</td>
<td>5.74</td>
<td>6.32</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>4.62</td>
<td>4.71</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.782</td>
<td>0.804</td>
</tr>
</tbody>
</table>
On an average, 5.74 marks obtained by students in pre-test with the standard deviation of 4.62 and the mean score was 6.32 in post-test with the standard deviation of 4.71. In experimental group, they got mean score of 5.11 in pre-test with standard deviation of 3.78 and in post-test average marks obtained by students was 8 with the standard deviation of 4.35. Both, the control and experimental group had 19 students each. The correlation between the scores of pre-test and post-test in control group is 0.782, but in experimental group, it is 0.804. This indicates use of animation has played a positive role in improving students’ performance.

Fig 26: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Bidar District.
4.1.24: Study Result of Schools of Chamaraja Nagara District in Control and Experimental Groups in Fourth Standard.

Table 31: Details of Marks obtained by Fourth Standard Students of Chamaraja Nagara District:

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Student 2</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Student 3</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Student 4</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Student 5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Student 6</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Student 7</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Student 8</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>Student 9</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Student 10</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Student 11</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Student 12</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 13</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Student 14</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 15</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Student 16</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Student 17</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Student 18</td>
<td>5</td>
<td>13</td>
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<tr>
<td>Student 19</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Student 20</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Student 21</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Student 22</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Student 23</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Student 24</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Student 25</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
The forth standard students of Chmaraja Nagara district got an average of 4.88 marks in pre-test with the standard deviation of 2.42 and the mean score was 8.58 in post-test with the standard deviation of 5.12. In experimental group, they got mean score of 5.54 in pre-test with standard deviation of 2.49 and in post-test average marks obtained by students was 10.5 with the standard deviation of 3.37. The control included 24 students for the study and experimental group had 26 students. The correlation between the scores of pre-test and post-test in control group is 0.382, and in experimental group it is 0.639, which Pearson correlation in both the groups are positive, but it in experimental group, where animation is used for teaching, positive correlation is high.

Fig 27: Comparison of Performance of Fourth Standard Students in Control and Experimental Groups in Chamaraja Nagara District.

<table>
<thead>
<tr>
<th>Student 26</th>
<th>-</th>
<th>-</th>
<th>9</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4.88</td>
<td>8.58</td>
<td>5.54</td>
<td>10.5</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>2.42</td>
<td>5.12</td>
<td>2.49</td>
<td>3.37</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>11</td>
<td>19</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.382</td>
<td>0.639</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.1.25: Study Result of Control and Experimental Groups in Sixth Standard of Govt Primary School, Tippenahalli in Banagalore District.

Table 32: Details of Marks obtained by Sixth Standard Students of Govt Primary School, Tippenahalli.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Student 2</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Student 3</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Student 4</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 5</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Student 6</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Student 7</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 8</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 9</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 10</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Student 11</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Student 12</td>
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<td>16</td>
</tr>
<tr>
<td>Student 13</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Mean</td>
<td>7.38</td>
<td>14.62</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3.40</td>
<td>2.63</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.455</td>
<td>0.751</td>
</tr>
</tbody>
</table>

As shown in the above table, in control group, an average of 7.38 marks obtained by students in pre-test with the standard deviation of 3.40 and the mean score was 14.62 in post-test with the standard deviation of 2.63. In experimental group, they got mean score of 7.38 in
pre-test with standard deviation of 3.31 and in post-test average marks obtained by students was 14.30 with the standard deviation of 3.04. Both, the control and experimental group had 13 students each. The correlation between the scores of pre-test and post-test in control group is 0.455, but in experimental group, it is 0.751. This shows that the Pearson correlation in both the groups is positive, but it is higher in experimental group, where animation content is used for teaching.

Fig 28: Comparison of performance of Sixth Standard students in Control and Experimental Groups in govt. primary school, Tippenahalli.

4.1.26: Study Result of Control and Experimental Groups in sixth standard of Prajna Vidya nikethan, byataraynapura, in banagalore district.

Table 33: Details of Marks Obtained By Sixth Standard Students of Prajna Vidya Nikethan, Byataraynapura, In Banagalore District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Student 2</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Student 3</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>16</td>
</tr>
</tbody>
</table>
The students of Prajna vidyanekethana achieved mean score of 7.29 marks in control group in pre-test with the standard deviation of 2.89 and the mean score was 13.29 in post-test with the standard deviation of 2.79. In experimental group, they got mean score of 8.43 in pre-test with standard deviation of 2.50 and in post-test average marks obtained by students was 14.29 with the standard deviation of 3.41. Both, the control and experimental group had 14 students each. The correlation between the scores of pre-test and post-test in control group is 0.275, and in experimental group it is 0.887, which is quite high comparing to control group.
Fig 29: Comparison of Performance Of Sixth Standard Students In Control And Experimental Groups Prajna Vidya Nikethan, Bytaranapura, Bengaluru.

Control Group

Experimental Group

4.1.27: Study Result of Control and Experimental Groups in Sixth Standard of Govt Primary School, Hokkadigoli in Dakshina Kananada District.

Table 34: Details Of Marks Obtained by Sixth Standard Students Of Govt. Primary School, Hokkadigoli.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>14</td>
<td>14</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Student 2</td>
<td>8</td>
<td>12</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Student 3</td>
<td>6</td>
<td>14</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Student 4</td>
<td>6</td>
<td>16</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Student 5</td>
<td>10</td>
<td>16</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Student 6</td>
<td>4</td>
<td>12</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Student 7</td>
<td>8</td>
<td>16</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Student 8</td>
<td>6</td>
<td>14</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Mean</td>
<td>7.75</td>
<td>14.25</td>
<td>8.25</td>
<td>12.5</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3.11</td>
<td>1.67</td>
<td>3.28</td>
<td>2.56</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>4</td>
<td>12</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>14</td>
<td>16</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.234</td>
<td>0.526</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On an average, 7.75 marks was obtained by students in pre-test with the standard deviation of 3.11 in control group and the mean score was 14.25 in post-test with the standard deviation of 1.67. In experimental group, they got mean score of 8.25 in pre-test with standard deviation of 3.28 and in post-test average marks obtained by students was 12.5 with the standard deviation of 2.56. Both, the control and experimental group had 8 students each. The correlation between the scores of pre-test and post-test in control group is 0.234, but in experimental group, it is 0.526. This shows experimental group has high positive correlation where animation was used.

Fig 30: Comparison of Performance of Sixth Standard Students in Control and Experimental Groups in Govt Primary School, Hokkadigoli.
4.1.28: Study Result of Control and Experimental Groups in Sixth Standard of Akshara Bharathi Vidyalaya, Vamada Padvu In Dakshina Kananada District.

Table 35: Details of Marks Obtained by Sixth Standard Students of Akshara Bharathi Vidyalaya, Vamada Padvu.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Student 2</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Student 3</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Student 4</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Student 5</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Student 6</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Student 7</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Student 8</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Student 9</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Student 10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>7.56</td>
<td>14.66</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>5.36</td>
<td>2.45</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.025</td>
<td></td>
</tr>
</tbody>
</table>

The above table shows that control and experimental group had 28 students each. In control group, students mean score was 7.56 with the standard deviation of 5.36 in pre-test and it was 14.66 in post-test with the standard deviation of 2.45. In experimental group, they achieved mean score of 7.4 in pre-test with standard deviation of 2.32. In Post-test, mean score was 15.8 with the Standard deviation of 2.74. The correlation between the scores of
pre-test and post-test in control group is 0.025, but in experimental group, it is 0.329, which shows both the groups have positive Pearson correlation, but in experimental group it is high.

Fig 31: Comparison of Performance of Sixth Standard Students in Control And Experimental Groups in Akshara Bharathi Vidyalaya, Vamada Padvu.

4.1.29: Study Result of Control and Experimental Groups in Sixth Standard of Govt. Primary School, Naubad in Bidar district.

Table 36: Details of Marks Obtained by Sixth Standard Students of Govt. Primary School, Naubad.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Student 2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Student 3</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Student 4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Student 5</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Student 6</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Student 7</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Student 8</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Student 9</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>
Students of sixth standard of Govt. primary school Nuabad achieved an average of 1.64 marks in pre-test of control group with the standard deviation of 1.50. The mean score was 9.27 in post-test with the standard deviation of 2.24. In experimental group, they got mean score of 5.62 in pre-test with the standard deviation of 3.64 and in post-test average marks obtained by students was 11 with the standard deviation of 3.46. The control group had 11 students, whereas experimental group had 13 students. The correlation between the scores of pre-test and post-test in control group is 0.032, but in experimental group, it is 0.496. This shows the Pearson correlation in both the groups is positive, but it is higher in experimental group, where animation is used for educational communication.
Fig 32: Comparison of Performance of Sixth Standard Students in Control and Experimental Groups in Govt. Primary School, Naubad.

4.1.30: Study Result of Control and Experimental Groups in Sixth Standard of Jnana Sudha English Medium School, In Bidar District.

Table 37: Details of Marks Obtained by Sixth Standard Students of Jnana Sudha English Medium School, Bidar.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Student 2</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Student 3</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Student 4</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Student 5</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Student 6</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Student 7</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Student 8</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Student 9</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Student 10</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Student 11</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Student 12</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Student 13</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>-----------</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Mean</td>
<td>10.46</td>
<td>15.07</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>2.33</td>
<td>2.78</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.225</td>
<td>0.702</td>
</tr>
</tbody>
</table>

Mean of 10.46 marks was obtained by students in pre-test with the standard deviation of 2.33 in control group and the mean score was 15.07 in post-test with the standard deviation of 2.78. In experimental group, they got mean score of 10.17 in pre-test with standard deviation of 2.34 and in post-test average marks obtained by students was 17 with the standard deviation of 2.36. Both, the control and experimental group had 13 students each. The correlation between the scores of pre-test and post-test in control group is 0.225, but in experimental group, it is 0.702, which shows the Pearson correlation in both the groups are positive, but it is higher in experimental group, where animation is used for teaching.

Fig 33: Comparison of Performance of Sixth Standard Students in Control and Experimental Groups in Jnana Sudha English Medium School, Bidar.
4.1.31: Study Result of Control and Experimental Groups in Sixth Standard of Govt. Primary School, Hardanahalli in Chamarja Nagara district.

Table 38: Details of Marks obtained by Sixth Standard Students of Govt. Primary School, Hardanahalli.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Student 2</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Student 3</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Student 4</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Student 5</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Student 6</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Student 7</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Student 8</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Student 9</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Student 10</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Student 11</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Student 12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>10.91</td>
<td>10.91</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3.94</td>
<td>2.07</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.183</td>
<td>0.216</td>
</tr>
</tbody>
</table>

In the sixth standard of Govt. Primary School, Hardanahalli, control and experimental group had 11 and 12 students respectively. Mean score of students in pre and post-test in control group was the same, 10.91 with the standard deviation of 3.94 and 2.07 respectively. But, in pre-test of experimental group students got in average 7.17 with the standard deviation of 2.33.
deviation of 2.33 and in post-test, performance was slightly better with the mean of 15 and standard deviation of 1.81. The correlation between the scores of pre-test and post-test in control group is 0.183, but in experimental group, it is 0.216. This indicates that both groups had positive correlation, but it is comparatively high in experimental group.

Fig 34: Comparison of Performance of Sixth Standard Students in Control And Experimental Groups in Govt. Primary School, Hardanahalli.

4.1.32: Study Result of Control and Experimental Groups in Sixth Standard of Universal Learning School, Chamaraja Nagar in Chamaraja Nagar District.

Table 39: Details of Marks obtained by Sixth Standard Students of Universal Learning School, Chamaraja Nagar.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>10</td>
<td>16</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 2</td>
<td>6</td>
<td>14</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Student 3</td>
<td>10</td>
<td>14</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Student 4</td>
<td>14</td>
<td>10</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Student 5</td>
<td>10</td>
<td>18</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Student 6</td>
<td>14</td>
<td>12</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Student</td>
<td>1st Mark</td>
<td>2nd Mark</td>
<td>3rd Mark</td>
<td>4th Mark</td>
</tr>
<tr>
<td>-----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Student 7</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>Student 8</td>
<td>14</td>
<td>15</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>Student 9</td>
<td>16</td>
<td>18</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Student 10</td>
<td>14</td>
<td>16</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Student 11</td>
<td>2</td>
<td>12</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>Student 12</td>
<td>12</td>
<td>16</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Student 13</td>
<td>10</td>
<td>14</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>10.62</td>
<td>13.77</td>
<td>8.5</td>
<td>17.5</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>4.03</td>
<td>3.76</td>
<td>2.71</td>
<td>1.51</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>16</td>
<td>18</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.408</td>
<td></td>
<td></td>
<td>0.422</td>
</tr>
</tbody>
</table>

As shown in above table students mean score was 10.62 with the standard deviation of 4.03 in pre-test of control group, and it was 13.77 in post-test with the standard deviation of 3.76. In experimental group, they achieved mean score of 8.5 in pre-test with standard deviation of 2.71. In Post-test, mean score was 17.5 with the Standard deviation of 1.51. The correlation between the scores of pre-test and post-test in control group is 0.408, whereas in experimental group, it is 0.422. It shows both the groups have positive Pearson correlation, but it is slightly higher in experimental group, where animation was used for teaching.
Fig 35: Comparison of Performance of Sixth Standard Students in Control and Experimental Groups in Universal Learning School, Chamaraja Nagar.

4.1.33: Study Result of Sixth Standard Students of Bengaluru District in Control and Experimental Groups in Sixth Standard.

Table 40: Details of Marks obtained by Sixth Standard Students of Bengaluru District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Student 2</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Student 3</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Student 4</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 5</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Student 6</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Student 7</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 8</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 9</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 10</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Student 11</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Student 12</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Student 13</td>
<td>2</td>
<td>14</td>
</tr>
</tbody>
</table>
In control group, sixth standard students of Bengaluru district scored an average of 7.33 marks in pre-test with the standard deviation of 3.1 and the mean score was 13.93 in post-test with the standard deviation of 2.74. In experimental group, they got mean score of 7.93 in pre-test with standard deviation of 2.91. In Post-test, mean score was 14.3 with the Standard deviation of 3.2. The correlation between the scores of pre-test and post-test in control group is 0.357. Correlation in experimental group, it is 0.786. Both the groups have positive correlation, but in experimental group, where animation is used in teaching, it is quite high when compared to control group.
Fig 36: Comparison of Performance of Sixth Standard Students in Control and Experimental Groups in Bengaluru District.

4.1.34: Study Result of Sixth Standard Students of Dakshina Kannada District in Control and Experimental Groups in Sixth Standard.

Table 41: Details of Marks obtained by Sixth Standard Students of Dakshina Kannada District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Student 2</td>
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</tr>
<tr>
<td>Max. Marks</td>
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<td>18</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.076</td>
<td>0.260</td>
</tr>
</tbody>
</table>

As shown in the above table, sixth standard students Dakshinna Kanada district achieved an average of 7.65 marks in pre-test with the standard deviation of 4.31. In post-test, they got mean score of 14.5 with the standard deviation of 2.1. In experimental group, students scored an average score of 7.78 in pre-test with standard deviation of 2.73. In Post-test, mean score was 14.33 with the standard deviation of 3.09. The correlation between the scores of pre-test and post-test in control group is 0.076. Whereas, in experimental group, it is 0.260. Both the groups have positive correlation. But it is comparatively it is high in experimental group.
Fig 37: Comparison of Performance of Sixth Standard Students in Control and Experimental Groups in Dakshina Kananda District.

Control Group

Experimental Group

4.1.35: Study Result of Sixth Standard Students of Bidar District in Control and Experimental Groups in Sixth Standard.

Table 42: Details of Marks obtained by Sixth Standard Students of Bidar District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Pre-Test</td>
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<td>12</td>
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<tr>
<td>Student 13</td>
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</tr>
</tbody>
</table>
### Table

<table>
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<th>Post-Marks</th>
<th>Pre-Marks</th>
<th>Post-Marks</th>
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</thead>
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</tr>
<tr>
<td>Student 25</td>
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<td>-</td>
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</tr>
<tr>
<td>Mean</td>
<td>6.42</td>
<td>12.41</td>
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<td>13.9</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>4.90</td>
<td>3.87</td>
<td>3.81</td>
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<td>Mini. Marks</td>
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<tr>
<td>Max. Marks</td>
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<td>20</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.743</td>
<td>0.744</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean of 6.42 marks was obtained by students in pre-test with the standard deviation of 4.90 in control group and the mean score was 12.41 in post-test with the standard deviation of 3.87. In experimental group, students got mean score of 7.8 in pre-test with standard deviation of 3.81 and in post-test average marks obtained by students was 13.9 with the standard deviation of 4.23. The control and experimental group had 24 and 25 students respectively. The Pearson correlation between the scores of pre-test and post-test in control group is 0.743. In experimental group, it is 0.744. Both the groups have positive correlation but the difference is negligible, which indicates that use of animation has not played a crucial role in improving students’ performance.
Fig 38: Comparison of Performance of Sixth Standard Students in Control and Experimental Groups in Bidar District.

![Graph showing comparison of performance](image)

4.1.36: Study Result of Sixth Standard Students of Chamaraj Nagara District in Control and Experimental Groups in Sixth Standard.

Table 43: Details of Marks obtained by Sixth Standard Students of Chamaraja Nagara District.

<table>
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<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Pre-Test</td>
<td>Post-Test</td>
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<td>Student 2</td>
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<td>Student 3</td>
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<tr>
<td>Student 4</td>
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<tr>
<td>Student 5</td>
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<tr>
<td>Student 6</td>
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<td>Student 7</td>
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<tr>
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</tr>
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<td>12</td>
</tr>
<tr>
<td>Student 11</td>
<td>0</td>
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</tr>
</tbody>
</table>
The sixth standard students of Chamaraja Nagar district got mean score of 10.75 in pre-test with the standard deviation of 3.90 in control group and the mean score was 12.46 in post-test with the standard deviation of 3.36. In experimental group, they got mean score of 7.83 in pre-test with standard deviation of 2.57 and in post-test average marks obtained by students was 16.25 with the standard deviation of 2.07. The control and experimental group had 24 and 25 students respectively. The correlation between the scores of pre-test and post-test in control group is 0.227, but in experimental group, it is 0.401, which shows the Pearson correlation in both the groups are positive, but it is higher in experimental group, where animation is used.
Fig 39: Comparison of Performance of Sixth Standard Students in Control and Experimental Groups in Chamaraja Nagara District.

4.1.37: Study Result of Control and Experimental Groups in Over All Samples of Govt Primary School, Tippenahalli, Banagalore District.

Table 44: Details of Marks obtained by Students of Govt. Primary School, Tippenahalli, Bengaluru District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
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<td>Student 42</td>
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</table>
As shown in the above table sample in Govt. primary school, Tippenahalli control group students scored in an average of 9.90 in pre-test with the standard deviation of 3.43 and the mean score was 13.79 in post-test with the standard deviation of 2.98. In experimental group, they got mean score of 9.34 in pre-test with standard deviation of 3.63 and average marks obtained by students in post-test was 12.76 with the standard deviation of 3.74. The correlation between the scores of pre-test and post-test in control group is 0.167. In experimental group it is 0.610. This clearly shows that the Pearson correlation in both the groups is positive, but it is significantly higher in experimental group.

Fig 40: Comparison of Performance of overall sample group of Govt. Primary School, Tippenahalli, Bengaluru District in Control and Experimental Groups.
### Study Result of Control and Experimental Groups in Overall Samples of Prajna Vidya Nikethan, Byatarayanapura, Bangalore District.

Table 45: Details of Marks obtained by Students of Prajna Vidya Nikethan, Byatarayanapura, Bengaluru District.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
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<tbody>
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<td>Student 25</td>
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</tbody>
</table>
Students of Prajna Vidya Nikethan, Byatarayanapura, Bengaluru district scored an average of 7.67 marks in pre-test with the standard deviation of 2.83 in control group and the mean score was 11.29 in post-test with the standard deviation of 3.27. In experimental group, they got mean score of 9.1 in pre-test with standard deviation of 3.18 and average marks obtained by students in post-test was 11.79 with the standard deviation of 4.27. The correlation between the scores of pre-test and post-test in control group is 0.214. While in experimental group, it is 0.672. Both the groups have positive correlation, but it is higher in
experimental group. This shows the use of animation in classroom communication had positive impact on students’ performance.

Fig 41: Comparison of Performance of overall sample group of Prajna Vidya Nikethan, Byatarayanapura, Bengaluru District in Control and Experimental Groups.

4.1.39: Study Result of Control and Experimental Groups in Over All Samples of Govt Primary School, Hokkadigoli, Dakshina Kananda District.

Table 46: Details of Marks obtained by Students of Govt. Primary School, Hokkadigoli, Dakshina Kannada District.

<table>
<thead>
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<th>Details</th>
<th>Control Group</th>
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<tr>
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<td>2.64</td>
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<tr>
<td>Pearson Correlation</td>
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</table>

As illustrated in the above table, students achieved an aggregate of 10 marks in pre-test of control group with the standard deviation of 3.39 and the mean score was 13 in post-test with the standard deviation of 2.64. In experimental group, they got mean score of 10.68 in pre-test with standard deviation of 3.66 and in post-test average marks obtained by students was 13.96 with the standard deviation of 3.27. The correlation between the scores of pre-test
and post-test in control group is 0.180. In experimental group, correlation is 0.778. The Pearson correlation in both the groups is positive, but it is higher in experimental group.

Fig 42: Comparison of Performance of Overall Sample Group of Govt. Primary School, Hokładigoli, Dakshina Kannada District in Control and Experimental Groups.

### 4.1.40: Study Result of Control and Experimental Groups in Over All Samples of Akshara Bharathi Vidyalaya, Vamada Padvu, Dakshina Kananada.

Table 47: Details of Marks obtained by Students of Akshara Bharathi Vidyalaya, Vamada Padvu, D. K.

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<td>Post Test</td>
<td>Pre Test</td>
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<tr>
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<td>7.64</td>
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<tr>
<td>Max. Marks</td>
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<td>18</td>
<td>15</td>
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</tbody>
</table>
Students of Aksharabharathi Vidyalaya, obtained mean score of 7.54 in pre-test of control group with the standard deviation of 3.68 and the mean score was 12.11 in post-test with the standard deviation of 3.12. In experimental group, they got mean score of 7.64 in pre-test with standard deviation of 3.03 and in post-test average marks obtained by students was 12.14 with the standard deviation of 4.93. The control and experimental group had 35 and 36 students each. The correlation between the scores of pre-test and post-test in control group is 0.686, and in experimental group, it is 0.901. The Pearson correlation in both the groups is positive, but it is higher in experimental group.

Fig 43: Comparison of Performance of Overall Sample Group of Akshara Bharathi Vidyalaya, Vamada Padvu, Dakshina Kannada District in Control and Experimental Groups.
4.1.41: Study Result of Control and Experimental Groups in Over All Samples of Govt Primary School, Naubad, Bidar.

Table 48: Details of Marks obtained by Students of Govt Primary School, Naubad, Bidar.

<table>
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<th>Control Group</th>
<th>Experimental Group</th>
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</tr>
<tr>
<td>Student 2</td>
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</tr>
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<td>Student 3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Student 4</td>
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<tr>
<td>Student 26</td>
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</tbody>
</table>
The sample group of Govt. Primary School, Naubad, control and experimental group had 25 and 28 students respectively. Mean score of students in pre-test was 1.42 with the standard deviation of 1.25 and in post-test were 5.42 with the standard deviation of 4.2. But, in pre-test of experimental group students got in average of 3.3 with the standard deviation of 3.57 and in post-test, performance was better with the mean of 6.7 and standard deviation was 5.2. The correlation between the scores of pre-test and post-test in control group is 0.322, and in experimental group, it is 0.779. This indicates that both the groups had positive Pearson correlation, but it is comparatively high in experimental group, where animation is used in teaching.

Fig 44: Comparison of Performance of Overall Sample Groups of Govt. Primary School, Naubad, Bidar District in Control and Experimental Groups.
### 4.1.42: Study Result of Control and Experimental Groups in Over All Sample of Jnana Sudha English Medium School, Bidar.

Table 49: Details of Marks Obtained by Students of Jnana Sudha English Medium School, Bidar.

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<td>Pre Test</td>
<td>Post Test</td>
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As shown in the above table in control group, an average of 7.89 marks was obtained by students in pre-test with the standard deviation of 4.02 and the mean score in post-test was 10.03 with the standard deviation of 5.39. In experimental group, they got mean score of 6.45 in pre-test with standard deviation of 4.5 and in post-test average marks obtained by students was 10.58 with the standard deviation of 6.48. Control and experimental group had 33 and 37 students respectively. The correlation between the scores of pre-test and post-test in control group is 0.686. In experimental group, it is 0.910.
Fig 45: Comparison of Performance of Overall Sample Group of Jnana Sudha English Medium School, Bidar District in Control and Experimental Groups.

![Comparison of Performance](image)

4.1.43: Study Result of Control and Experimental Groups in Over All Samples of Govt Primary School, Haradanahalli, Chamarajanagara.

Table 50: Details of Marks Obtained by Students of Govt. Primary School, Haradanahalli:

<table>
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<tr>
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On an average, 6.22 marks was obtained by students in pre-test with the standard deviation of 4.58 and the mean score was 8.63 in post-test with the standard deviation of 5.53. In experimental group, they got mean score of 5.24 in pre-test with standard deviation of 3.49 and in post-test average marks obtained by students was 10.56 with the standard deviation of 5.17.
deviation of 5.17. The control and experimental group had 32 and 33 students respectively. The correlation between the scores of pre-test and post-test in control group is 0.565, and experimental group, it is 0.788. This indicates that the Pearson correlation in both the groups is positive, but it is higher in experimental group, where animation used in teaching.

Fig 46: Comparison of Performance of Overall Sample Group of Jnana Sudha English Medium School, Chamarja Nagara District in Control and Experimental Groups.

<table>
<thead>
<tr>
<th>Control Group</th>
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</tr>
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<tbody>
<tr>
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<td>Post Test</td>
</tr>
<tr>
<td>Pre Test</td>
<td>Post Test</td>
</tr>
<tr>
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</tr>
<tr>
<td>Student 3</td>
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</tr>
<tr>
<td>Student 4</td>
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</tr>
</tbody>
</table>

4.1.44: Study Result of Control and Experimental Groups in Over All Samples of Universal Learning School, Chamarajanagara, Chamarajanagara District.

Table 51: Details of Marks obtained by Students of Universal Learning School, Chamarajanagara:

<table>
<thead>
<tr>
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<th>Experimental Group</th>
</tr>
</thead>
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<tr>
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<td>Post Test</td>
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<tr>
<td>Student 2</td>
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</tr>
<tr>
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<tr>
<td>Student 36</td>
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</table>
On an average, 6.11 marks was obtained by students in pre-test with the standard deviation of 4.7 and the mean score was 8.63 in post-test with the standard deviation of 5.16 in control group. In experimental group, they got mean score of 4.94 in pre-test with standard deviation of 3.66 and in post-test average marks obtained by students was 10.83 with the standard deviation of 5.94. The correlation between the scores of pre-test and post-test in control group is 0.693, and in experimental group, it is 0.838. The results show both the groups have positive correlation, but it is quite high in experimental group, in which group animation was used for teaching.

Fig 47: Comparison of Performance of Overall Sample Group of Jnana Sudha English Medium School, Chamarja Nagara District in Control and Experimental Groups:
4.1.45: Study Result of Control and Experimental Groups in Over All Samples of Bengaluru District.

Table 52: Details of Marks obtained by the Students of Bengaluru District:

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The sample group of Bengaluru district achieved mean score of 8.76 marks in control group in pre-test with the standard deviation of 3.33 and the mean score was 12.54 in post-test with the standard deviation of 3.38. In experimental group, they got mean score of 9.22 in pre-test with standard deviation of 3.39 and in post-test average marks obtained by students was 12.24 with the standard deviation of 4.02. Both, the control and experimental group had 83 students each. The correlation between the scores of pre-test and post-test in control group is 0.293, but in experimental group, it is 0.635. Both groups have positive correlation. The Person correlation in experimental group is high comparing to control group, where animation is used for teaching.

Fig 48: Comparison of Performance of Overall Sample Group of Bengaluru District in Control and Experimental Groups:
4.1.46: Study Result of Control and Experimental Groups in Over All Sample of Dakshina Kannada District.

Table 53: Details of the Marks obtained by Students of Dakshina Kannada District:

<table>
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<th></th>
<th>Experimental Group</th>
<th></th>
</tr>
</thead>
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As shown in the above table sample group of Dakshinna Kannada achieved an aggregate score of 8.58 marks in their pre-test in control group. Standard deviation was 3.72. In post-test they scored mean score of 12.47 with the standard deviation of 2.92. In pre-test of experimental group mean score were 8.89 with the standard deviation of 3.60. In post-test they achieved an average of 12.89 with 4.39 as standard deviation. The Pearson correlation between the pre-test and post-test of control and experimental groups are 0.274 and 0.653 respectively. The correlation results show both the groups have positive correlation, but it is high in experimental group, where animation is used in teaching.

Fig 49: Comparison of Performance of Overall Sample Group of Dakshina Kannada District in Control and Experimental Groups.
4.1.47: Study Result of Control and Experimental Groups in Over All Sample of Bidar District.

Table 54: Details of the Marks obtained by the Students of Bidar District:

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| Pearson Correlation | 0.686 | 0.874 |

An average of 5.34 marks was obtained by students in Bidar district in pre-test with the standard deviation of 4.52 and the mean score was 8.21 in post-test with the standard deviation of 5.42. In experimental group, they got mean score of 5.03 in pre-test with standard deviation of 4.37 and in post-test average marks achieved by students was 8.83 with the standard deviation of 6.17. Total number of students who attended the class in control and experimental group was 61 and 60 students respectively. The correlation between the scores of pre-test and post-test in control group is 0.686. And in experimental group, it is 0.874.

Fig 50: Comparison of Performance of Overall Sample Group of Bidar District in Control and Experimental Groups:
### 4.1.48: Study Result of Control and Experimental Groups in Overall Sample of Chamaraja Nagara District.

Table 55: Details of the Marks obtained by Students of Bidar District:

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</table>
The sample group of Chamrajnanagara district achieved mean score of 6.16 marks in pre-test of control group with the standard deviation of 4.60 and the mean score was 8.63 in post-test with the standard deviation of 5.3. In experimental group, they got mean score of 5.09 in pre-test with standard deviation of 3.53 and in post-test average marks obtained by students was 10.70 with the standard deviation of 5.54. Both, the control and experimental group had 67 and 69 students respectively. The correlation between the scores of pre-test and post-test in control group is 0.630, but in experimental group, it is 0.814. Both groups have positive correlation. But, the Person correlation in experimental group, where animation is used in teaching, is high compared to control group.
Fig 51: Comparison of Performance of Overall Sample Group of Chamarja Nagara District in Control and Experimental Groups.

Control Group

Experimental Group

4.1.49: Study Result of Control and Experimental Groups in Kannada Medium Schools of Karnataka.

Table 56: Details of the Marks obtained by Students of Kannada Medium:

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<th>Details</th>
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</table>

Students of Kannada medium schools of Karnataka achieved in an average of 7.32 marks in pre-test with the standard deviation of 4.77 and the mean score was 10.64 in post-test with the standard deviation of 5.13. In experimental group, they got mean score of 7.22 in pre-test with the standard deviation of 4.51 and in post-test average marks obtained by students
was 11.18 with the standard deviation of 5.08. The correlation between the scores of pre-test and post-test in control group is 0.636, and in experimental group, it is 0.777. The results show that the Pearson correlation in both the groups is positive, and it is higher in experimental group. It can be recalled that animation teaching material was used in teaching in experimental group. Govt Primary School, Naubad; Govt Primary School, Hardanahalli; Govt Primary School, Thippena Halli and Govt Primary School, Hokkadigoli are the Kananda medium schools.

Fig 52: Comparison of Performance of Kannada Medium Students in Control and Experimental Groups.

4.1.50: Study Result of Control and Experimental Groups in English Medium Schools of Karnataka.

Table 57: Details of Marks obtained by Students of English Medium Schools:

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As shown in the above table, an average of 7.30 marks was achieved by students in pre-test with the standard deviation of 3.85 in control group and the mean score was 10.53 in post-test with the standard deviation of 4.5. In experimental group, they got mean score of 7.14 in pre-test with standard deviation of 3.92 and in post-test average marks obtained by students was 11.30 with the standard deviation of 5.38. The control and experimental group had 148 and 145 students respectively. The correlation between the scores of pre-test and
post-test in control group is 0.545 and in experimental group, it is 0.749, which shows the Pearson correlation in both the groups are positive, but it is higher in experimental group, where animation is used. Jnanasudha English Medium School, Bidar; Univercell Learning School, Chamaraj Nagar; Prjna Vidyanikethan, Bangalore and Akshara Bharathi Vidyalaya, Vamadapadavu are the schools belonging to English medium cluster.

Fig 53: Comparison of Performance of English Medium Students in Control and Experimental Groups.

4.1.51: Study Result of Control and Experimental Groups in Rural Schools of Karnataka:

Table 58: Details of Marks obtained by the Students of Rural Schools of Karnataka.

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The students of rural schools got an average of 7.76 marks in pre-test with the standard deviation of 4.17 in control group and the mean score was 11.13 in post-test with the standard deviation of 4.4. In experimental group, they got mean score of 6.93 in pre-test with standard deviation of 4.24 and in post-test average marks obtained by students was 11.28 with the standard deviation of 5.15. The correlation between the scores of pre-test and post-test in control group is 0.485, but in experimental group, it is 0.762. This shows the Pearson correlation in both the groups is positive and it is significantly higher in experimental group, in which animation content was used for teaching. Govt Primary School, Naubad; Jnanasudha English Medium School, Bidar; Univercell Learning School, Chamaraj Nagar; Govt Primary School, Thippena Halli and Prjna Vidyanikethan, Bangalore are in the urban cluster.
Fig 54: Comparison of Performance of Rural Students in Control and Experimental Groups.

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<tr>
<td>Student 173</td>
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</table>
As illustrated in the table, 179 rural students in control group and 168 rural students in experimental group have attended the classes and tests. They got an average of 7.08 marks in pre-test with the standard deviation of 4.33 in control group and the mean score was 10.3 in post-test with the standard deviation of 4.96. In experimental group, they got mean score of 7.33 in pre-test with standard deviation of 4.18 and in post-test average marks obtained by students was 11.23 with the standard deviation of 5.29. The correlation between the scores of pre-test and post-test in control group is 0.638, but in experimental group, it is 0.759. Govt Primary School, Hardanahalli; Govt Primary School, Hokkadigoli and Akshara Bharathi Vidyalaya, Vamadapadavu schools are covered under rural cluster.
Fig 55: Comparison of Performance of Urban Students in Control and Experimental Groups.

4.1.53: Study Result of Control and Experimental Groups among Male Students of Karnataka

Table 60: Details of Marks obtained by the Male Students of Karnataka

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</table>
Male students of sample group in Karnataka got an average of 7.38 marks students in pre-
with the standard deviation of 4.03 in control group and the mean score was 10.43 in post-test
with the standard deviation of 4.8. In experimental group, they got mean score of 7.04 in pre-
test with standard deviation of 4.18 and in post-test average marks obtained by students was
10.74 with the standard deviation of 5.31. The correlation between the scores of pre-test and
post-test in control group is 0.547, but in experimental group, it is 0.797. This shows the
Pearson correlation in both the groups are positive, but it is quite higher in experimental
group.
Fig 56: Comparison of Performance of Male Students in Control and Experimental Groups.

4.1.54: Study Result of Control and Experimental Groups among Female Students of Karnataka.

Table 61: Details of the Marks obtained by the Female Students of Karnataka.

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As shown in the above table female students achieved an average of 7.24 marks in pre-test of control group with the standard deviation of 4.54. The mean score was 10.73 in post-test with the standard deviation of 4.78. In experimental group, they got mean score of 7.34 in pre-test with the standard deviation of 4.23 and in post-test average marks obtained by students was 11.84 with the standard deviation of 5.09. The control and experimental group had 135 and 125 students respectively. The correlation between the scores of pre-test and post-test in control group is 0.639, and in experimental group, it is 0.715. The Pearson correlation in both the groups is positive, but it is slightly higher in experimental group, where animation is used as a variable.

Fig 57: Comparison of Performance of the Female Students in Control and Experimental Groups.

Control Group

Experimental Group
### 4.1.55: Study Result of Control and Experimental Groups among the Over All Samples In Karnataka.

Table 62: Details of the Marks obtained by the Over All Sample Group in Karnataka.

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Overall, 544 students involved in the research study conducted to understand the effectiveness of animation as a medium of communication in education, which includes
students of 8 schools from four districts of Karnataka. Out of 544 students 271 students were placed in control group, where traditional teaching methods were used. Remaining 273 students were in experimental group, where animation instructional materials were used for teaching. The above table reveals the scores obtained by the students. In control group students scored mean score of 7.31 marks in pre-test, and an average of 10.58 marks in post-test. Standard deviation was 4.28 and 4.78 in pre-test and post-test respectively. In experimental group students scored an average of 7.28 and 11.25 marks in pre-test and post-test respectively. Standard deviation in pre-test was 7.18 and in post-test 11.25. Pearson correlation between the scores of pre-test and post-test in control group was 0.593 and in experimental group 0.759. The Pearson correlation shows that both the groups have positive correlation. If we compare the results between two groups, the correlation is high in experimental group.

Fig 58: Comparison of Performance of Students in Control and Experimental Groups in Karnataka.
### 4.1.56: Study Result of Control and Experimental Groups among the Sample Group for Maths Subject.

Table 63: Details of the Marks obtained by the Sample Group in Maths Subject.

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</tbody>
</table>
The above tables reveal the results of mathematics exam, which was conducted to a group consisting students from second, fourth and sixth standard. In control group, students mean score was 7.25 with the standard deviation of 3.9 in pre-test and it was 8.75 in post-test with the standard deviation of 3.21. In experimental group, they got mean score of 7.32 in pre-test with standard deviation of 3.35. In Post-test, mean score was 9.48 with the Standard deviation of 3.1. Total number of students who attended the class in control was 24 and in experimental group it was 25. The correlation between the scores of pre-test and post-test in control group is 0.851. In experimental group correlation is 0.888. In both the groups’ impact is positive and results show correlation is slightly high in experimental group.

Fig 59: Comparison of Performance of Students in Mathematics Subject.
4.1.57: Study Result of Control and Experimental Groups among the Sample Group for Science Subject.

Table 64: Details of the Marks obtained by the Sample Group in Science Subject.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Student 2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Student 3</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Student 4</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Student 5</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Student 6</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Student 7</td>
<td>8</td>
<td>9</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Student 8</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Student 9</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Student 10</td>
<td>4</td>
<td>8</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Student 11</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Student 12</td>
<td>5</td>
<td>12</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Student 13</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Student 14</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Student 15</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Student 16</td>
<td>1</td>
<td>10</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Student 17</td>
<td>10</td>
<td>16</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Student 18</td>
<td>14</td>
<td>14</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Student 19</td>
<td>4</td>
<td>12</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Student 20</td>
<td>8</td>
<td>12</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Student 21</td>
<td>6</td>
<td>14</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Student 22</td>
<td>8</td>
<td>16</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Student 23</td>
<td>6</td>
<td>14</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Student 24</td>
<td>6</td>
<td>16</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 25</td>
<td>-</td>
<td>-</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Mean</td>
<td>5.71</td>
<td>9.25</td>
<td>5.88</td>
<td>9.88</td>
</tr>
</tbody>
</table>
As shown in the above table in control group students got mean score of 5.71 with the standard deviation of 2.76 in pre-test and mean score of 9.25 with the standard deviation of 4.28 in post-test. In experimental group, they obtained mean score of 5.88 in pre-test with standard deviation of 2.74. In post-test, mean score was slightly more 9.88 with the standard deviation of 2.89. Control group had 24 students, whereas experimental group had 25 students. The group consisted students from second, fourth and sixth standard. The correlation between the scores of pre-test and post-test in control group is 0.548. And, in experimental group, it is 0.644. Comparing the results of two groups, the experimental group has high positive correlation, which shows that use of animation had high impact on students’ performance than the traditional teaching method.

Fig 60: Comparison of Performance of Students in Science Subject
4.1.58: Study Result of Control and Experimental Groups among the Sample Group for Language Subject:

Table 65: Details of Marks obtained by the Sample Group in Language Subject.

<table>
<thead>
<tr>
<th>Details</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Student 2</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Student 3</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Student 4</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Student 5</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Student 6</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Student 7</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Student 8</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Student 9</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Student 10</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Student 11</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>Student 12</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Student 13</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Student 14</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Student 15</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Student 16</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Student 17</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Student 18</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Student 19</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Student 20</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Student 21</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Student 22</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Student 23</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Student 24</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Student 25</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
An average of 6.92 marks was obtained by second standard students in Language pre-test with the standard deviation of 3.48 and the mean score was 9.63 in post-test with the standard deviation of 4.03. In experimental group, they got mean score of 8.36 in pre-test with standard deviation of 4.8 and in post-test average marks obtained by students was 11.44 with the standard deviation of 5.4. Total number of students who attended the class in control and experimental group was 24 and 25 respectively, which included students from second, fourth and sixth standard. The correlation between the scores of pre-test and post-test in control group is 0.743. And in experimental group correlation is 0.912. Both the groups have positive correlation, but in experimental group correlation are quite high compared to control group where animation is used for teaching.

Fig 61: Comparison of Performance of Students in Language Subject:

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>6.92</td>
<td>9.63</td>
</tr>
<tr>
<td></td>
<td>8.36</td>
<td>11.44</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3.48</td>
<td>4.03</td>
</tr>
<tr>
<td></td>
<td>4.8</td>
<td>5.4</td>
</tr>
<tr>
<td>Mini. Marks</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Max. Marks</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.743</td>
<td>0.912</td>
</tr>
</tbody>
</table>
4.2 STUDY RESULTS OF QUESTIONNAIRE BASED SURVEY

The questionnaire based survey included fifteen variables which were carved out in order to get the opinion of teachers on benefits and use of animation in education and the response was collected in a five point scale, which includes strongly agree, agree, disagree, and strongly disagree. Percentage was calculated against every variable. Besides, the mean and the standard deviation of the data collected from questionnaire are computed using the following formula.

\[
\text{Mean (}\bar{x}\text{)} = \frac{\sum f.x}{\sum f}, \quad \text{Standard Deviation (}\sigma\text{)} = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}}
\]

Where \( x \) is the scale of response for the questionnaire and \( f \) be number of respondents for the particular response (strongly agree, agree, disagree or strongly disagree). After the data analysis, the statement which had mean value of 2.75 or more was considered as accepted. Others were rejected.

**Table 66: Distribution of Sample According to their Gender**

<table>
<thead>
<tr>
<th>Gender</th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>41</td>
<td>31%</td>
</tr>
<tr>
<td>Female</td>
<td>91</td>
<td>69%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
</tbody>
</table>

Among the respondents 31% of the respondents were male and 69% of them were female teachers.

**Table 67: Distribution of Sample According to their Age**

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 25</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>25-30</td>
<td>31</td>
<td>23%</td>
</tr>
<tr>
<td>31-35</td>
<td>44</td>
<td>33%</td>
</tr>
<tr>
<td>36-40</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td>Age Group</td>
<td>No. of Respondents</td>
<td>Percentage of Respondents</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>41-45</td>
<td>18</td>
<td>14%</td>
</tr>
<tr>
<td>46-50</td>
<td>12</td>
<td>9%</td>
</tr>
<tr>
<td>Above 50</td>
<td>18</td>
<td>14%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
</tbody>
</table>

The above table shows the distribution of sample according to seven different age groups. Among the respondents 33 percentage of the people belong to age group of 31-35. 23% people fall in 25-30 age group category. An equal 14 percentage of total samples belong to the age group of 41-45 and Above 50 years. 5% people are in 36-40 years of age, and small 2% respondents are in the age group of below 25 years.

**Table 68: Distribution of Sample according to their Qualification**

<table>
<thead>
<tr>
<th>Qualification</th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.Ed</td>
<td>102</td>
<td>77%</td>
</tr>
<tr>
<td>B.Ed</td>
<td>18</td>
<td>14%</td>
</tr>
<tr>
<td>Masters</td>
<td>8</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
</tbody>
</table>

A Majority, 77%, of the sample has D.Ed as their educational qualification. 14% completed B.Ed. 6% of the respondents had completed their Master’s degree. But, other 3% of the people belong to other category as they had qualifications like S.S.L.C and T.C.H.

**Table 69: Distribution of Sample according to their Teaching experience**

<table>
<thead>
<tr>
<th>Duration</th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 years</td>
<td>21</td>
<td>16%</td>
</tr>
<tr>
<td>6-10 years</td>
<td>40</td>
<td>30%</td>
</tr>
<tr>
<td>11-15 years</td>
<td>31</td>
<td>24%</td>
</tr>
<tr>
<td>16-20 years</td>
<td>20</td>
<td>15%</td>
</tr>
</tbody>
</table>
As shown in the above table 16% of the sample group has 1-5 years of teaching experience. 30% of the respondents have 6-10 years of experience. 24 percent belong to the age group of 11-15 years. Both, 11-15 years and above 20 years categories have 15% each of the sample group.

Table 70: Distribution of Sample according to the Districts

<table>
<thead>
<tr>
<th>District</th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bengaluru</td>
<td>43</td>
<td>33%</td>
</tr>
<tr>
<td>Dakshina Kananda</td>
<td>31</td>
<td>23%</td>
</tr>
<tr>
<td>Bidar</td>
<td>22</td>
<td>17%</td>
</tr>
<tr>
<td>Chamaraja Nagara</td>
<td>36</td>
<td>27%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
</tbody>
</table>

The above table shows the distribution of sample according to the district they belong to. Among the respondents 33 percentage of the people belong to Bengaluru urban district. 23% are from Dakshina Kannada. 17% of the people belong to Bidar district. And rests of the respondents (27%) are from Chamarja Nagara district.

Table 71: Distribution of Sample according to the Medium of Instruction

<table>
<thead>
<tr>
<th>Medium</th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kannada</td>
<td>70</td>
<td>53%</td>
</tr>
<tr>
<td>English</td>
<td>62</td>
<td>47%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
</tbody>
</table>

Out of 132 respondents, 53% of the respondents belong to Kananda Medium and 47% of the teachers were teaching in English medium schools.
Table 72: Distribution of study subjects according to the statement that use of animation is more effective than traditional communication methods in classroom, and it enhances student’s learning

<table>
<thead>
<tr>
<th></th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>56</td>
<td>42%</td>
</tr>
<tr>
<td>Agree</td>
<td>76</td>
<td>58%</td>
</tr>
<tr>
<td>Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>3.42</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.25</td>
<td></td>
</tr>
</tbody>
</table>

A majority 58% of the respondents agreed for the statement that animation is an effective communication medium than the traditional methods and it enhances learning. 42% of the respondents strongly endorsed the same view. None of the respondents disagreed to this statement. The mean of the response is 3.42 with the standard deviation of 0.25. This indicates that all the respondents accepted that using animation as a communication tool in classroom is more effective than traditional teaching methods.

Fig 62: Animation enhances students learning
Table 73: Distribution of study subjects according to the statement that a good animation can improve the quality of communication by focusing on specificity and accuracy of the course content

<table>
<thead>
<tr>
<th></th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>60</td>
<td>45%</td>
</tr>
<tr>
<td>Agree</td>
<td>72</td>
<td>55%</td>
</tr>
<tr>
<td>Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>3.45</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.25</td>
<td></td>
</tr>
</tbody>
</table>

As shown in the above table, 45% of the respondents strongly agreed for the statement, that a good animation can improve the quality of communication by focusing on specificity and accuracy of the course content. And, other 55% of them just agreed. Over all, the above statement is accepted by the entire sample group with the mean of 3.45. Standard deviation for the statement is 0.25.

Fig 63: Animation improves the quality of communication
Table 74: Distribution of study subjects according to the statement that by learning with animation students will understand or memorize better than traditional methods as it involves audio/visual content.

<table>
<thead>
<tr>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>58</td>
</tr>
<tr>
<td>Agree</td>
<td>74</td>
</tr>
<tr>
<td>Disagree</td>
<td>0</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
</tr>
<tr>
<td>Mean</td>
<td>3.44</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.25</td>
</tr>
</tbody>
</table>

56% of the respondents agreed the view that by learning with animation students will understand or memorise better than traditional methods as it involves audio/visual content. Nearly 44% of the respondents strongly supported the same view. No one disagreed to this statement. The arithmetic mean of the response is 3.44 with the standard deviation of 0.25.

Fig 64: Animation will help to understand and memorise better.
Table 75: Distribution of study subjects according to the statement that Animation can motivate students for learning.

<table>
<thead>
<tr>
<th></th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>56</td>
<td>42%</td>
</tr>
<tr>
<td>Agree</td>
<td>72</td>
<td>55%</td>
</tr>
<tr>
<td>Disagree</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>3.38</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.36</td>
<td></td>
</tr>
</tbody>
</table>

Out of 132 respondents 42 percentages of the sample group strongly agreed and 55% of them just agreed for the statement that animation can motivate students for learning. Other 2% did not agree on this. The mean of response to the statement is 3.38 with the standard deviation of 0.36. This shows majority of the respondents accept above mentioned statement.

Fig 65: Animation can motivate students
Table 76: Distribution of study subjects according to the statement that Animation can help to attract the attention of students in class.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60</td>
<td>46%</td>
</tr>
<tr>
<td>Agree</td>
<td>56</td>
<td>42%</td>
</tr>
<tr>
<td>Disagree</td>
<td>16</td>
<td>12%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>3.33</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.47</td>
<td></td>
</tr>
</tbody>
</table>

The above table illustrates that 46% of the sample strongly agreed for the statement that animation can help to attract the attention of students in class. 42% of the respondents just agreed on this, whereas 12% of the sample disagreed on the same. The mean of the response to the statement is 3.33 with the standard deviation of 0.47.
Table 77: Distribution of study subjects according to the statement that Animation helps to convert education into ‘edutainment’ (education with entertainment).

<table>
<thead>
<tr>
<th></th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>58</td>
<td>44%</td>
</tr>
<tr>
<td>Agree</td>
<td>58</td>
<td>44%</td>
</tr>
<tr>
<td>Disagree</td>
<td>16</td>
<td>12%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>3.32</td>
<td></td>
</tr>
<tr>
<td>Standards Deviation</td>
<td>0.46</td>
<td></td>
</tr>
</tbody>
</table>

The statement ‘animation helps to convert education into ‘edutainment’ had equal share for strongly agree and agree with 44% each. But, 12% of the respondents disagreed on this statement. The mean of the response for the stamen is 3.32 with the standard deviation of 0.46.

Fig 67: Animation converts education into ‘edutainment’.
Table 78: Distribution of study subjects according to the statement that if we use animation in education students may concentrate only on entertainment elements, they may not focus on the actual course content.

<table>
<thead>
<tr>
<th></th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>20</td>
<td>15%</td>
</tr>
<tr>
<td>Agree</td>
<td>52</td>
<td>39%</td>
</tr>
<tr>
<td>Disagree</td>
<td>60</td>
<td>46%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>2.70</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.52</td>
<td></td>
</tr>
</tbody>
</table>

Only 15% of the sample group strongly agreed on the view that if we use animation in education students may concentrate only on entertainment elements, they may not focus on the actual course content. Other 39% just agreed this. But, 46% of the respondents disagreed to this statement. The mean of response to the statement is 2.70 with the standard deviation of 0.52. This shows respondents had difference of opinion in on this statement.

Fig 68: Animation will lead students to concentrate on entertainment elements.
Table 79: Distribution of study subjects according to the statement that just playing the animation content in the classroom without teacher’s assistance will not help students.

<table>
<thead>
<tr>
<th></th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>20</td>
<td>15%</td>
</tr>
<tr>
<td>Agree</td>
<td>68</td>
<td>52%</td>
</tr>
<tr>
<td>Disagree</td>
<td>36</td>
<td>27%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>8</td>
<td>6%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>2.76</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.61</td>
<td></td>
</tr>
</tbody>
</table>

The statement ‘just playing the animation content in the classroom without teacher’s assistance will not help students’ elicited divergent views. 15% of the people strongly agreed on this, while 52% majority of them just agreed. Other 27% of the respondents disagreed this view. A small 6 percent of sample group strongly disagreed the statement. The mean of response to the statement is 2.76 with the standard deviation of 0.61.

Fig 69: Animation without teacher’s assistance will not help students.
Table 80: Distribution of study subjects according to the statement that Animation will be useful for the students only if the teachers use it as teaching aid in the class.

<table>
<thead>
<tr>
<th>View</th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>40</td>
<td>30%</td>
</tr>
<tr>
<td>Agree</td>
<td>64</td>
<td>49%</td>
</tr>
<tr>
<td>Disagree</td>
<td>28</td>
<td>21%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>3.09</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.51</td>
<td></td>
</tr>
</tbody>
</table>

The above table shows that 30% of the respondents had strongly agreed the view that animation will be useful for the students only if the teachers use it as teaching aid in the class. 49% of the people just agreed for the statement. Around 21% of the sample disagreed on this. The mean of response to the statement is 3.09 with the standard deviation of 0.51.

Fig 70: Animation will be useful only if it is used as teaching aid.
Table 81: Distribution of study subjects according to the statement that Images, texts, sounds that are not related to the theme of the lesson, can affect the communication process in the class.

<table>
<thead>
<tr>
<th></th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>24</td>
<td>17%</td>
</tr>
<tr>
<td>Agree</td>
<td>63</td>
<td>49%</td>
</tr>
<tr>
<td>Disagree</td>
<td>33</td>
<td>25%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>12</td>
<td>9%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>2.75</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.74</td>
<td></td>
</tr>
</tbody>
</table>

17% of the sample strongly agreed the view that Images, texts, sounds that are not related to the theme of the lesson, can affect the communication process in the class. 49% just agreed to this statement. But, 25% of the sample group did not buy this argument and disagreed. A small 9% of the sample strongly disagreed of the above viewpoint. The mean of response to the statement is 2.75 with the standard deviation of 0.74.

Fig 71: Unrelated Images, texts, sounds can affect communication
Table 82: Distribution of Study Subjects according to the Statement that if animation contains too much of extraneous material, it may affect learning adversely.

<table>
<thead>
<tr>
<th>Response</th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>32</td>
<td>24%</td>
</tr>
<tr>
<td>Agree</td>
<td>64</td>
<td>49%</td>
</tr>
<tr>
<td>Disagree</td>
<td>32</td>
<td>24%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>4</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>2.94</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.61</td>
<td></td>
</tr>
</tbody>
</table>

24% of the sample group strongly agreed on the view that if an animation contains too much of extraneous material it may affect learning adversely. But the equal number of people, other 24%, disagreed on the view. 49% of the respondents just agreed this. A mere 3% of the respondents strongly disagreed to this statement. The mean of response to the statement is 2.94 with the standard deviation of 0.61.

Fig 72: Extraneous material in animation may affect learning adversely.
Table 83: Distribution of study subjects according to the statement that use of animation for subjects like Maths which involves formulas will not be as effective as other subjects.

<table>
<thead>
<tr>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>22</td>
</tr>
<tr>
<td>Agree</td>
<td>65</td>
</tr>
<tr>
<td>Disagree</td>
<td>37</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
</tr>
<tr>
<td>Mean</td>
<td>2.77</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.64</td>
</tr>
</tbody>
</table>

The mean value for the responses collected for the statement that use of animation for subjects like Maths which involves formulas will not be as effective as other subject is 2.77 with the standard deviation of 0.64. A majority 57 agreed on the viewpoint of the statement and 9% of the respondents strongly endorsed it. But, 28% disagreed to this. Other 6% have strongly disagreed.

Fig 73: For subjects like Maths animation will not be as effective as other subjects.
Table 84: Distribution of Study Subjects according to the Statement that use of animation may overwhelm students in class room but it doesn’t help students to improve cognitive process.

<table>
<thead>
<tr>
<th></th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>8</td>
<td>6%</td>
</tr>
<tr>
<td>Agree</td>
<td>60</td>
<td>45%</td>
</tr>
<tr>
<td>Disagree</td>
<td>58</td>
<td>44%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>2.53</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.46</td>
<td></td>
</tr>
</tbody>
</table>

The statement ‘use of animation may overwhelm students in class room but it doesn’t help students to improve cognitive process’ was not able get consensus. 45% of the people agreed this statement, but other 44% disagreed. 6% people strongly agreed the above viewpoint and remaining 5% have strongly disagreed on this view. The arithmetic mean of response to the statement is 2.53 with the standard deviation of 0.46.

Fig 74: Animation may overwhelm, but won’t improve cognitive process.
Table 85: Distribution of Study Subjects according to the Statement that Animation can reduce the cognitive load of the students by presenting the complex concept in simpler form.

<table>
<thead>
<tr>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>34</td>
</tr>
<tr>
<td>Agree</td>
<td>79</td>
</tr>
<tr>
<td>Disagree</td>
<td>19</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
</tr>
<tr>
<td>Mean</td>
<td>3.11</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.39</td>
</tr>
</tbody>
</table>

The above table shows that the statement ‘animation can reduce the cognitive load of the students by presenting the complex concept in simpler form’ was accepted by most of the respondents. 60% of the people just agreed this and 26% strongly endorsed the same view. Only a small 14% had disagreement on this. The weighted arithmetic mean of response to the statement is 3.11 with the standard deviation of 0.39.

Fig 75: Animation can reduce the cognitive load
Table 86: Distribution of Study Subjects according to the Statement that if animation content is not designed properly, it may affect students learning adversely.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>No. of Respondents</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>32</td>
<td>24%</td>
</tr>
<tr>
<td>Agree</td>
<td>72</td>
<td>55%</td>
</tr>
<tr>
<td>Disagree</td>
<td>20</td>
<td>15%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>8</td>
<td>6%</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>2.97</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.64</td>
<td></td>
</tr>
</tbody>
</table>

The mean for the responses collected for the statement that if the animation content is not designed properly it may impact students learning negatively, is 2.97 with the standard deviation of 0.64. Out of 132 respondents, 24 percent of the respondents strongly agreed the view, whereas, other 55% of the sample just agreed it. But, 15% did not buy this argument and a small 6% people strongly disagreed on the view.

Fig 76: Improperly designed animation content will affect learning adversely.
4.3 HYPOTHESIS TEST RESULTS

The Hypothesis’ were tested using different techniques. In the cluster where there are two variables and sample size is more than 30 students Z-test was used and when there are more than two variables, here while comparing 3 subjects, ANOVA was used for hypothesis test. In the study, while comparing the performance of control and experimental, Kannada and English Medium, Urban and Rural cluster, Male and female students, Z test was used.

While comparing the performance of students in control and experimental group the scores of pre-test and post-test was calculated for each student, and then mean score was calculated for each group and before Z-test was used. However, when it was proved that animation is more effective than traditional teaching methods, to compare the impact of animation between Kannada and English Medium students, Urban and Rural students, Male and female students and different subjects only experimental score was considered. In both the variables difference between the scores of pre-test and post-test in experimental group was calculated for each student, and then mean score was calculated for each group before Z-test was done. Here, it should be noted that researcher has taken only the scores of experimental group as it was aimed at comparing the degree of improvement in student’s performance when animation was used in teaching in different contexts. However, in each variable, data were analyzed using Microsoft excel using the following formula.

\[ Z = \frac{(\bar{x}_1 - \bar{x}_2) - d_0}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} \]

In the above formula \( \bar{x}_1 \) = mean of sample x, \( \bar{x}_2 \) = mean of sample y, \( d_0 \) = Hypothesized difference between the populations means (0, if testing for equal), \( \sigma_1 \) and \( \sigma_2 \) are standard deviation of two populations. \( n_1 \) and \( n_2 \) are sizes of two samples.
In a cluster where there are 3 variables (groups), such as, here in the study, while comparing the performance of students in different subjects like Mathematics, language and Science. ANOVA Test was done using following formula:

\[
SS_{W/in} = \sum_{j=1}^{t} \sum_{i} n_{j} (x_{ij} - \bar{x}_{j})^2
\]

\[
SS_{Betw} = \sum_{j=1}^{t} n_{j} (\bar{x}_{j} - \bar{x})^2
\]

\[
MS_{W/in} = \frac{SS_{W/in}}{N - t}
\]

\[
SS_{Tot} = SS_{Betw} + SS_{W/in}
\]

\[
F = \frac{MS_{Betw}}{MS_{W/in}}
\]

\[
MS_{Betw} = \frac{SS_{Betw}}{t - 1}
\]

Where, \( t \) = Total number of groups; \( n_{j} \) = Number observations in \( j^{th} \) group; \( \bar{x}_{j} \) = mean observations in \( j^{th} \) group; \( N \) =Total number of observations; \( \bar{x} \) = Grand mean;

**Table 87: Details of ANOVA**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>SS_{Betw}</td>
<td>t-1</td>
<td>MS_{Betw}</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>SS_{W/in}</td>
<td>N-t</td>
<td>MS_{W/in}</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>SS_{Tot}</td>
<td>N-1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Table 88: Details of the Z Test Results for the Hypothesis that the Use of Animation as a Tool of Communication in Education will not have a Significant Effect on Improving the Student’s Performance

<table>
<thead>
<tr>
<th>Details</th>
<th>Experimental Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre Test</td>
<td>Post Test</td>
</tr>
<tr>
<td>Student 1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Student 4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Student 5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Student 6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 8</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Student 9</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Student 10</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Student 11</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Student 12</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Student 13</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Student 14</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Student 15</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Student 16</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Student 17</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Student 18</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 19</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Student 20</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Student 21</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Student 22</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Student 23</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Student 24</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Student 25</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>Student 26</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 27</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Student 28</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Student 29</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 30</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Student 31</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Student 32</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Student 33</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Student 34</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Student 35</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Student 36</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Student 37</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Student 38</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Student 39</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Student 40</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Student 41</td>
<td>9</td>
<td>8</td>
</tr>
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<td>Student 42</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Student 43</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 44</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Student 45</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Student 46</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Student 47</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Student 48</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Student 49</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Student 50</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Student 51</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Student 52</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Student 53</td>
<td>8</td>
<td>14</td>
</tr>
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<td>Student 54</td>
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<td>16</td>
</tr>
<tr>
<td>Student 55</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>Student 56</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>Student 57</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
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As shown in the above table mean of difference between the scores of pre-test and post-test in experimental group is 4.066 and in control group mean of difference between the scores of pre-test and post-test is 3.273. This indicates that degree of improvement in student’s performance is higher in experimental group, where animation was used in teaching than that of control group. It can be noted that ‘Chalk and talk’ method was adopted as a tool of communication for teaching in control group.

Known variance in experimental group was 11.643 and in control group it was 16.910. The above table also shows that the number students in attended classes in experimental group were 273, and control group had 271 students. The populations mean difference for the null hypothesis is 0. As per the table Z value of experimental and control group is 2.44631, which is greater than Z critical one tail value (1.64485). The standard P value is 0.05, whereas the P one tail value for the hypothesis is 0.0072.

Based on the above results, with 99.3% confidence we can say that the above null hypothesis “use of animation as a tool of communication in education will not have significant effect on improving student’s performance” is rejected. Hence, it can be concluded that use of animation as a tool of communication in education will have a significant effect on improving student’s performance in primary school education.
Table 89: Details of the Z Test Results for the Hypothesis that Effectiveness of animation will be similar on both English Medium Students and Kannada Medium Students when it is used as a Communication tool in Education.

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**Mean of Difference (Pre-test & Post-test)**

|                  | 4.159 | 3.961 |

**Known Variance**

|                  | 12.7038 | 10.5102 |

**Observations**

|                  | 145 | 128 |

**Hypothesized Mean Difference**

|                  | 0 |

**Z**

|                  | 0.47984 |

**P(Z<=z) one-tail**

|                  | 0.31567 |

**Z Critical One tail**

|                  | 1.644854 |
The above table illustrates that, the mean of difference between the scores of pre-test and post-test is 4.159 in experimental group among English medium students of Karnataka. And the mean of difference between the scores of pre-test and post-test in experimental group among Kannada medium students is 3.961. This shows that English medium students have slightly better mean score than Kannada medium students, when animation was used in the class.

Known variance in experimental group of English medium students was 12.7038 and among Kananda medium group it was 10.5102. The above table also shows that the number students in attended classes in experimental group in English medium were145, and in Kananda medium it was 128. The populations mean difference for the null hypothesis is 0. The standard P value is 0.05, whereas the P one tail value for the hypothesis is 0.31567.

As per the table Z value of English and Kananda medium group is 0.47984. Z critical one tail value for the hypothesis is 1.64485. This shows that Z value is lower than Z critical one tail value in the above given hypothesis. So the above null hypothesis is accepted.

Based on these results it can be decided that effectiveness of animation will be similar on both English medium students and Kannada medium students when it is used as a communication tool in education.
Table 90: Details of the Z Test Results for the Hypothesis that there won’t be any difference in the effectiveness of animation on performance of rural and urban students when it is used in primary education.

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As shown in the above table mean of difference between the scores of pre-test and post-test is 4.343 in experimental group among rural students of Karnataka. And the mean of difference between the scores of pre-test and post-test in experimental group among urban students is 3.892. This shows the improvement between pre-test and post-test was more among rural students than urban students.

Known variance in experimental group of rural students was 11.2082 and among urban students of Karnataka were 11.9763. The above table also shows that the number of students
attended classes in experimental group in from rural area are 105, and from urban area it was 168. The populations mean difference for the null hypothesis is 0. The standard P value is 0.05, whereas the P one tail value for the above mentioned null hypothesis is 0.14301. As per the table Z value for rural and urban group is 1.06651, which is lower than Z critical one tail value i.e 1.64485. So the above null hypothesis is accepted.

Considering these results it can be concluded that there won’t be any difference in the effectiveness of animation on performance of rural and urban students when it is used in primary education.

Table 91: Details of the Z Test Results for the Hypothesis that Use of animation will an equal positive effect on the performance of male and female students.

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The above table reveals the performance of male and female students in experimental condition. The mean of difference between the scores of pre-test and post-test, in experimental group, among Male students of Karnataka is 3.702. And the mean of difference between the scores of pre-test and post-test, in experimental group, among female students is 4.496.

Known variance among male students was 13.0262 and among female students it was 10.2648. The above table also shows that the number of students in male attended classes in experimental group were 125, and number of female students was 148. The populations mean difference for the null hypothesis is 0. The standard P value is 0.05, whereas the P one tail value for the hypothesis is 0.02844. As per the table Z value for male students is 1.90416, which is greater than Z critical one tail value (1.64485). The standard P value is 0.05, whereas the P one tail value for the hypothesis is 0.02844.
Based on these results with 97.2% confidence we can say that the null hypothesis “Use of animation will have equal positive effect on the performance of male students and female students” is rejected.

Table 92: Results of the ANOVA test on the hypothesis that Animation will have similar effect on student’s performance when it is used as a tool of communication in teaching Mathematics, Science and Language subjects.

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The above table shows the scores of pre-test and post-test obtained in experimental group on different subjects- Mathematics, Science and Language and the ANOVA test results. The table reveals that the difference between the mean score of pre-test and post-test in Mathematics is 2.16, in science it is 4 and in Language it is 3.08. In mathematics variance was 2.39. But in Science variance was high with 5.67 and in Language it is 4.83.

As per the table, based on the ANOVA test results, sum of square between the three groups is 42.32, whereas within the group it is 309.2. Degree of freedom between the groups is 72 and between groups it is 2. Mean of sum between groups is 21.6 and within the groups it is 4.294.

The table shows that P-value is 0.00987. It can be noted that the standard P-value is 0.05. The f value for the above ANOVA test is 4.93 and f critical value is 3.124. These results show that in the current test f value is more than f critical value. Hence the current null hypothesis ‘Animation will have similar effect on student’s performance when it is used as a...
tool of communication in teaching Mathematics, Science and Language subjects’ is rejected and alternative hypothesis is accepted. Hence, based on the above results with 99.01% confidence it can be said that effect of animation may from subject to subject when it is used in the education.