HYPOTHESIS -7:

Null Hypothesis: There is no significant difference in physical climate of higher secondary schools with respect to the medium of instruction.

Table 4.11: Mean, SD and t-value on classroom physical climate of the higher secondary schools with respect to the medium of instruction.

<table>
<thead>
<tr>
<th>Medium of Instruction</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamil</td>
<td>220</td>
<td>5.84</td>
<td>3.10</td>
<td>4.048**</td>
</tr>
<tr>
<td>English</td>
<td>180</td>
<td>7.10</td>
<td>3.10</td>
<td></td>
</tr>
</tbody>
</table>

Note: ** Significant at 0.05 level.

From the above table, there is significant difference is noted in physical climate of higher secondary schools with respect to medium of instruction at 0.05 level. In this case, the higher secondary English medium schools have more mean score (M=7.10) when compared to the Tamil medium schools. (M=5.84).

Figure 4.11: Mean and SD value on classroom physical climate of higher secondary students with respect to the medium of instruction.
HYPOTHESIS -8

Null Hypothesis: There is no significant difference in classroom physiological climate of higher secondary students with respect to gender.

Table 4.12: Mean, SD and t-value on classroom physiological climate of higher secondary students with respect to gender.

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>190</td>
<td>16.68</td>
<td>6.73</td>
<td>0.211*</td>
</tr>
<tr>
<td>Female</td>
<td>210</td>
<td>16.54</td>
<td>7.10</td>
<td></td>
</tr>
</tbody>
</table>

Note: * Not Significant at 0.05 level

From the above table, it is observed that there exists no significant difference in classroom physiological climate of higher secondary students with respect to gender at 0.05 level.

Figure 4.12: Mean and SD value on classroom physiological climate of higher secondary students with respect to gender.
HYPOTHESIS -9

Null Hypothesis: There is no significant difference in classroom physiological climate of higher secondary students with respect to the type of school.

Table 4.13: Mean, SD and t-value on classroom physiological climate of higher secondary students with respect to the type of school.

<table>
<thead>
<tr>
<th>Type of School</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boy’s</td>
<td>118</td>
<td>16.95</td>
<td>6.69</td>
<td></td>
</tr>
<tr>
<td>Girl’s</td>
<td>161</td>
<td>16.56</td>
<td>7.41</td>
<td>0.238*</td>
</tr>
<tr>
<td>Co-education</td>
<td>121</td>
<td>16.34</td>
<td>6.52</td>
<td></td>
</tr>
</tbody>
</table>

Note: * Not Significant at 0.05 level

From the above table, it is noted that there exists no significant difference in classroom physiological climate of higher secondary students with respect to the type of school at 0.05 level.

Figure 4.13: Mean and SD value on classroom physiological climate of higher secondary students with respect to the type of school.
HYPOTHESIS - 10

Null Hypothesis: There is no significant difference in classroom physiological climate of higher secondary students with respect to the type of management of school.

Table 4.14: Mean, SD and t-value on classroom physiological climate of higher secondary students with respect to the type of management of school.

<table>
<thead>
<tr>
<th>Type of Management of School</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>129</td>
<td>12.22</td>
<td>5.18</td>
<td></td>
</tr>
<tr>
<td>Govt. Aided</td>
<td>130</td>
<td>15.67</td>
<td>6.66</td>
<td>89.866**</td>
</tr>
<tr>
<td>Private</td>
<td>141</td>
<td>21.49</td>
<td>5.35</td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. * * Significant at 0.05 level.

2. Different alphabet among type of management of school denotes significance at 5% level using Duncan Multiple Range Test (DMRT).

From the above table, it is noted that there exists significant difference in classroom physiological climate of higher secondary students with respect to type of management of school at 0.05 level. However, among these groups, each group students are significantly differed among themselves. The private school students have more mean score (M=21.49) when compared to government aided school (M=15.67) and government school students (M=12.22).
Figure 4.14: Mean and SD value on classroom physiological climate of higher secondary students with respect to the type of management of school.
HYPOTHESIS -11:

Null Hypothesis: There is no significant difference in physiological climate of higher secondary schools with respect to locality.

Table 4.15: Mean, SD and t-value on classroom physiological climate of higher secondary students with respect to locality.

<table>
<thead>
<tr>
<th>Locality</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>184</td>
<td>13.28</td>
<td>5.79</td>
<td>9.879**</td>
</tr>
<tr>
<td>Urban</td>
<td>216</td>
<td>19.44</td>
<td>6.54</td>
<td></td>
</tr>
</tbody>
</table>

Note: ** Significant at 0.05 level.

From the above table, there is significant difference noted in physiological climate of higher secondary schools with respect to locality at 0.05 level. In this case, the higher secondary urban schools students have more mean score (M=19.44) when compared to the rural higher secondary schools students (M=13.28).

Figure 4.15: Mean and SD value on classroom physiological climate of higher secondary students with respect to locality.
HYPOTHESIS -12:

Null Hypothesis: There is no significant difference in physiological climate of higher secondary schools with respect to the medium of instruction.

Table 4.16: Mean, SD and t-value on classroom physiological climate of the higher secondary schools with respect to the medium of instruction.

<table>
<thead>
<tr>
<th>Medium of Instruction</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamil</td>
<td>220</td>
<td>14.98</td>
<td>6.47</td>
<td>5.369**</td>
</tr>
<tr>
<td>English</td>
<td>180</td>
<td>18.59</td>
<td>6.95</td>
<td></td>
</tr>
</tbody>
</table>

Note: ** Significant at 0.05 level.

From the above table, there is significant difference noted in physiological climate of higher secondary schools with respect to the medium of instruction at 0.05 level. In this case, the higher secondary school English medium students have more mean score (M=18.59) when compared to the Tamil medium students (M=14.98).

Figure 4.16: Mean and SD value on classroom physiological climate of higher secondary students with respect to the medium of instruction.
HYPOTHESIS -13

Null Hypothesis: There is no significant difference in overall classroom climate of higher secondary students with respect to gender.

Table 4.17: Mean, SD and t-value on overall classroom climate of higher secondary students with respect to gender.

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>190</td>
<td>23.03</td>
<td>9.20</td>
<td>0.028*</td>
</tr>
<tr>
<td>Female</td>
<td>210</td>
<td>23.00</td>
<td>9.67</td>
<td></td>
</tr>
</tbody>
</table>

Note: * Not Significant at 0.05 level

From the above table, it is observed that there exists no significant difference in overall classroom climate of higher secondary students with respect to gender at 0.05 level.

Figure 4.17: Mean and SD value on overall classroom climate of higher secondary students with respect to gender.
HYPOTHESIS -14

Null Hypothesis: There is no significant difference in overall classroom climate of higher secondary students with respect to the type of school.

Table 4.18: Mean, SD and t-value on overall classroom climate of higher secondary students with respect to the type of school.

<table>
<thead>
<tr>
<th>Type of School</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boy's</td>
<td>118</td>
<td>23.40</td>
<td>9.26</td>
<td></td>
</tr>
<tr>
<td>Girl's</td>
<td>161</td>
<td>23.10</td>
<td>10.04</td>
<td>0.269*</td>
</tr>
<tr>
<td>Co-education</td>
<td>121</td>
<td>22.52</td>
<td>8.82</td>
<td></td>
</tr>
</tbody>
</table>

Note: * Not Significant at 0.05 level.

From the above table, it is noted that there exists no significant difference in overall classroom climate of higher secondary students with respect to the type of school at 0.05 level.

Figure 4.18: Mean and SD value on overall classroom climate of higher secondary students with respect to the type of management of school.
HYPOTHESIS -15

Null Hypothesis: There is no significant difference in overall classroom climate of higher secondary students with respect to type of management of school.

Table 4.19: Mean, SD and t-value on overall classroom climate of higher secondary students with respect to the type of management of school.

<table>
<thead>
<tr>
<th>Type of Management of School</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>129</td>
<td>17.02a</td>
<td>7.14</td>
<td></td>
</tr>
<tr>
<td>Govt. Aided</td>
<td>130</td>
<td>21.93b</td>
<td>9.21</td>
<td>85.723**</td>
</tr>
<tr>
<td>Private</td>
<td>141</td>
<td>29.50c</td>
<td>7.24</td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. ** Significant at 0.05 level.

2. Different alphabet among the type of management of school denotes significance at 5% level using Duncan Multiple Range Test (DMRT).

From the above table, it is noted that there exists significant difference in overall classroom climate of higher secondary students with respect to type of school at 0.05 level. However, among these groups, each group students are significantly differed among themselves. The private school students have more mean score (M=29.50) when compared to government aided school (M=21.93) and government school students (M=17.02).
Figure 4.19: Mean and SD value on overall classroom climate of higher secondary students with respect to the type of management of school.
HYPOTHESIS -16:

Null Hypothesis: There is no significant difference in overall classroom climate of higher secondary schools with respect to locality.

Table 4.20: Mean, SD and t-value on overall classroom climate of higher secondary students with respect to locality.

<table>
<thead>
<tr>
<th>Locality</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>184</td>
<td>18.53</td>
<td>8.09</td>
<td>9.752**</td>
</tr>
<tr>
<td>Urban</td>
<td>216</td>
<td>26.83</td>
<td>8.81</td>
<td></td>
</tr>
</tbody>
</table>

Note: ** Significant at 0.05 level.

From the above table, there is significant difference noted in overall classroom climate of higher secondary schools with respect to locality at 0.05 levels. In this case, the higher secondary urban schools students have more mean score (M=26.83) when compared to the rural higher secondary schools students (M=18.53).

Figure 4.20: Mean and SD value on overall classroom climate of higher secondary students with respect to locality.
HYPOTHESIS -17:

Null Hypothesis: There is no significant difference in overall classroom climate of higher secondary schools with respect to the medium of instruction.

Table 4.21: Mean, SD and t-value on overall classroom climate of the higher secondary schools with respect to the medium of instruction.

<table>
<thead>
<tr>
<th>Medium of Instruction</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamil</td>
<td>220</td>
<td>20.82</td>
<td>8.99</td>
<td>5.313**</td>
</tr>
<tr>
<td>English</td>
<td>180</td>
<td>25.69</td>
<td>9.29</td>
<td></td>
</tr>
</tbody>
</table>

Note: ** Significant at 0.05 level.

From the above table, there is significant difference noted in overall classroom climate of higher secondary schools with respect to the medium of instruction at 0.05 level. In this case, the higher secondary English medium schools have more mean score (m=25.69) when compared to the Tamil medium schools (M=20.82).

Figure 4.21: Mean and SD value on overall classroom climate of higher secondary students with respect to the medium of instruction.
4.8. DIFFERENTIAL ANALYSIS – ACADEMIC ACHIEVEMENT

HYPOTHESIS -18

Null Hypothesis: There is no significant difference in academic achievement of higher secondary students with respect to gender.

Table 4.22: Mean, SD and t-value on academic achievement of higher secondary students with respect to gender.

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>190</td>
<td>59.11</td>
<td>7.24</td>
<td>0.387*</td>
</tr>
<tr>
<td>Female</td>
<td>210</td>
<td>58.82</td>
<td>7.37</td>
<td></td>
</tr>
</tbody>
</table>

Note: * Not Significant at 0.05 level.

From the above table, it is observed that there exists no significant difference in academic achievement of higher secondary students with respect to gender at 0.05 level.

Figure 4.22: Mean and SD value on academic achievement of higher secondary students with respect to gender
HYPOTHESIS -19

Null Hypothesis: There is no significant difference in academic achievement of higher secondary students with respect to the type of school.

Table 4.23: Mean, SD and t-value on academic achievement of higher secondary students with respect to the type of school.

<table>
<thead>
<tr>
<th>Type of School</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boy's</td>
<td>118</td>
<td>58.34</td>
<td>6.93</td>
<td></td>
</tr>
<tr>
<td>Girl's</td>
<td>161</td>
<td>59.08</td>
<td>7.33</td>
<td>0.674*</td>
</tr>
<tr>
<td>Co-education</td>
<td>121</td>
<td>59.41</td>
<td>7.63</td>
<td></td>
</tr>
</tbody>
</table>

Note: * Not Significant at 0.05 level.

From the above table, it is noted that there exists no significant difference in academic achievement of higher secondary students with respect to the type of school at 0.05 level.

Figure 4.23: Mean and SD value on academic achievement of higher secondary students with respect to the type of school.
HYPOTHESIS -20

Null Hypothesis: There is no significant difference in academic achievement of higher secondary students with respect to the type of management of school.

Table 4.24: Mean, SD and t-value on academic achievement of higher secondary students with respect to the type of management of school.

<table>
<thead>
<tr>
<th>Type of Management of School</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>129</td>
<td>56.46&lt;sup&gt;a&lt;/sup&gt;</td>
<td>7.08</td>
<td></td>
</tr>
<tr>
<td>Govt. Aided</td>
<td>130</td>
<td>58.68&lt;sup&gt;b&lt;/sup&gt;</td>
<td>7.26</td>
<td>17.600**</td>
</tr>
<tr>
<td>Private</td>
<td>141</td>
<td>61.51&lt;sup&gt;c&lt;/sup&gt;</td>
<td>6.73</td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. ** Significant at 0.05 level.

2. Different alphabet among the type of management of school denotes significance at 0.05 level using Duncan Multiple Range Test (DMRT).

From the above table, it is noted that there exists significant difference in academic achievement of higher secondary students with respect to the type of management of school at 0.05 level. However, among these groups, each group students significantly differed among themselves. The private school students have more mean score (M=29.50) when compared to government aided school (M=21.93) and government school students (M=17.02).
Figure 4.24: Mean and SD value on academic achievement of higher secondary students with respect to the type of management of school.
HYPOTHESIS -21:

Null Hypothesis: There is no significant difference in academic achievement of higher secondary schools with respect to locality.

Table 4.25: Mean, SD and t-value on academic achievement of higher secondary students with respect to locality.

<table>
<thead>
<tr>
<th>Locality</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>184</td>
<td>57.00</td>
<td>6.94</td>
<td>5.094**</td>
</tr>
<tr>
<td>Urban</td>
<td>216</td>
<td>60.62</td>
<td>7.20</td>
<td></td>
</tr>
</tbody>
</table>

Note: ** Significant at 0.05 level.

From the above table, there is significant difference noted in academic achievement of higher secondary schools with respect to locality at 0.05 level. In this case, the higher secondary urban school students have more mean score (M=60.62) when compared to the rural higher secondary schools students (M=57.00).

Figure 4.25: Mean and SD value of on academic achievement of higher secondary students with respect to locality.
HYPOTHESIS -22:

Null Hypothesis: There is no significant difference in academic achievement of higher secondary schools with respect to the medium of instruction.

Table 4.26: Mean, SD and t-value on academic achievement of the higher secondary schools with respect to the medium of instruction.

<table>
<thead>
<tr>
<th>Medium of Instruction</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamil</td>
<td>220</td>
<td>57.66</td>
<td>7.67</td>
<td>3.988**</td>
</tr>
<tr>
<td>English</td>
<td>180</td>
<td>60.54</td>
<td>6.50</td>
<td></td>
</tr>
</tbody>
</table>

Note: ** Significant at 0.05 level.

From the above table, there is significant difference noted in academic achievement of higher secondary schools with respect to the medium of instruction at 0.05 level. In this case, the higher secondary English medium students have more mean score (M=25.69) when compared to the Tamil medium students (M=20.82).

Figure 4.26: Mean and SD value on overall classroom climate of higher secondary students with respect to the medium of instruction.
4.9 RELATIONAL ANALYSIS

4.9.1 CHI-SQUARE ANALYSIS – CLASSROOM CLIMATE

HYPOTHESIS-23:

Null Hypothesis: There is no significant association between gender and classroom climate of higher secondary schools.

Table 4.27: Chi-square test for association between the level of classroom climate and gender.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Level of Classroom Climate</th>
<th>Chi-Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Male</td>
<td>55</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>(28.9)</td>
<td>(44.8)</td>
</tr>
<tr>
<td></td>
<td>[47.8]</td>
<td>[48.6]</td>
</tr>
<tr>
<td>Female</td>
<td>60</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>(28.6)</td>
<td>(42.9)</td>
</tr>
<tr>
<td></td>
<td>[52.2]</td>
<td>[51.4]</td>
</tr>
</tbody>
</table>

Note: 1. * Not significant at 0.05 level.

2. The value within ( ) refers to Row % (Gender).

3. The value within [ ] refers to Column % (Classroom Climate).

From the above table, it is inferred that there is no significant association between the gender and the level of classroom climate of higher secondary schools at 0.05 level. Based on the mean scores 28.9% of male students with low level of classroom climate and 26.3% of the male students with high level of classroom climate; 28.6% of female students with low level of classroom climate and 28.6% of female students with high level of classroom climate.
HYPOTHESIS-24:

Null Hypothesis: There is no significant association between the type of school and classroom climate of higher secondary schools.

Table 4.28: Chi-square test for association between the level of classroom climate and the type of school.

<table>
<thead>
<tr>
<th>Type of School</th>
<th>Level of Classroom Climate</th>
<th>Chi - Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Boy’s</td>
<td>33</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>(44.1) [29.7]</td>
<td>(28.0) [30.0]</td>
</tr>
<tr>
<td>Girl’s</td>
<td>46</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>(42.9) [39.4]</td>
<td>(28.6) [41.8]</td>
</tr>
<tr>
<td>Co-education</td>
<td>36</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>(44.6) [30.9]</td>
<td>(25.6) [28.2]</td>
</tr>
</tbody>
</table>

Note: 1. * Not significant at 0.05 level.

2. The value within ( ) refers to Row % (Type of School)

3. The value within [ ] refers to Column % (Classroom Climate)

From the above table, it is inferred that there is no significant association between the type of school and the level of classroom climate of higher secondary schools at 0.05 level. Based on the mean scores, 28.0% of boy’s schools with low level of classroom climate and 28.0% of boy’s schools with high level of classroom climate; 28.6% of girl’s schools with low level of classroom climate and 28.6% of girl’s schools with high level of classroom climate; 29.8% of co-education schools with low level of classroom climate and 28.2% of co-education schools with high level of classroom climate.
HYPOTHESIS-25:

Null Hypothesis: There is no significant association between the type of management of school and classroom climate of higher secondary schools.

Table 4.29: Chi-square test for association between the level of classroom climate and the type of management.

<table>
<thead>
<tr>
<th>Type of Management of School</th>
<th>Level of Classroom Climate</th>
<th>Chi-Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Government</td>
<td>65</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>(50.4)</td>
<td>(45.7)</td>
</tr>
<tr>
<td></td>
<td>[56.5]</td>
<td>[33.7]</td>
</tr>
<tr>
<td>Govt. Aided</td>
<td>43</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>(33.1)</td>
<td>(45.4)</td>
</tr>
<tr>
<td></td>
<td>[37.4]</td>
<td>[33.7]</td>
</tr>
<tr>
<td>Private</td>
<td>7</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>(5.0)</td>
<td>(40.4)</td>
</tr>
<tr>
<td></td>
<td>[6.1]</td>
<td>[32.6]</td>
</tr>
</tbody>
</table>

Note: 1. ** Significant at 0.05 level.

2. The value within ( ) refers to Row % (Type of Management of School).

3. The value within [ ] refers to Column % (Classroom Climate).

From the above table, it is inferred that there exists significant association between the type of management of school and the level of classroom climate of higher secondary schools at 0.05 level. Based on the mean scores, 50.4% of government schools with low level of classroom climate and only 3.9% of government schools with high level of classroom climate; 33.1% of government aided schools with low level of classroom climate and 21.5% of government aided schools with high level of classroom climate; 5.0% of private schools with low level of classroom climate and 54.6% of private schools with high level of classroom climate.
HYPOTHESIS-26:

*Null Hypothesis:* There is no significant association between locality and classroom climate of higher secondary schools.

Table 4.30: Chi-square test for association between the level of classroom climate and locality.

<table>
<thead>
<tr>
<th>Locality</th>
<th>Level of Classroom Climate</th>
<th>Chi-Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Rural</td>
<td>85</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>(46.2)</td>
<td>(44.0)</td>
</tr>
<tr>
<td></td>
<td>[73.9]</td>
<td>[46.3]</td>
</tr>
<tr>
<td>Urban</td>
<td>30</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>(13.9)</td>
<td>(43.5)</td>
</tr>
<tr>
<td></td>
<td>[26.1]</td>
<td>[53.7]</td>
</tr>
</tbody>
</table>

Note: 1. ** Significant at 0.05 level.

2. The value within ( ) refers to Row % (Locality).

3. The value within [ ] refers to Column % (Classroom Climate).

From the above table, it is inferred that there exists significant association between the locality and the level of classroom climate of higher secondary schools at 0.05 level. Based on the mean scores, 46.2% of rural schools with low level of classroom climate and only 9.8% of rural schools with high level of classroom climate; 13.9% of urban schools with low level of classroom climate and 42.6 % of urban schools with high level of classroom climate.
HYPOTHESIS-27:

Null Hypothesis: There is no significant association between the medium of instruction and classroom climate of higher secondary schools.

Table 4.31: Chi-square test for association between the level of classroom climate and the medium of instruction.

<table>
<thead>
<tr>
<th>Medium of Instruction</th>
<th>Level of Classroom Climate</th>
<th>Chi – Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Tamil</td>
<td>70</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>(31.8)</td>
<td>(49.1)</td>
</tr>
<tr>
<td></td>
<td>[60.9]</td>
<td>[61.7]</td>
</tr>
<tr>
<td>English</td>
<td>45</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>(25.0)</td>
<td>(37.2)</td>
</tr>
<tr>
<td></td>
<td>[39.1]</td>
<td>[38.3]</td>
</tr>
</tbody>
</table>

Note: 1. ** Significant at 0.05 level.

2. The value within ( ) refers to Row % (Medium of Instruction)

3. The value within [ ] refers to Column % (Classroom Climate)

From the above table, it is inferred that there exists significant association between the medium of instruction and the level of classroom climate of higher secondary schools at 0.05 level. Based on the mean scores, 31.8% of Tamil medium schools with low level of classroom climate and 19.1% of Tamil medium schools with high level of classroom climate; 25.0% of English medium schools with low level of classroom climate and 37.8 % of English medium schools with high level of classroom climate.
4.9.2  CHI-SQUARE ANALYSIS – ACADEMIC ACHIEVEMENT

HYPOTHESIS-28:

Null Hypothesis: There is no significant association between gender and the level of academic achievement of higher secondary students.

Table 4.32: Chi-square test for association between gender and the level of academic achievement.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Level of Academic Achievement</th>
<th></th>
<th></th>
<th>Chi – Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>52</td>
<td>90</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(27.4)</td>
<td>(47.4)</td>
<td>(25.3)</td>
<td>0.183*</td>
</tr>
<tr>
<td></td>
<td>[46.4]</td>
<td>[48.6]</td>
<td>[46.6]</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>60</td>
<td>95</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(28.6)</td>
<td>(45.2)</td>
<td>(26.2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[53.6]</td>
<td>[51.4]</td>
<td>[53.4]</td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. * Not significant at 0.05 level.

2. The value within ( ) refers to Row % (Gender).

3. The value within [ ] refers to Column % (Academic Achievement).

From the above table, it is inferred that there is no significant association between respect to the gender and the academic achievement of higher secondary school students at 0.05 level. Based on the mean scores, 27.4% of male students with low level of academic achievement and 25.3% of male students with high level of academic achievement; 28.6% of female students with low level of academic achievement and 26.2% of female students with high level of academic achievement.
HYPOTHESIS-29:

Null Hypothesis: There is no significant association between the type of school and the level of academic achievement of higher secondary students.

Table 4.33: Chi-square test for association between the type of school and the level of academic achievement.

<table>
<thead>
<tr>
<th>Type of School</th>
<th>Level of Academic Achievement</th>
<th>Chi – Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Boy’s</td>
<td>36</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>(30.5)</td>
<td>(48.3)</td>
</tr>
<tr>
<td></td>
<td>[32.1]</td>
<td>[30.8]</td>
</tr>
<tr>
<td>Girl’s</td>
<td>43</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>(26.7)</td>
<td>(47.2)</td>
</tr>
<tr>
<td></td>
<td>[38.4]</td>
<td>[41.1]</td>
</tr>
<tr>
<td>Co-education</td>
<td>33</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>(27.3)</td>
<td>(43.0)</td>
</tr>
<tr>
<td></td>
<td>[29.5]</td>
<td>[28.1]</td>
</tr>
</tbody>
</table>

Note: 1. Not significant at 0.05 level.

2. The value within ( ) refers to Row % (Type of School).

3. The value within [ ] refers to Column % (Academic Achievement).

From the above table, it is inferred that there exists significant association between respect to the type of school and the academic achievement of higher secondary school students at 0.05 levels. Based on the mean scores, 30.5% of boys school students with low level of academic achievement and 21.2% of boy’s school students with high level of academic achievement; 26.7% of girl’s school students with low level of academic achievement and 26.1% of girl’s school students with high level of academic achievement; 27.3% of co-education school students with low level of academic achievement and 29.8% of co-education school students with high level of academic achievement.
HYPOTHESIS-30:

Null Hypothesis: There is no significant association between the type of management of school and the level of academic achievement of higher secondary students.

Table 4.34: Chi-square test for association between the type of management of school and the level of academic achievement.

<table>
<thead>
<tr>
<th>Type of Management of School</th>
<th>Level of Academic Achievement</th>
<th>Chi – Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Government</td>
<td>50</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>(38.8%)</td>
<td>(43.4%)</td>
</tr>
<tr>
<td></td>
<td>[44.6%]</td>
<td>[30.3%]</td>
</tr>
<tr>
<td>Govt. Aided</td>
<td>40</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>(30.8%)</td>
<td>(43.8%)</td>
</tr>
<tr>
<td></td>
<td>[35.7%]</td>
<td>[30.8%]</td>
</tr>
<tr>
<td>Private</td>
<td>22</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>(15.6%)</td>
<td>(51.1%)</td>
</tr>
<tr>
<td></td>
<td>[19.6%]</td>
<td>[38.9%]</td>
</tr>
</tbody>
</table>

Note: 1. ** Significant at 0.05 level.

2. The value within ( ) refers to Row % (Type of Management of School).

3. The value within [ ] refers to Column % (Academic Achievement).

From the above table, it is inferred that there exists significant association between the type of management of school and the academic achievement of higher secondary school students at 0.05 levels. Based on the mean scores, 38.8% of government school students with low level of academic achievement and 17.8% of government school students with high level of academic achievement; 30.8% of government aided school students with low level of academic achievement and 25.4% of government aided school students with high level of academic achievement; 15.6% of private school students with low level of academic achievement and 33.3% of private school students with high level of academic achievement.
HYPOTHESIS-31:

Null Hypothesis: There is no significant association between locality and level of academic achievement of higher secondary students.

Table 4.35: Chi-square test for association between the locality and the level of academic achievement.

<table>
<thead>
<tr>
<th>Locality</th>
<th>Level of Academic Achievement</th>
<th>Chi-Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Rural</td>
<td>71</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>(38.6)</td>
<td>(42.9)</td>
</tr>
<tr>
<td></td>
<td>[63.4]</td>
<td>[42.7]</td>
</tr>
<tr>
<td>Urban</td>
<td>41</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>(19.0)</td>
<td>(49.1)</td>
</tr>
<tr>
<td></td>
<td>[36.6]</td>
<td>[57.3]</td>
</tr>
</tbody>
</table>

Note: 1. ** Significant at 0.05 level.

2. The value within ( ) refers to Row % (Locality).

3. The value within [ ] refers to Column % (Academic Achievement).

From the above table, it is inferred that there exists significant association between the locality and the academic achievement of higher secondary school students at 0.05 level. Based on the mean scores, 38.6% of rural school students with low level of academic achievement and 18.5% of rural school students with high level of academic achievement; 19.0% of urban school students with low level of academic achievement and 31.9% of urban school students with high level of academic achievement.
HYPOTHESIS-32:

Null Hypothesis: There is no significant association between the medium of instruction and the level of academic achievement of higher secondary students.

Table 4.36: Chi-square test for association between the medium of instruction and the level of academic achievement.

<table>
<thead>
<tr>
<th>Medium of Instruction</th>
<th>Level of Academic Achievement</th>
<th>Chi-Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Tamil</td>
<td>83</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>(37.7)</td>
<td>(38.2)</td>
</tr>
<tr>
<td></td>
<td>[74.1]</td>
<td>[45.4]</td>
</tr>
<tr>
<td>English</td>
<td>29</td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>(16.1)</td>
<td>(56.1)</td>
</tr>
<tr>
<td></td>
<td>[25.9]</td>
<td>[54.6]</td>
</tr>
</tbody>
</table>

Note: 1. ** significant at 0.05 level.

2. The value within ( ) refers to Row % (Medium of Instruction).

3. The value within [ ] refers to Column % (Academic Achievement).

From the above table, it is inferred that there exists significant association between the medium of instruction and the academic achievement of higher secondary school students at 0.05 level. Based on the mean scores, 37.7% of Tamil medium students with low level of academic achievement and 24.1% of Tamil medium students with high level of academic achievement; 16.1% of English medium students with low level of academic achievement and 27.8% of English medium students with high level of academic achievement.
4.9.3 CHI-SQUARE ANALYSIS – CLASSROOM CLIMATE Vs ACADEMIC ACHIEVEMENT

HYPOTHESIS-33:

Null Hypothesis: There is no significant association between the classroom climate and the level of academic achievement of higher secondary students.

Table 4.37: Chi-square test for association between level of academic achievement and classroom climate of higher secondary students.

<table>
<thead>
<tr>
<th>Level of Classroom Climate</th>
<th>Level of Academic Achievement</th>
<th>Chi – Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Low</td>
<td>57 (49.6%)</td>
<td>47 (40.9%)</td>
</tr>
<tr>
<td></td>
<td>[50.9%]</td>
<td>[25.4%]</td>
</tr>
<tr>
<td>Moderate</td>
<td>42 (24.0%)</td>
<td>92 (52.6%)</td>
</tr>
<tr>
<td></td>
<td>[37.5%]</td>
<td>[49.7%]</td>
</tr>
<tr>
<td>High</td>
<td>13 (11.8%)</td>
<td>46 (41.8%)</td>
</tr>
<tr>
<td></td>
<td>[11.6%]</td>
<td>[24.9%]</td>
</tr>
</tbody>
</table>

Note: 1. Significant at 0.05 level.

1. The value within ( ) refers to Row % (Classroom Climate).

2. The value within [ ] refers to Column % (Academic Achievement).

From the above table, it is inferred that there exists significant association between the level of classroom climate and the level of academic achievement of higher secondary school students at 0.05 levels. Based on the mean scores, 49.6% of schools have low level of classroom climate with low level of academic achievement of students and only 9.6% of the schools have low level of classroom climate with high level of academic achievement students; 11.8% of schools have high level of classroom climate with low level of academic achievement of students and 46.4% of schools have high level of classroom climate with high level of academic achievement of students.
4.9.4 CORRELATION ANALYSIS

HYPOTHESIS-34:

*Null Hypothesis:* There is no significant correlation between physical climate and physiological climate; physical climate and overall classroom climate; physical climate and academic achievement; physiological climate and overall classroom climate; physiological climate and academic achievement; overall classroom climate and academic achievement.

Table 4.38: Correlation analysis on physical climate and physiological climate; physical climate and overall classroom climate; physical climate and academic achievement; physiological climate and overall classroom climate; physiological climate and academic achievement; overall classroom climate and academic achievement of higher secondary schools.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Physical Climate</th>
<th>Physiological Climate</th>
<th>Overall Classroom Climate</th>
<th>Academic Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Climate</td>
<td>1.000</td>
<td>0.710**</td>
<td>0.856**</td>
<td>0.379**</td>
</tr>
<tr>
<td>Physiological Climate</td>
<td></td>
<td>1.000</td>
<td>0.972**</td>
<td>0.436**</td>
</tr>
<tr>
<td>Overall Classroom Climate</td>
<td></td>
<td></td>
<td>1.000</td>
<td>0.447**</td>
</tr>
<tr>
<td>Academic Achievement</td>
<td></td>
<td></td>
<td></td>
<td>1.000</td>
</tr>
</tbody>
</table>

*Note:* ** Significant at the 0.05 level.
From the above table, it is observed that there exists significant positive high level \((r=0.710)\) of correlation between physical climate and physiological climate of higher secondary schools. Further, significant positive high level of correlation \((r=0.856)\) is noted between the physical climate and overall classroom climate of higher secondary schools. And significant marked level of correlation \((r=0.379)\) is noted between physical climate and academic achievement in percentage of higher secondary schools. It is observed that there exists significant high level \((r=0.972)\) of positive correlation between physiological climate and overall classroom climate. Further, significant positive marked level of correlation \((r=0.436)\) is noted between the physiological climate and academic achievement in percentage. In addition to this, significant substantial level \((r=0.447)\) of positive correlation exists between overall classroom climate and academic achievement in percentage of higher secondary schools.

4.10 REGRESSION ANALYSIS

Regression is the determination of statistical relationship between two or more variables. In simple regression, two variables are used. One variable (independent) is the cause of the behaviour of another one (dependent). When there are more than two independent variables, the analysis concerning relationship is known as multiple correlations and the equation describing such relationship is called the multiple regression equation.

Kerlinger (1981) states “multiple regression analysis is a method for studying the effects and magnitudes of the effects on more than one independent variables and one dependent variable using the principles of correlation and regression”. In the present study, the investigator felt the need to find out the effects of independent variable on one dependent variable (achievement in biological science) in terms of percentage. Therefore, the investigator calculated the multiple regressions and also decided to predict the magnitude of effect in terms of percentage.
REGRESSION ANALYSIS OF CLASSROOM CLIMATE ON STUDENTS ACADEMIC ACHIEVEMENT

HYPOTHESIS-35:

*Null Hypothesis:* There is no significant predictive efficiency of classroom climate on the academic achievement of higher secondary students.

In this study, the dependent variable is student's academic achievement; physical climate and physiological climate are the independent variables. The analysis is discussed as follows:

- **Dependent Variable**: Academic Achievement
- **Independent variable**: Dimensions of Classroom Climate
  - 1. Physical Climate (X₁)
  - 2. Physiological Climate (X₂)

**Multiple R value**: 0.447
**R square value**: 0.200
**F value**: 49.537
**P value**: 0.000

Table 4.39: Multiple regression analysis of physical climate and physiological climate on the academic achievement of higher secondary students.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Variable Name</th>
<th>Standardized Co-efficient (β)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>Physical Climate</td>
<td>0.142</td>
</tr>
<tr>
<td>X2</td>
<td>Physiological Climate</td>
<td>0.335**</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>Academic Achievement</td>
<td>58.954</td>
</tr>
</tbody>
</table>

**Note:** **Significant at 0.05 level.**
The multiple correlation coefficient is 0.447 measures the degree of relationship between the actual values and the predicted values of students academic achievement. Because the predicted values are obtained as a linear combination of physical climate ($X_1$) and physiological climate ($X_2$), the coefficient value 0.447 indicates the existence of relationship between academic achievement as a dependent variable and the other two independent variables is quite strong and positive.

The Coefficient of determination R-square measures the goodness-of-fit of the estimated Sample Regression Plane (SRP) in terms of the proportion of the variation in the dependent variables explained by the fitted sample regression equation. Thus, the value of R square is 0.200 simply means that about 20.0% of the variation in academic achievement is explained by the estimated SRP that uses the two independent variables and R square value is significant at 0.05 level.

The Multiple Regression Formula $Y = 58.954 + 0.142X_1 + 0.335X_2$

Even though almost both the two independent variables contribute to academic achievement of higher secondary students, only the physiological climate ($X_2$) contributes more for the student’s academic achievement.

Since the coefficient of $X_2$ is 0.335 represents the partial effect of physiological climate ($X_2$) on student’s academic achievement, holding other variable as constant. The estimated positive sign implies that such effect is positive on student’s academic achievement score would increase by 0.335 for every unit increase in physiological climate ($X_2$) and this coefficient value is significant at 0.05 level.

4.10 FINDINGS OF THE STUDY

The following findings are observed from the analysis.

1. 43.80 % of higher secondary students (N=400) involved in the study have only average level of classroom climate, 28.80 % of them have low level of classroom climate and the remaining 27.50 % have high level of classroom climate.
2. 46.3% of higher secondary students (N=400) involved in the present study have found moderate level of academic achievement, 28.0% of them have low level of academic achievement and the remaining 25.8 % have high level of academic achievement.

3. There exists no significant difference in classroom physical climate of higher secondary students with respect to gender.

4. There exists no significant difference in classroom physical climate of higher secondary students with respect to the type of school.

5. There exists significant difference in classroom physical climate of higher secondary students with respect to the type of management of school. However, among these groups, each group students significantly differed among themselves. The private school students have more mean score (M=8.01) when compared to government aided school (M=6.26) and government school students (M=4.80).

6. There is significant difference noted in physical climate of higher secondary schools with respect to locality. In this case, the higher secondary urban schools students have more mean score (M=7.39) when compared to the rural higher secondary schools students (M=5.24).

7. There is significant difference noted in physical climate of higher secondary schools with respect to the medium of instruction. In this case, the higher secondary English medium schools have more mean score (M=7.10) when compared to the Tamil medium schools. (M=5.84).

8. There exists no significant difference in classroom physiological climate of higher secondary students with respect to gender.

9. There exists no significant difference in classroom physiological climate of higher secondary students with respect to the type of school.

10. There exists significant difference in classroom physiological climate of higher secondary students with respect to the type of management of school. However, among these groups, each group students significantly differed among themselves. The private school students have more mean
score (M=21.49) when compared to government aided school (M=15.67) and government school students (M=12.22).

11. There is significant difference noted in physiological climate of higher secondary schools with respect to locality. In this case, the higher secondary urban schools students have more mean score (M=19.44) when compared to the rural higher secondary schools students (M=13.28).

12. There is significant difference is noted in physiological climate of higher secondary schools with respect to the medium of instruction. In this case, the higher secondary English medium school students have more mean score (M=18.59) when compared to the Tamil medium schools students (M=14.98).

13. There exists no significant difference in overall classroom climate of higher secondary students with respect to gender.

14. There exists no significant difference in overall classroom climate of higher secondary students with respect to the type of school.

15. There exists significant difference in overall classroom climate of higher secondary students with respect to the type of management of school. However, among these groups, each group students significantly differed among themselves. The private school students have more mean score (M=29.50) when compared to government aided school (M=21.93) and government school students (M=17.02).

16. There is a significant difference noted in overall classroom climate of higher secondary schools with respect to locality. In this case, the higher secondary urban schools students have more mean score (M=26.83) when compared to the rural higher secondary schools students (M=18.53).

17. There is a significant difference is noted in overall classroom climate of higher secondary schools with respect to the medium of instruction. In this case, the higher secondary English medium schools have more mean score (M=25.69) when compared to the Tamil medium schools (M=20.82).
18. There exists no significant difference in academic achievement of higher secondary students with respect to gender.

19. There exists no significant difference in academic achievement of higher secondary students with respect to the type of school.

20. It is noted that there exists significant difference in academic achievement of higher secondary students with respect to the type of management of school. However, among these groups, each group students are significantly differed among themselves. The private school students have more mean score (M=29.50) when compared to government aided school (M=21.93) and government school students (M=17.02).

21. There is a significant difference noted in academic achievement of higher secondary schools with respect to locality. In this case, the higher secondary urban schools students have more mean score (M=26.83) when compared to the rural higher secondary schools students (M=18.53).

22. There is a significant difference noted in academic achievement of higher secondary schools with respect to the medium of instruction. In this case, the higher secondary English medium students have more mean score (M=25.69) when compared to the Tamil medium students (M=20.82).

23. There is no significant association between the students’ gender and the level of classroom climate of higher secondary schools. Based on the mean scores, 28.9% of male students with low level of classroom climate and 26.3% of the male students with high level of classroom climate; 28.6% of female students with low level of classroom climate and 28.6% of female students with high level of classroom climate. From the above table, it is inferred that there is no significant association between the type of school and the level of classroom climate of higher secondary schools at 0.05 level. Based on the mean scores, 28.0% of boys schools with low level of classroom climate and 28.0% of boys schools with high level of classroom climate; 28.6% of girls schools with low level of classroom climate and 28.6% of girls schools with high level of classroom climate; 29.8% of co-
education schools with low level of classroom climate and 28.2% of co-education schools with high level of classroom climate are brought about.

24. There exists significant association between the type of management and the level of classroom climate of higher secondary schools. Based on the mean scores, 50.4% of government schools with low level of classroom climate and only 3.9% of government schools with high level of classroom climate; 33.1% of government aided schools with low level of classroom climate and 21.5% of government aided schools with high level of classroom climate; 5.0% of private schools with low level of classroom climate and 54.6% of private schools with high level of classroom climate are brought about.

25. There exists significant association between the locality and the level of classroom climate of higher secondary schools. Based on the mean scores, 46.2% of rural schools with low level of classroom climate and only 9.8% of rural schools with high level of classroom climate; 13.9% of urban schools with low level of classroom climate and 42.6% of urban schools with high level of classroom climate are brought about.

26. There exists significant association between the medium of instruction and the level of classroom climate of higher secondary schools. Based on the mean scores, 31.8% of Tamil medium schools with low level of classroom climate and 19.1% of Tamil medium schools with high level of classroom climate; 25.0% of English medium schools with low level of classroom climate and 37.8% of English medium schools with high level of classroom climate are brought about.

27. There is no significant association between the gender and the academic achievement of higher secondary schools. Based on the mean scores, 27.4% of male students with low level of academic achievement and 25.3% of male students with high level of academic achievement; 28.6% of female students with low level of academic achievement and 26.2% of female students with high level of academic achievement are calculated.
28. There exists significant association between the type of school and the academic achievement of higher secondary schools. Based on the mean scores, 30.5% of boys schools with low level of academic achievement and 21.2% of boy's schools with high level of academic achievement; 26.7% of girl's schools with low level of academic achievement and 26.1% of girl's schools with high level of academic achievement; 27.3% of co-education schools with low level of academic achievement and 29.8% of co-education schools with high level of academic achievement are calculated.

29. There exists significant association between the type of management and the academic achievement of higher secondary schools. Based on the mean scores, 38.8% of government schools with low level of academic achievement and 17.8% of government schools with high level of academic achievement; 30.8% of government aided schools with low level of academic achievement and 25.4% of government aided schools with high level of academic achievement; 15.6% of private schools with low level of academic achievement and 33.3% of private schools with high level of academic achievement are calculated.

30. There exists significant association between the locality and the academic achievement of higher secondary schools. Based on the mean scores, 38.6% of rural schools with low level of academic achievement and 18.5% of rural schools with high level of academic achievement; 19.0% of urban schools with low level of academic achievement and 31.9% of urban schools with high level of academic achievement are brought about.

31. There exists significant association between the medium of instruction and the academic achievement of higher secondary schools. Based on the mean scores, 37.7% of Tamil medium students with low level of academic achievement and 24.1% of Tamil medium students with high level of academic achievement; 16.1% of English medium students with low level of academic achievement and 27.8% of English medium students with high level of academic achievement are calculated.
32. There exists significant association between the level of classroom climate and the level of academic achievement of higher secondary schools. Based on the mean scores, 49.6% of schools have low level of classroom climate with low level of academic achievement and only 9.6% of the schools have low level of classroom climate with high level of academic achievement; 11.8% of schools have high level of classroom climate with low level of academic achievement and 46.4% of schools have high level of classroom climate with high level of academic achievement are calculated.

33. There exists significant positive high level ($r=0.710$) of correlation between physical climate and physiological climate of higher secondary schools. Further, significant positive high level of correlation ($r=0.856$) is noted between the physical climate and overall classroom climate of higher secondary schools. And significant marked level of correlation ($r=0.379$) is noted between physical climate and academic achievement in percentage of higher secondary schools. It is observed that there exists significant high level ($r=0.972$) of positive correlation between physiological climate and overall classroom climate. Further, significant positive marked level of correlation ($r=0.436$) is noted between the physiological climate and academic achievement in percentage. In addition to this, significant substantial level ($r=0.447$) of positive correlation exists between overall classroom climate and academic achievement in percentage of higher secondary schools.

34. The multiple correlation coefficient is 0.447 measures the degree of relationship between the actual values and the predicted values of students academic achievement. Because the predicted values are obtained as a linear combination of physical climate ($X_1$) and physiological climate ($X_2$), the coefficient value of 0.447 indicates the existence of relationship between academic achievement as a dependent variable and the other two independent variables is quite strong and positive. The Coefficient of Determination R-square measures the goodness-of-fit of the estimated Sample Regression Plane (SRP) in terms of the proportion of the variation in the dependent variables explained by the fitted sample regression
equation. Thus, the value of **R square is** 0.200 simply means that about 20.0% of the variation in students academic achievement is explained by the estimated SRP that uses the two independent variables and R square value is significant at 0.05 level. Even though almost both the two independent variables contribute to academic achievement of higher secondary students, only the physiological climate ($X_2$) contributes more for student’s academic achievement. Since the coefficient of $X_2$ is 0.335 represents the partial effect of physiological climate ($X_2$) on student’s academic achievement, holding other variable as constant. The estimated positive sign implies that such effect is positive on student’s academic achievement score would increase by 0.335 for every unit increase in physiological climate ($X_2$) and this coefficient value is significant at 0.05 level.

4.11 DISCUSSION OF THE FINDINGS

The discussion of the findings of the present study is given below.

1. The higher secondary students have average level of classroom climate. This finding contradicts with the studies of Jayanthi, N.L.N. (2008) and Gurumoorthi.G., & Mani, S. (2012).

3. There exists no significant difference in overall classroom climate of higher secondary students with respect to the type of school. This concur with the studies of Little Flower, D & Krishnamurthy, S (2011); Karthikeyan, P & Mani, S. (2010); Soni, R.B.L. (2008); Aruna, P.K. & Usha, P. (2006) and Maurice Elias et al (2002). But this finding contradicts with the studies of Chamundeswari, S., & Ezhilarasi, A. (2006); Zipur Shechtman (2005) and Angelika Anderson et al (2004) observed the significant difference in classroom climate among boy’s, girl’s and co-education school students.

4. There exists significant difference in overall classroom climate of higher secondary students with respect to the type of management of school. However, among these groups, each group students significantly differed among themselves. The private school students have more mean score when compared to government aided school and government school students. It has been supported by the findings of Beulah Bel Bency, P. B., & Krishna Prasad (2013); Karthikeyan, P & Mani, S. (2010); Gaiab, S. et al. (2008), Jayanthi, N.L.N. (2008); and Ram Swaroop Vishwakarma (2008). Gaiab, S. et al. (2008) and Ram Swaroop Vishwakarma (2008) observed that private higher secondary school students have better classroom climate compared to government and government aided school students. But it contradicts with the studies of Beulah Bel Bency, P. B., & Krishna Prasad (2013) observed that government higher secondary school students have better classroom climate compared to their counterparts. However, Soni, R.B.L. (2008); Chamundeswari, S., & Ezhilarasi, A. (2006) and Daniel Salter (2003) found no significant difference in classroom climate with respect to the type of management of school.

5. There is significant difference is noted in overall classroom climate of higher secondary schools with respect to Locality. In this case, the higher secondary urban schools students have more mean score when compared to the rural higher secondary schools students. It was similar to Beulah Bel Bency, P. B., & Krishna Prasad (2013); Arul Lawrence, A.S., & Vimala, A. (2012); Hasan Cakir et al (2009); Rekalidou Galini & Penderi Efthymia (2009); Jayanthi, N.L.N. (2008); Angelika Anderson et al
(2004); and Perreault George & George Hill (2000) and Parveen Kaur & Deepak Kharb (1993) studies. Further, Hasan Cakir et al (2009); Rekalidou Galini & Penderi Efthymia (2009); Angelika Anderson et al (2004); and Perreault George & George Hill (2000) and Parveen Kaur & Deepak Kharb (1993) observed that urban higher secondary school students have better classroom climate compared to rural school students. But it contradicts with Beulah Bel Bency, P. B., & Krishna Prasad (2013) observed that rural higher secondary school students have better classroom climate compared to urban school students. However, the dissimilar findings observed by Hasan Cakir et al (2009) and Chamundeswari, S., & Ezhilarasi, A. (2006) found no significant difference in classroom climate with respect to locality of school.

6. There is a significant difference noted in overall classroom climate of higher secondary schools with respect to the medium of instruction. In this case, the higher secondary English medium schools have more mean score when compared to the Tamil medium schools. Similar finding was observed by Zipor Shechtman (2005). But it contradicts the findings of Arul Lawrence, A.S., & Vimala, A. (2012); Gurumoorthi.G., & Mani, S. (2012); Karthikeyan, P & Mani, S. (2010); Soni, R.B.L. (2008); Chamundeswari, S., & Ezhilarasi, A. (2006) found no significant difference in classroom climate with respect to the medium of instruction.

7. There exists no significant difference in academic achievement of higher secondary students with respect to gender. It concurs with the study of Arul Lawrence, A.S., & Vimala, A. (2012); Natural P.N. & Manjula G. (2012) and Radha Mohan (1998). But, Beulah Bel Bency, P. B., & Krishna Prasad (2013); Sadia Mahmood & Tahira Khatoon (2011); Jayanthi, N.L.N. (2008); and Ram Swaroop Vishwakarma (2008) observed significant difference in academic achievement between the boys and girls.

8. There exists no significant difference in academic achievement of higher secondary students with respect to the type of school. No studies are found to be either supported or contradicted.
9. It is noted that there exists significant difference in academic achievement of higher secondary students with respect to the type of management of school. However, among these groups, each group students significantly differed among themselves. The private school students have more mean score when compared to government aided school and government school students. The similar findings are observed by Beulah Bel Bency, P. B., & Krishna Prasad (2013); Ashokkumar B. Surapur (2012); Jayanthi, N.L.N. (2008); Ram Swaroop Vishwakarma (2008); Arockiasamy, S. & Jebasheela (2001). But, Ashokkumar B. Surapur (2012) and Ram Swaroop Vishwakarma (2008) found that government school students found better academic achievement than their counterparts. But Sadia Mahmood & Tahira Khatoon (2011) found that government school students found low academic achievement. However, it contradicts with finding of Radha Mohan (1998).

10. There is a significant association between classroom climate and type of management of school, locality and medium of instruction of higher secondary schools students. The similar findings are observed by Jayanthi, N.L.N. (2008); Aruna, P.K. and Usha, P. (2006); Saha, K (2005) and Dipti Oza (2001); However, it contradicts with finding of Evelien Buyse (2009); Eric Tubbs, Mary Garner (2008) and Majda Schmidt & Branka Cagran (2006).

11. There is a significant positive correlation between classroom climate and academic achievement. This findings concur by the findings of Cynthia L Wolsey Uline et al (2010); Hasan Cakir et al (2009); Jerome Freiberg & Stacey Lamb (2009); Jayanthi, N.L.N. (2008); Sona Thakur & Tejpreet Kaur Kang (2005); Champa, P. (2005); Jan Bennett (2001); Sundararajan & Rajasekar (1993) found significant relationship between classroom climate and academic achievement. But Burkhard Gniewosz & Peter Noack (2008); Audra Parker (2009) and Aruna, P.K. & Usha, P. (2006) found no significant relationship between classroom climate and academic achievement.
12. The classroom climate values predict the values of students' academic achievement. The similar findings of Carolyn Gascoigne (2012); Aryn Dotterer and Katie Lowe (2011); Constantinos Kokkinos & Stamatia Hatzinikolaou (2011); Genevieve Marie Johnson (2006); Maurice Elias et al (2002); Jan Bennett (2001) and Paul Germann (1994) observed classroom climate has strong predictive efficiency on academic achievement.

4.12 CONCLUSION

This chapter summerises the analysis of data, testing of hypotheses, description and inference of the tables and figures, findings of the study and discussion of findings. A brief report of the research study together with the major findings along with their educational implications, suggestions for further research and conclusions has been presented in the succeeding chapter.
CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTION FOR FURTHER RESEARCH
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SUMMARY, FINDINGS, CONCLUSIONS, RECOMMENDATIONS
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SUMMARY, FINDINGS, CONCLUSION,
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5.1 INTRODUCTION

Education is a powerful tool to empower an individual on all aspects of his/her life. The National Policy on Education (1986) emphasises the importance and the urgent need for meeting the challenges in the social, economical, culture and moral factors of the present day contextual demands of Indian society. The responses to these challenges could be attended only through education, which in fact is the most powerful tool to bring out the desirable changes.

For providing better education, the school, classroom and the teacher are the most important factors. Teaching refers to the activities that are purposely designed and performed to produce desirable changes in students’ behaviour (B.E.Smith, 1961). Teaching is a complex skill. To a great extent teachers influence students to attain happiness, satisfaction, outlook and even their attitude to life. About teachers, the Indian Education Commission (1964 – 1966) rightly pointed out that “Of all the different factors which influence the quality of education and its contribution to national development the quality, competence and character of teachers are undoubtedly the most significant. Nothing is more important than securing a sufficient supply of high quality recruits to the teaching profession, providing them with the best possible professional preparation and creating satisfactory conditions of work in which they can be fully devoted”.

Classrooms that encourage emotional well-being, create an atmosphere for both learning and emotional development. Educational research supports creating an atmosphere of mutual respect, where students feel relaxed in asking questions and expressing their thoughts and feelings. Some areas to consider when creating an atmosphere of mutual respect are classroom design, classroom procedures, and
classroom strategies. Implementing a few strategies that address these areas can help develop a strong sense of community and encourage positive interactions and cooperative learning for students. A warm classroom environment can lead to increased academic achievement and a sense of pride and belonging in the school. The physical environment of a classroom plays a part in the ownership students feel about their school and more specifically their class. The classroom environment should do as much to foster co-operation and acceptance as the instructional method the teacher uses. Children are sensitive to the atmosphere created in the classroom.

Creating a positive classroom climate and positive rapport with the students is a co-operative endeavor. It requires evaluation and modification of both student and teacher behaviour. Committing to it at the beginning of the school year will pay off greatly in the long run. The teachers have the goal of establishing a classroom environment that is favorable for helping all students work co-operatively in order to learn. The type of classroom climate that a teacher creates and encourages can either increase or decrease a student's ability to learn and feel comfortable as a member of the class.

Among various factors, classroom plays an important role in the shaping the life of children in the development of attitudes and motives. Teachers must ensure good environment and other opportunities to express to their students in such a way to develop all necessary position and characters in them. Teacher approval and disapproval of the children's behavior, begins the process of involvement, interest and efforts in classroom activities and studies. Achievement in biology depends upon the way teacher encourages the student, suitable teaching-learning environment at the school, home environment and the interest of the students.

5.2 REVIEW OF RELATED LITERATURE

The investigator reviewed the various related literature to append a general idea on the proposed area of research. The studies conducted so far in the specified area were collected and synthesized. The review of earlier studies is classified on the basis of the variables of the study. The review related literature has been classified into Indian studies and International studies according to the
major research variable-wise. The researcher synthesized them to get a better understanding about the major findings of these studies, its educational implications and suggestions for further study.

5.3 RESEARCH DESIGN AND METHODOLOGY

The chapter on research design and methodology deals with the statement of the problem of the study, operational definitions of key terms used, need and importance of the study, tools used for this study, reliability and validity of the tools, selection of population, sample, sampling procedure adopted and its size, procedure of data collection, delimitation of the study, etc.

5.4 STATEMENT OF THE PROBLEM

Present study entitled as “The Impact of Classroom Climate on Achievement at Higher Secondary Level” has been undertaken by the researcher to find out the influence of classroom climate on the academic achievement of the first year higher secondary students.

5.5 OPERATIONAL DEFINITION OF THE KEY TERMS USED

A. Classroom

Learning takes place in a structured situation is called classroom; where through certain procedures formal learning is achieved. The Classroom is not a mere aggregate of pupils. The classroom is a place exposed to our society’s ways and values. In this study, the classroom of the students studying first year (+1) higher secondary course is considered as the classroom.

B. Climate

The term climate has been variously understood in many ways as ‘the zeal’, ‘the atmosphere’, ‘the environment’, ‘the conditions prevailing and ‘the tone of institution’. In this study, the classroom atmosphere of the students studying first year (+1) higher secondary course is considered as the climate.
C. Classroom Climate

Classroom climate can be considered as a product of the dynamic interrelationship between the collective needs of the participants and the system maintenance requirements of the classroom. In this study, the classroom atmosphere of the students studying first year (+1) higher secondary course is considered as the climate.

D. Achievement

In this study, achievement is considered to be the test scores in the subject biology in the academic year 2011-2012. The questions for the test were taken up from the portion of Half-yearly examinations. The marks obtained in the test are considered as achievement score.

E. Higher Secondary Level

In this study, higher secondary level refers to the plus one (+1) students who have opted for biology as one of the subjects of study and undergone the study during the academic year 2011-12 from selected higher secondary schools of Vellore District of Tamilnadu.

5.6 NEED AND IMPORTANCE OF THE STUDY

In the present system of education no stress is given to discriminate between the minimum essential competencies and advanced competencies at a particular stage of learning. The need of the hour is that there must be some method to ensure that every pupil coming from a lower standard to a higher standard should have a minimum subject knowledge/competency. It is a general assumption that each stage of learning is self-contained and forms a good basis for the next stage. The teachers of higher secondary schools believe that the pupils, coming to the higher secondary level, have mastered the basic material in their secondary school level to higher secondary level. But in many cases these pupils may not possess even some of the most essential subject knowledge, necessary for the stage.
In the higher secondary schools, there are three groups of pupils, on the basis of their option for biology education. Among them, the first group of pupils wants to continue with biology for their studies in the higher class. The second group of pupils wants to continue their studies in subjects other than biology. There is still a third group who will end their formal education with the higher secondary school stage. This fact points to the importance of teaching to master scientific concepts at the higher secondary school stage, especially for the benefit of the last two groups mentioned above, to enable them to lead a normal life in a world which is highly advanced in the field of science especially biology.

Concepts in biology have an impact on the child in different situations in his/her life. The different concepts in biology regarding the importance in keeping personal hygiene and healthy food habits developed in the early stages of learning will be having lasting impact on the child throughout his life. Higher-level concepts in biology acquired by the pupil in the higher secondary school level are also having very high transfer value and find much application in different stages of life compared to other science subjects. One of the main disadvantages of our educational system is that it is operating at the lowest level of efficiency. This system is characterized by poor pupil and teacher performance and it results in much wastage and stagnation. Most of the shortcomings of our education system are due to an incomplete understanding of the pupil and the wrong teaching-learning process followed by the educational institutions. Generally, our system of education has some sort of pitfalls that is not still able to develop the full potentials of the individual pupils. This inability is mainly due to an improper understanding about the social and psychological background of the pupils and lack of an in-depth understanding of their influence on their academic capabilities. It is a usual practice of the teachers to follow the same process of instruction to teach the students who differ in psycho-social levels. Such an approach causes a number of limitations in the instruction process and it in turn affects the efficiency of the learning process. This is reflected by the experience of a number of teachers who feel that even after utilizing their maximum abilities and efforts, they are not able to make all the pupils of their class progress at the desired rate. Formation of concepts in any subject is an individual affair. It is influenced by a number of
psychological and social variables. There are apparent individual differences in pupils with regard to their ability to conceptualize.

The constraints and difficulties which to having an ideal classroom in a developing country like India showed highly contemplated. We should identify the conditions necessary to influence the classroom setting. The interaction of the factors that take place in the classroom plays an important role as the classroom is a web of interaction in a particular way. This interaction forms the basis for the prevailing environment in any classroom. The environment provides a network of forces and factors which play on the individual of any classroom.

Some individual may resist this network and some rare individuals completely avoid or escape from these forces. The environment is a shaping and reinforcing forces which acts on the individual’s learning. At the same time every individual becomes the part of the component of the environment.

It is imperative to consider the interaction between the teacher and the pupil, teaching and learning, availability and utilization of instructional aids, discipline control, situation and facility available etc. It is believed that the different climate will have different effect on the achievement of pupils. That is, if one moves from classroom to classroom he finds that conditions differ. Hence, the investigator has chosen the present problem.

5.7 **OBJECTIVES OF THE STUDY**

The investigator framed the following objectives pertaining to the present study:

(A) The investigator framed the following general objectives:

1. To study the level of classroom climates of higher secondary students.
2. To study the level of achievement of higher secondary students.
3. To study whether there is any significant difference in classroom physical climates of the higher secondary students with respect to the background variables.
4. To study whether there is any significant difference in classroom physiological climates of the higher secondary students with respect to the background variables.

5. To study whether there is any significant difference in academic achievement of the higher secondary students with respect to the background variables.

6. To find out whether there is any significant association between classroom climate and background variables.

7. To find out whether there is any significant association between academic achievement and background variables.

8. To find out whether there is any significant correlation between classroom climate and background variables.

9. To find out whether there is any significant correlation between academic achievement and background variables.

10. To find out whether there is any significant predictive efficiency of classroom climate on academic achievement of higher secondary students.

(B) The investigator framed the following specific objectives:

11. To find out the level of classroom climate of higher secondary students.

12. To find out the level of academic achievement of higher secondary students.

13. To find out whether there is any significant difference in classroom physical climate of higher secondary students with respect to gender.

14. To find out whether there is any significant difference in classroom physical climate of higher secondary students with respect to the type of school.
15. To find out whether there is any significant difference in classroom physical climate of higher secondary students with respect to the type of management of school.

16. To find out whether there is any significant difference in physical climate of higher secondary schools with respect to locality.

17. To find out whether there is any significant difference in physical climate of higher secondary schools with respect to the medium of instruction.

18. To find out whether there is any significant difference in classroom physiological climate of higher secondary students with respect to gender.

19. To find out whether there is any significant difference in classroom physiological climate of higher secondary students with respect to the type of school.

20. To find out whether there is any significant difference in classroom physiological climate of higher secondary students with respect to the type of management of school.

21. To find out whether there is any significant difference in physiological climate of higher secondary schools with respect to locality.

22. To find out whether there is any significant difference in physiological climate of higher secondary schools with respect to the medium of instruction.

23. To find out whether there is any significant difference in overall classroom climate of higher secondary students with respect to gender.

24. To find out whether there is any significant difference in overall classroom climate of higher secondary students with respect to the type of school.

25. To find out whether there is any significant difference in overall classroom climate of higher secondary students with respect to the type of management of school.
26. To find out whether there is any significant difference in overall classroom climate of higher secondary schools with respect to locality.

27. To find out whether there is any significant difference in overall classroom climate of higher secondary schools with respect to medium of instruction.

28. To find out whether there is any significant difference in academic achievement of higher secondary students with respect to gender.

29. To find out whether there is any significant difference in academic achievement of higher secondary students with respect to the type of school.

30. To find out whether there is any significant difference in academic achievement of higher secondary students with respect to the type of management of school.

31. To find out whether there is any significant difference in academic achievement of higher secondary schools with respect to locality.

32. To find out whether there is any significant difference in academic achievement of higher secondary schools with respect to the medium of instruction.

33. To find out whether there is any significant association between students' gender and classroom climate of higher secondary schools.

34. To find out whether there is any significant association between the type of school and classroom climate of higher secondary schools.

35. To find out whether there is any significant association between the type of management and classroom climate of higher secondary schools.

36. To find out whether there is any significant association between locality and classroom climate of higher secondary schools.

37. To find out whether there is any significant association between the medium of instruction and classroom climate of higher secondary schools.
38. To find out whether there is any significant association between gender and the level of academic achievement of higher secondary students.

39. To find out whether there is any significant association between the type of school and the level of academic achievement of higher secondary students.

40. To find out whether there is any significant association between the type of management of school and the level of academic achievement of higher secondary students.

41. To find out whether there is any significant association between locality and the level of academic achievement of higher secondary students.

42. To find out whether there is any significant association between the medium of instruction and the level of academic achievement of higher secondary students.

43. To find out whether there is any significant association between classroom climate and the level of academic achievement of higher secondary students.

44. To find out whether there is any significant correlation between physical climate and physiological climate; physical climate and overall classroom climate; physical climate and academic achievement; physiological climate and overall classroom climate; physiological climate and academic achievement; overall classroom climate and academic achievement.

45. To find out whether there is any significant predictive efficiency of classroom climate on the academic achievement of higher secondary students.

5.8 HYPOTHESES OF THE STUDY

The following were the hypotheses formulated for the present study.

1. The level of classroom climate of higher secondary students is high.
2. The level of academic achievement of higher secondary students is high

3. There is no significant difference in classroom physical climate of higher secondary students with respect to gender.

4. There is no significant difference in classroom physical climate of higher secondary students with respect to the type of school.

5. There is no significant difference in classroom physical climate of higher secondary students with respect to the type of management of school.

6. There is no significant difference in physical climate of higher secondary schools with respect to locality.

7. There is no significant difference in physical climate of higher secondary schools with respect to the medium of instruction.

8. There is no significant difference in classroom physiological climate of higher secondary students with respect to gender.

9. There is no significant difference in classroom physiological climate of higher secondary students with respect to the type of school.

10. There is no significant difference in classroom physiological climate of higher secondary students with respect to the type of management of school.

11. There is no significant difference in physiological climate of higher secondary schools with respect to locality.

12. There is no significant difference in physiological climate of higher secondary schools with respect to the medium of instruction.

13. There is no significant difference in overall classroom climate of higher secondary students with respect to gender.

14. There is no significant difference in overall classroom climate of higher secondary students with respect to the type of school.

15. There is no significant difference in overall classroom climate of higher secondary students with respect to the type of management of school.
16. There is no significant difference in overall classroom climate of higher secondary schools with respect to locality.

17. There is no significant difference in overall classroom climate of higher secondary schools with respect to the medium of instruction.

18. There is no significant difference in academic achievement of higher secondary students with respect to gender.

19. There is no significant difference in academic achievement of higher secondary students with respect to the type of school.

20. There is no significant difference in academic achievement of higher secondary students with respect to the type of management of school.

21. There is no significant difference in academic achievement of higher secondary schools with respect to locality.

22. There is no significant difference in academic achievement of higher secondary schools with respect to the medium of instruction.

23. There is no significant association between students gender and classroom climate of higher secondary schools.

24. There is no significant association between the type of school and classroom climate of higher secondary schools.

25. There is no significant association between the type of management of school and classroom climate of higher secondary schools.

26. There is no significant association between locality and classroom climate of higher secondary schools.

27. There is no significant association between the medium and classroom climate of higher secondary schools.

28. There is no significant association between gender and the level of academic achievement of higher secondary students.
29. There is no significant association between the type of school and the level of academic achievement of higher secondary students.

30. There is no significant association between the type of management of school and the level of academic achievement of higher secondary students.

31. There is no significant association between locality and the level of academic achievement of higher secondary students.

32. There is no significant association between the medium of instruction and the level of academic achievement of higher secondary students.

33. There is no significant association between classroom climate and the level of academic achievement of higher secondary students.

34. There is no significant correlation between physical climate and physiological climate; physical climate and overall classroom climate; physical climate and academic achievement; physiological climate and overall classroom climate; physiological climate and academic achievement; overall classroom climate and academic achievement.

35. There is no significant predictive efficiency of classroom climate on the academic achievement of higher secondary students.

5.9 METHOD OF STUDY

In the present investigation, the investigator has adopted normative survey method. It describes and interprets what exists at present. And it is concerned with conditions or relationship that exists, practices that prevail, beliefs, points of view or attitudes that are held, processes that are going on, influences that are being felt, and trends that are developing. By this method the investigator analysed the classroom climate on the achievement of higher secondary students.

5.10 VARIABLES OF THE STUDY

The variables selected by the investigator for the present study are given in the following sub-headings.
3.10.1 Independent Variable

"In a any research study, the independent variables are antecedent conditions that are presumed to affect a dependent variable. They are either manipulated by the researcher or are observed by the researcher so that their values can be related to that of the dependent variable (Jaeger, 1990). In this study, the investigator considered classroom climate as the independent variable.

3.10.2 Dependent Variable

"In a any research study, the independent variable defines a principal focus of research interest. It is the consequent variable that is presumably affected by one or more independent variables that are either manipulated by the researcher or observed by the researcher and regarded as antecedent conditions that determine the value of the dependent variable. The dependent variable is the participant's response (Jaeger, 1990). In the present study, academic achievement in biology has been treated as a dependent variable.

3.10.3 Background Variables:

In the present study, the following are background variables.

- Gender: Male / Female
- Type of School: Boy's / Girl's / Co-education School
- Type of Management: Government / Private
- Locality: Rural / Urban
- Medium of Instruction: English / Tamil
5.11 TOOLS USED

In this study, the following tools have been used by the investigator.

1. Personal Data Sheet developed by the Investigator. (Appendix-II)
2. Classroom Climate Inventory developed and validated by Rajkumar (1984) adopted by the Investigator. (Appendix-III)
3. Achievement Test in Biology developed and validated by the Investigator. (Appendix-V)

5.12 POPULATION AND SAMPLE OF THE STUDY

The Class XI students studying at Vellore District in various schools of government, government aided and self-finance constituted the population of the study. The present study comprises 400 higher secondary students studying in 20 higher secondary schools located in Vellore District of Tamil Nadu. The sample was selected by using simple random sampling technique. The sample forms a representative of the entire population.

5.13 COLLECTION OF DATA

Researcher personally met the heads of higher secondary schools of Vellore District of Tamilnadu and required permission for data collection. Accordingly a total sample of four hundred has been collected.

5.14 STATISTICAL TECHNIQUES USED

In this study, the investigator has used the following statistical technique for analysis of the data.

a. Descriptive analysis (Percentage, Mean, Standard Deviation)

b. Differential analysis (t-test, F-ratio)

c. Association analysis (Chi-square)

d. Correlation analysis (Co-efficient of Correlation)

e. Regression analysis
5.15 SCOPE OF THE STUDY

The present study is an attempt to examine the influence of some selected classroom climate correlates such as physical and physiological climate on acquisition of biological concepts of pupils studying in the higher secondary schools of Vellore District of Tamilnadu. Most of the educational thinkers believe that the basic aim of schooling is to help the children learn concepts. But in the present system of education, sufficient stress is not given to the acquisition of concepts in any subject. In the teaching-learning situation, facts are more stressed, but such facts have less transfer value and are not retained for long. So the need of the hour is to ensure that each student, coming from a particular standard to the next higher standard, must have acquired the minimum set of essential concepts expected for that standard. There are some individual differences in pupils with regard to their ability to acquire concepts in different subjects, owing to a number of individual, psycho-sociological and economic factors. The investigator believes that the influence of the selected classroom climate correlates on the acquisition of biological concepts as revealed by this study will also be applicable to the acquisition of concepts in other science subjects such as physics and chemistry. The investigator further believes that the results of the study will be useful to have a better understanding of the nature of the acquisition of concepts, which can be utilized to develop better theories about the educational outcomes of different kinds. The findings of the study may be of use to the educational thinkers, school administrators, teachers, parents and all those who are concerned with education to organize better learning environment so as to benefit each and every student. A review of related literature shows that studies in the present area of study do not cover the possible correlates of the acquisition of science concepts at the higher secondary school level under Indian conditions. Hence the present study may be a pioneering attempt under Indian conditions to study the influence of certain selected variables in combination with sex, locale and type of management of school, type of school and medium of instruction on the acquisition of biological concept of pupil studying in the higher secondary schools. In the selection of sample, due representation is given to the urban rural settings of school, the sex of the subjects, the type of management (government / private) and the geographical distribution of schools. The present study makes use of standardized tools to
measure the dependent and independent variables. Effort is also made to maintain the ideal test conditions during the administration of tools. This study also uses suitable and reliable statistical techniques to analyse and interpret the data obtained by the administration of tools. For these reasons the investigator hopes that the results of study will be valid and useful. The investigator hopes that a proper understanding of the nature of the influence of the selected variables on the acquisition of concepts will lead to a better understanding of the nature of the acquisition of concepts itself. Such knowledge will help us to develop better theories about educational outcomes of different kind. This will also enable us to understand in what ways conceptual achievement is identical with or different from the traditional educational outcomes. It is also hoped that the findings of the study can help us to redefine the process of instruction and classroom settings itself that will especially be aimed at the development of higher level learning outcomes, including the acquisition of concepts. These learning activities will be ultimately aimed at the better performance of pupils belonging to different strata in selected variables. The new knowledge yielded by the present study will be of help to classroom teachers, school administrators, parents and all other stakeholders concerned with the process of education to get a comprehensive understanding about the underlying factors leading to conceptual achievement and help in the designing of better instructional strategies. This will also facilitate to provide extra-educational treatment like guidance and counselling and other types of individualized programmes for the improvement of each pupil.

5.16 DELIMITATION OF THE STUDY

The present investigation has the following delimitations.

1. The sample area was geographically limited to Vellore District of Tamil Nadu.

2. Twenty schools from Vellore District were randomly selected for the present study.

3. For the academic achievement aspect, the researcher had taken only one subject that is biology. She conducted an achievement test in
biology (Botany and Zoology), the questions were taken only up to the half-yearly examination portion during the academic year 2011-2012.

4. The total number of sample is restricted to 400 higher secondary first year (+1) students.

5. The present study is done only with one major variable and five background variables.

6. There are so many factors responsible for the climate condition of a classroom, the researcher has taken only two factors in the study, they are:
   a. Physical climate and
   b. Physiological climate.

5.17 FINDINGS OF THE STUDY

I Descriptive Analysis

Descriptive analysis indicates the following findings:

1. 43.80 % of higher secondary students (N=400) involved in the study have only average level of classroom climate, 28.80 % of them have low level of classroom climate and the remaining 27.50 % have high level of classroom climate.

2. 46.3 % of higher secondary students (N=400) involved in the present study have found moderate level of academic achievement, 28.0 % of them have low level of academic achievement and the remaining 25.8 % have high level of academic achievement.

II Differential Analysis

Differential analysis indicates the following findings:

1. There exists no significant difference in classroom physical climate of higher secondary students with respect to gender.
2. There exists no significant difference in classroom physical climate of higher secondary students with respect to the type of school.

3. There exists significant difference in classroom physical climate of higher secondary students with respect to the type of management of school. However, among these groups, each group students significantly differed among themselves. The private school students have more mean score (M=8.01) when compared to government aided school (M=6.26) and government school students (M=4.80).

4. There is a significant difference noted in physical climate of higher secondary schools with respect to locality. In this case, the higher secondary urban schools students have more mean score (M=7.39) when compared to the rural higher secondary schools students (M=5.24).

5. There is a significant difference noted in physical climate of higher secondary schools with respect to the medium of instruction. In this case, the higher secondary English medium schools have more mean score (M=7.10) when compared to the Tamil medium schools. (M=5.84).

6. There exists no significant difference in classroom physiological climate of higher secondary students with respect to gender.

7. There exists no significant difference in classroom physiological climate of higher secondary students with respect to the type of school.

8. There exists a significant difference in classroom physiological climate of higher secondary students with respect to the type of management of school. However, among these groups, each group students significantly differed among themselves. The private school students have more mean score (M=21.49) when compared to government aided school (M=15.67) and government school students (M=12.22).

9. There is a significant difference noted in physiological climate of higher secondary schools with respect to locality. In this case, the higher secondary urban schools students have more mean score (M=19.44) when compared to the rural higher secondary schools students (M=13.28).
10. There is significant difference noted in physiological climate of higher secondary schools with respect to the medium of instruction. In this case, the higher secondary English medium school students have more mean score ($M=18.59$) when compared to the Tamil medium schools students ($M=14.98$).

11. There exists no significant difference in overall classroom climate of higher secondary students with respect to gender.

12. There exists no significant difference in overall classroom climate of higher secondary students with respect to the type of school.

13. There exists significant difference in overall classroom climate of higher secondary students with respect to the type of management of school. However, among these groups, each group students are significantly differed among themselves. The private school students have more mean score ($M=29.50$) when compared to government aided school ($M=21.93$) and government school students ($M=17.02$).

14. There is significant difference noted in overall classroom climate of higher secondary schools with respect to locality. In this case, the higher secondary urban schools students have more mean score ($M=26.83$) when compared to the rural higher secondary schools students ($M=18.53$).

15. There is a significant difference noted in overall classroom climate of higher secondary schools with respect to the medium of instruction. In this case, the higher secondary English medium schools have more mean score ($M=25.69$) when compared to the Tamil medium schools ($M=20.82$).

16. There exists no significant difference in academic achievement of higher secondary students with respect to gender.

17. There exists no significant difference in academic achievement of higher secondary students with respect to the type of school.

18. It is noted that there exists significant difference in academic achievement of higher secondary students with respect to the type of management of school at 0.05 level. However, among these groups, each group students
are significantly differed among themselves. The private school students have more mean score (M=29.50) when compared to government aided school (M=21.93) and government school students (M=17.02).

19. There is significant difference noted in academic achievement of higher secondary schools with respect to locality. In this case, the higher secondary urban schools students have more mean score (M=26.83) when compared to the rural higher secondary schools students (M=18.53).

20. There is significant difference noted in academic achievement of higher secondary schools with respect to the medium of instruction. In this case, the higher secondary English medium students have more mean score (M=25.69) when compared to the Tamil medium students (M=20.82).

III Associational Analysis

Associational analysis indicates the following findings:

1. There is no significant association between the students’ gender and the level of classroom climate of higher secondary schools. Based on the mean scores, 28.9% of male students with low level of classroom climate and 26.3% of the male students with high level of classroom climate; 28.6% of female students with low level of classroom climate and 28.6 % of female students with high level of classroom climate. From the above table, it is inferred that there is no significant association between the type of school and the level of classroom climate of higher secondary schools at 0.05 level. Based on the mean scores, 28.0% of boys schools with low level of classroom climate and 28.0% of boys schools with high level of classroom climate; 28.6% of girls schools with low level of classroom climate and 28.6 % of girls schools with high level of classroom climate; 29.8% of co-education schools with low level of classroom climate and 28.2% of co-education schools with high level of classroom climate are brought about.
2. There exists significant association between the type of management and the level of classroom climate of higher secondary schools. Based on the mean scores, 50.4% of government schools with low level of classroom climate and only 3.9% of government schools with high level of classroom climate; 33.1% of government aided schools with low level of classroom climate and 21.5% of government aided schools with high level of classroom climate; 5.0% of private schools with low level of classroom climate and 54.6% of private schools with high level of classroom climate are brought about.

3. There exists significant association between the locality and the level of classroom climate of higher secondary schools. Based on the mean scores, 46.2% of rural schools with low level of classroom climate and only 9.8% of rural schools with high level of classroom climate; 13.9% of urban schools with low level of classroom climate and 42.6% of urban schools with high level of classroom climate are brought about.

4. There exists significant association between the medium of instruction and the level of classroom climate of higher secondary schools. Based on the mean scores, 31.8% of Tamil medium schools with low level of classroom climate and 19.1% of Tamil medium schools with high level of classroom climate; 25.0% of English medium schools with low level of classroom climate and 37.8% of English medium schools with high level of classroom climate are found out.

5. There is no significant association between respect to the gender and the academic achievement of higher secondary schools. Based on the mean scores, 27.4% of male students with low level of academic achievement and 25.3% of male students with high level of academic achievement; 28.6% of female students with low level of academic achievement and 26.2% of female students with high level of academic achievement are found out.
6. There exists significant association between the type of school and the academic achievement of higher secondary schools. Based on the mean scores, 30.5% of boys schools with low level of academic achievement and 21.2% of boy's schools with high level of academic achievement; 26.7% of girl's schools with low level of academic achievement and 26.1% of girl's schools with high level of academic achievement; 27.3% of co-education schools with low level of academic achievement and 29.8% of co-education schools with high level of academic achievement are noticed.

7. There exists significant association between the type of management and the academic achievement of higher secondary schools. Based on the mean scores, 38.8% of government schools with low level of academic achievement and 17.8% of government schools with high level of academic achievement; 30.8% of government aided schools with low level of academic achievement and 25.4% of government aided schools with high level of academic achievement; 15.6% of private schools with low level of academic achievement and 33.3% of private schools with high level of academic achievement are noticed.

8. There exists significant association between the locality and the academic achievement of higher secondary schools. Based on the mean scores, 38.6% of rural schools with low level of academic achievement and 18.5% of rural schools with high level of academic achievement; 19.0% of urban schools with low level of academic achievement and 31.9% of urban schools with high level of academic achievement are found out.

9. There exists significant association between the medium of instruction and the academic achievement of higher secondary schools. Based on the mean scores, 37.7% of Tamil medium students with low level of academic achievement and 24.1% of Tamil medium students with high level of academic achievement; 16.1% of English medium students with low level of academic achievement and 27.8% of English medium students with high level of academic achievement are noticed.
10. There exists significant association between the level of classroom climate and the level of academic achievement of higher secondary schools. Based on the mean scores, 49.6% of schools have low level of classroom climate with low level of academic achievement and only 9.6% of the schools have low level of classroom climate with high level of academic achievement; 11.8% of schools have high level of classroom climate with low level of academic achievement and 46.4% of schools have high level of classroom climate with high level of academic achievement are noted.

IV Correlational Analysis

Correlation analysis indicates the following findings:

There exists significant positive high level \( r=0.710 \) of correlation between physical climate and physiological climate of higher secondary schools. Further, significant positive high level of correlation \( r=0.856 \) is noted between the physical climate and overall classroom climate of higher secondary schools. And significant marked level of correlation \( r=0.379 \) is noted between physical climate and academic achievement in percentage of higher secondary schools. It is observed that there exists significant high level \( r=0.972 \) of positive correlation between physiological climate and overall classroom climate. Further, significant positive marked level of correlation \( r=0.436 \) is noted between the physiological climate and academic achievement in percentage. In addition to this, significant substantial level \( r=0.447 \) of positive correlation exists between overall classroom climate and academic achievement of higher secondary schools.

V Regression Analysis

Regression analysis reveals the following findings:

The multiple regression is 0.447 measures the degree of relationship between the actual values and the predicted values of students' academic achievement. Because the predicted values are obtained as a linear combination of physical climate \( X_1 \) and physiological climate \( X_2 \), the coefficient value of 0.447 indicates the existence of relationship between students' academic achievement as a dependent variable and the other two independent variables is
quite strong and positive. The Coefficient of Determination R-square measures the
goodness-of-fit of the estimated Sample Regression Plane (SRP) in terms of the
proportion of the variation in the dependent variables explained by the fitted
sample regression equation. Thus, the value of R square is 0.200 simply means
that about 20.0% of the variation in students academic achievement is explained
by the estimated SRP that uses the two independent variables and R square value
is significant at 0.05 level. Even though almost both the two independent variables
contribute to Academic Achievement of higher secondary students, only the
physiological climate (X2) contributes more for student’s academic achievement.
Since the coefficient of X2 is 0.335 represents the partial effect of physiological
climate (X2) on student’s academic achievement, holding other variable as
constant. The estimated positive sign implies that such effect is positive on
student’s academic achievement score would increase by 0.335 for every unit
increase in physiological climate (X2) and this coefficient value is significant at
0.05 level.

5.18 EDUCATIONAL IMPLICATIONS

On the basis of the present study, the researcher would like to highlight the
following educational implications and recommendations. The higher secondary
students have expressed moderate level of classroom climate. Frequent teachers
meeting may be organised by the school authorities for not only to educate their
role in the academic affair of their pupils, but also to dedicate their time and
energy in bringing up the children. Further, teachers need to be sensitized on the
importance of teachers influence in all activities and behavioural patterns of the
students, especially at the higher secondary level. In educational institutions, right
from the primary level of education, students should be given more exposure on
the importance of science to human being and its applications in the day-to-day
life. Hence, curricular and co-curricular activities should be arranged by the
educational institutions to enable the students to develop more interest, aptitude
and attitude in science. The students of higher secondary stage should be made to
realize the importance of achievement in their study, which determines their future
career. As English medium influences the academic achievement in biology,
resource books and other materials related to science subjects need to be brought
out in other languages and also made available to students’ access and usage.
Organising science related exhibitions and field visits to rural area students is of great help to them to take active part in science learning. The government schools and government aided schools should be provided with all necessary infrastructure and instructional facilities to facilitate students learning more concrete. The government and government aided higher secondary students need to be motivated to develop healthy academic competition on par with unaided private school students. The students from rural background should be given all necessary information and counselling with regard to the educational opportunities and financial schemes available and thereby drop out of students from the schools can be avoided.

5.19 SUGGESTIONS FOR FURTHER RESEARCH

The following are the suggestions for further research:

1. As the present study involves only two research variables and five background variables, some more research variables and background variables may be included for further study.
2. This study may be done in other science subjects of higher secondary stage.
3. Similar study may be undertaken in all other subjects of higher secondary stage.
4. This study may be extended to other districts of Tamilnadu.
5. The present study limits the sample size into four hundred higher secondary students. It may be done to a large number of students.

5.20 CONCLUSION

The investigator has drawn the following conclusions based on the present study. The study reveals the moderate level of classroom climate and achievement in biology of higher secondary students. The moderate level of classroom climate in higher secondary schools indicates poor or lack of facilities, unqualified and inexperienced staff, and vicious school authorities. Similarly the higher secondary students moderate level of academic performance in biology shows their poor academic participation and less importance given for the plus one (+1) academic score except promoting them to plus two (+2). Further, the study shows the
influence of medium on academic achievement in biology. This may be due to the recent resources related to science subjects available in English. The students hailing from urban area are getting more academic achievement in biology as compared to their counterpart. This is because of the exposure and competitive spirit of the students ensures all sorts of academic support from their family, friends and school. The unaided private higher secondary school students have edged over other students in classroom climate, and achievement in biology. This is because of the adequate resources available in the school; frequent interaction between the school authorities and parents, academic resources created and used in the schools; and also the constant drill to prepare them for good academic performance. Significant association is noted among the higher secondary students’ in classroom climate and academic achievement in biology. Similarly, the correlation analysis also indicates the existence of positive relationship between the classroom climate and academic achievement in biology. This leads to the inference that classroom is the foundation for the academic excellence of the children. However, among the independent variables of the study, medium of instruction and type of management of the school predicts the academic achievement in biology of the higher secondary students. Thus, the present study highlights the importance of classroom climate for the academic success of the children and also the close relationship between the classroom climate and academic achievement in biology at the higher secondary level.