Chapter IV
Methodology

4.0. Introduction:

Research is a systematic attempt for gaining new knowledge through scientific procedure. The problem taken for present study is - A Comparative Study on Environmental Awareness among Assamese and English medium Secondary School Teachers and Students in Jorhat district of Assam and their Attitudes towards Environmental Education. It is a hard task for an investigator to find out a conclusion without an appropriate method of research. Only an appropriate method of research can help an investigator to solve the chosen problem. There are various steps and plans which can help a researcher in solving a problem in a scientific way viz. selection of the problem, definition of the terms use in the problem, the tools used for data collection, analysis, and interpretation.

An educational research is a scientific and logical process on educational problems. Simultaneously it is also an investigation that has clearly defined parameters. It is a process consisting of critical, controlled and empirical investigation. It has been found from the various previous studies that Qualitative, Quantitative and Action Research are the approaches of research generally used in the field of education. For the present study, Quantitative approach of research has been chosen. This approach of research is used in experimental researches, survey studies and correlative studies. The present study focuses on the environmental awareness and attitude of the teachers and students of Assamese and English medium secondary schools, their attitude towards environmental education and its relationship with their teaching experience, educational
background, settlement and sex of the teachers and the socio-economic status, academic achievement, settlement, sex of the students.

The study comes under the preview of normative survey method of research. The term normative survey is used for the type of research, where a specific or typical conclusion or practice in present situation is estimated. Survey refers to an assessment for which standardized tools are used to collect data from the selected sample.

4.1 (A) Selection of Sample

The primary purpose of a research is to discover the principles that have universal application. It may not be possible for an investigator to study a whole population for some populations are so large that their characteristics can’t be measured. It may so happen that the population would change before the measurement is completed. The term population refers to any specific group of human beings or objects, educational institutions, time units, geographical areas, individual etc. Fortunately, the process of sampling makes it possible to draw valid inferences or generalizations on the basis of careful observation of variables within a relatively small proportion of the population. A sample is a small proportion of a population selected for observation and analysis. It is accepted by the experts that it is impossible for a research student to collect the data from each and every individual of a population. Therefore, sampling is the only way to make certain inferences about the characteristics of the population from which it is drawn.

In the present study, a sample was selected from the secondary schools of Assamese and English medium in the district of Jorhat, Assam. A sample of 240 teachers and 400 students was selected by adopting the random sampling techniques. Further, selected sample was divided into two segments of 120 teachers and 200 students. Here, each segment consists of teachers and students of the secondary schools of Assamese and
English medium in the district of Jorhat, Assam. Equal representation of teachers and students has been ensured for sex, medium and settlement in both the secondary schools of Assamese and English medium in the district of Jorhat, Assam.

Table 15: Distribution of the Sample Students.

<table>
<thead>
<tr>
<th>Category</th>
<th>STUDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>400</td>
</tr>
<tr>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Assamese (200)</td>
<td></td>
</tr>
<tr>
<td>English (200)</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male (100)</td>
<td></td>
</tr>
<tr>
<td>Female (100)</td>
<td></td>
</tr>
<tr>
<td>Male (100)</td>
<td></td>
</tr>
<tr>
<td>Female (100)</td>
<td></td>
</tr>
<tr>
<td>Achievement</td>
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<tr>
<td>H I O G H</td>
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<td>H I O G H</td>
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<td>H I O G H</td>
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</tr>
<tr>
<td>H I O G H</td>
<td></td>
</tr>
<tr>
<td>Socio-economic</td>
<td></td>
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<tr>
<td>Status</td>
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</tr>
<tr>
<td>H I O G H</td>
<td></td>
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<tr>
<td>H I O G H</td>
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<td>H I O G H</td>
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<tr>
<td>H I O G H</td>
<td></td>
</tr>
<tr>
<td>Settlement</td>
<td></td>
</tr>
<tr>
<td>Rural/Urban</td>
<td></td>
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<tr>
<td>Rural/Urban</td>
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Table 16: Distribution of the Sample Teachers.

<table>
<thead>
<tr>
<th>Category</th>
<th>TEACHERS</th>
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<tbody>
<tr>
<td>Sample</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medium</th>
<th>Assamese (120)</th>
<th>English (120)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male (60)</td>
<td>Female (60)</td>
</tr>
<tr>
<td>Teaching</td>
<td>H</td>
<td>L</td>
</tr>
<tr>
<td>Experience</td>
<td>I</td>
<td>O</td>
</tr>
<tr>
<td>G</td>
<td>W</td>
<td>G</td>
</tr>
<tr>
<td>Academic</td>
<td>H</td>
<td>L</td>
</tr>
<tr>
<td>Qualification</td>
<td>I</td>
<td>O</td>
</tr>
<tr>
<td>G</td>
<td>W</td>
<td>G</td>
</tr>
<tr>
<td>Settlement</td>
<td>Rural/Urban</td>
<td>Rural/Urban</td>
</tr>
</tbody>
</table>

4.1 (B) Selections of Tools:

On the basis of the objectives of the present study following tools were developed:

(a) Environmental awareness scale for the Assamese and English medium secondary school teachers of Jorhat district in Assam.

(b) Environmental awareness scale for the Assamese and English medium secondary school students of Jorhat district in Assam.

(c) Environmental attitude scale for the Assamese and English medium secondary school teachers of Jorhat district in Assam.

(d) Environmental attitude scale for the Assamese and English medium secondary school students of Jorhat district in Assam.
(e) Socio-economic status scale for the Assamese and English medium secondary school students of Jorhat district in Assam.

4.1.1 Environmental Awareness Scale for Assamese and English medium Secondary School Teachers in Jorhat district of Assam:

Environmental Awareness Scale (EAS) was constructed and standardized to measure the environmental awareness of Assamese and English medium Secondary School teachers in Jorhat district of Assam. In this EAS, there were 30 items, comprising of various components e.g. concept of environment, environment and health, environmental pollution, wildlife and environmental laws etc. The items were collected from different sources of environmental study.

The draft consisting of 50 items was given to the subject experts who edited the contents of the draft and the draft was further given to the language experts to examine the language of each statement of the items. EAS developed for teachers was translated into Assamese for the teachers of Assamese medium and the language of this version was examined by the language experts. The verified draft was tried on 50 (25 from Assamese medium and 25 from English medium) teachers to find out the level of item difficulty. The computed item variance showed that 30 items out of 50 ranged from 0.40 to 0.60 of variance. Therefore 30 items were retained in the final draft of the scale. Finally, the Test-Retest method was applied to find out the reliability of the scale and computed value reached at 0.85; it indicated that the scale has reliability at satisfactory level. The investigator ensured the content validity of the scale by seeking the opinions of the content experts. The copy of the scale has been enclosed as an appendix (Appendix III).
4.1.2 Environmental Awareness Scale for Assamese and English medium Secondary School Students in Jorhat district of Assam:

Another Environmental Awareness Scale (EAS) was separately constructed and standardized to measure the environmental awareness among the Assamese and English medium Secondary School students of Jorhat district in Assam. In the students EAS, there were 30 items, comprising of various components e.g. concept of environment, environment and health, environmental pollution, wildlife, environmental laws etc. The items were collected from different sources of environmental study.

The draft consisting of 45 items was given to the subject experts who edited the contents of the draft and the draft was further given to the language experts to examine the language of each statement of the items. EAS developed for students was translated into Assamese for the Assamese medium students and the language of this version was examined by the language experts. The verified draft was tried on 50 (25 from Assamese medium and 25 from English medium) students to find out the level of item difficulty. The computed item variance showed that 30 items out of 45 ranged from 0.50 to 0.70 of variance. Therefore 30 items were retained in the final draft of the scale. Finally, the Test-Retest method was applied to find out the reliability of the scale and computed value reached at 0.85; it had indicated that the scale has reliability at satisfactory level. The investigator ensured the content validity of the scale by seeking the opinions of the content experts. The copy of this scale has been enclosed as an appendix (Appendix I).
4.1.3 Environmental Attitude Scale for Assamese and English medium Secondary School Teachers in Jorhat district of Assam:

A five-point attitude scale was constructed by adopting the steps forwarded by Likert (1932) and standardized to measure the environmental attitude of Assamese and English medium Secondary School teachers in Jorhat district of Assam.

**Step – 1. Collection of Statements and Editing of the Statements:**

The researcher developed 50 statements consisting opinion towards the environmental education. The statements were edited by the subject experts and further they were examined by the language experts. Environmental Attitude Scale developed for teachers was translated into Assamese for the Assamese medium teachers and the language of this version was examined by separate language experts. After the completion of the editing, 35 statements were retained in the first draft of the Environmental Attitude Scale for teachers.

**Step – 2. Try out:**

The first draft of 35 statements was administered to a sample of 56 (28 from Assamese medium and 28 from English medium) teachers of Assamese and English medium secondary schools in the district of Jorhat, Assam. In this scale each statement was followed by five responses such as SA, A, U, D and SD. The respondents were asked to put tick (✓) mark on any one according to his/her willingness. The full form of SA, A, U, D and SD are as given bellow:

- SA = strongly agree.
- A = agree.
- U = Undecided.
- D = disagree.
SD = strongly disagree.

The weightage for the statements was given 4, 3, 2, 1 and 0 points respectively to SA, A, U, D and SD. The minimum score of Assamese and English medium Secondary School Student in this scale could be zero ($35 \times 0 = 35$) and maximum score could be one hundred forty ($35 \times 4 = 140$) only.

**Step – 3. Final Draft:**

The first draft of 35 statements was administered to a sample of 56 (28 from Assamese and 28 from English medium) teachers, where 28 males (14 from Assamese and 14 from English medium) and 28 females (14 from Assamese and 14 from English medium) from different secondary schools in the district of Jorhat, Assam. The scoring work was done according to weightage, which has been reflected in the previous step. As per the procedure cases of higher than 25 percent and lower than 25 percent in terms of attitude score were taken to compute the ‘t’ value of 35 statements. The ‘t’ value of 30 statements were found greater than 1.75, therefore 30 statements were retained in the final draft of the environmental attitude scale which has measured the attitude of Assamese and English medium Secondary School teachers in Jorhat district of Assam. The copy of the scale has been enclosed as an appendix (Appendix IV).

**Step – 4. Reliability and Validity:**

To compute the reliability of the attitude scale developed for Assamese and English medium Secondary School teachers in Jorhat district of Assam; the researcher used the ‘Test-Retest’ method. The co-efficient of reliability came out 0.96 which indicates a quite high amount of reliability of the attitude scale. The content validity was ensured by the content experts. All the sample teachers of Assamese and English medium Secondary School in Jorhat district of Assam attempted the scale with full interest and care.
4.1.4 Environmental Attitude Scale for Assamese and English medium Secondary School Students in Jorhat district of Assam:

Like the attitude scale developed for teachers, a five-point attitude scale was constructed by adopting the steps forwarded by Likert (1932) and standardized to measure the environmental attitude of Assamese and English medium Secondary School students in Jorhat district of Assam.

Step – 1. Collection of Statements and Editing of the Statements:

The researcher developed 55 statements consisting the opinion towards the environmental education. The statements were edited by the subject experts and further it was examined by the language experts. Environmental Attitude Scale developed for students was translated into Assamese for the Assamese medium students and the language of this version was examined by separate language experts. After the completion of the editing, 40 statements were retained in the first draft of the Environmental Attitude Scale for students.

Step – 2. Try out:

The first draft of 40 statements was administered to a sample of 60 (30 from Assamese medium and 30 from English medium) students of secondary schools of English and Assamese medium in the district of Jorhat, Assam. In this scale each statement was followed by five responses such as SA, A, U, D and SD. The respondents were asked to put tick (✓) mark on any one according to his/her willingness. The full form of SA, A, U, D and SD are as given below:

SA = strongly agree.
A = agree.
U = Undecided.
D = disagree.
SD = strongly disagree.

The weightage for the statements was given 4, 3, 2, 1 and 0 points respectively to SA, A, U, D and SD. The minimum score of a student of secondary schools of Assamese and English medium in this scale could be zero \((40 \times 0 = 0)\) and maximum score could be one hundred sixty \((40 \times 4 = 160)\) only.

**Step – 3. Final Draft:**

The first draft of 40 statements was administered to a sample of 60 (30 from Assamese and 30 from English medium) students, where 30 males (15 from Assamese and 15 from English medium) and 30 females (15 from Assamese and 15 from English medium) from different secondary schools in the district of Jorhat, Assam. The scoring work was done according to weightage, which has been reflected in the previous step. As per the procedure cases of higher than 25 percent and lower than 25 percent in terms of attitude score were taken to compute the ‘t’ value of 40 statements. The ‘t’ value of 30 statements were found greater than 1.75, therefore 30 statements were retained in the final draft of the environmental attitude scale which has measured the attitude of Assamese and English medium Secondary School students in Jorhat district of Assam. The copy of the scale has been enclosed as an appendix (Appendix II)

**Step – 4. Reliability and Validity:**

To compute the reliability of the attitude scale developed for Assamese and English medium Secondary School students in Jorhat district of Assam, the researcher used the ‘Test-Retest’ method. The co-efficient of reliability came out 0.95 which indicates a quite high amount of reliability of the attitude scale. The content validity was censured by the content experts. All the sample students of Assamese and English
medium Secondary School in Jorhat district of Assam attempted the scale with full interest and care.

4.1.5. Socio-economic Status Scale for Assamese and English medium Secondary School students in Jorhat district of Assam:

To measure the socio-economic status of the students studying in Assamese and English medium Secondary Schools in Jorhat district of Assam, the researcher used the socio-economic status scale. This scale was developed on the basis of B. Kupuswamy’s socio-economic status scale considering the aspect of life of the students. The whole scale was divided into nine segments e.g. Educational Qualification, Occupation, Income etc.

Segment – 1. Educational Qualification:

Father/mother/guardian according to his/her educational qualification was divided into six categories – (i) Illiterate (ii) Class I-IV (iii) Class V- VII (iv) Class VIII -HSLC (v) HSLC- Graduate (vi) Graduate to post-graduate etc. and weightage was given 0, 2, 4, 6, 8 and 10 respectively to each category.

Segment – 2. Occupation:

Father/mother/guardian according to his/her occupation was divided into six categories – (i) Class I service (ii) Class II service (iii) Class III service (iv) Businessman and (v) Farmers (vi) Skilled workers. The weightage to each category of occupation was also given as 9 for Class I service, 8 for Class II service, 7 for Class III service, 6 for businessman and 5-3 for farmers and 2 for skilled workers respectively. Farmers having 10 bighas or more than 10 bighas of cultivating land were given 5 points, farmers having less than 10 bighas but more than 4 bighas of cultivating land were given 4 points and the farmers having less than 4 bighas of cultivating land were given 3 points.
Segment – 3. Family structure:

Families according to their structure were divided into two categories – (i) single family and (ii) joint family; weightage given to each category of family structure was 4 and 2 respectively. In addition to it family on the strength of its members was divided into three categories – (i) a family having fewer than 5 members (ii) a family having 5-10 members and (iii) a family having more than 10 members. The weightage given to each category was 2, 4 and 6 respectively.

Segment – 4. Sources of information:

The sources of information were divided into four categories – (i) T.V (ii) Newspaper and (iii) Radio and (iv) Magazine. Weightage given to each category was 5, 4, 3 and 2 respectively.

Segment – 5. Sources of energy:

The sources of energy were divided into three categories – (i) fire wood (ii) Kerosin and (iii) LPG. Weightage given to each category was 1, 2 and 3 respectively.

Segment – 6. Sanitary system:

The sanitary system was divided into three categories – (i) open place (ii) katcha and (iii) pakka. Weightage given to each category was 1, 2 and 3 respectively.

Segment – 7. Transportation facilities:

The transportation facilities in the family was divided into five categories – (i) Cycle (ii) Motorcycle (iii) three wheeler (iv) four wheeler (v) six wheeler. Weightage given to each category was 2, 4, 6, 8 and 10 respectively.

Segment – 8. Live-stock:

The live-stocks in the family were divided into six categories – (i) Cow (ii) Buffalo (iii) Goat (iv) Hen (v) Duck (vi) others. Weightage given to each category of live-stocks in the family was 6, 5, 4, 3, 2 and 1 respectively.
Segment – 9. Income:

On the basis of the total income of the family it was categories into four groups i.e. (i) Family having the income less than 5000/- per month, (ii) Family having the income more than 5000/- but less than 10,000/- per month (iii) Family having the income more than 10,000/- but less than 15,000/- per month and (iv) Family having the income more than 15,000/- per month. Weightage given to each group was 1, 2, 3 and 4 respectively.

4.2 Administration of Tools:

After the completion of selection of sample and preparation of tools, the researcher had to proceed for collection of data. In the first step of research, the investigator communicated with the Headmaster/Headmistress/Principal of the selected Assamese and English medium Secondary Schools in Jorhat district of Assam through the Inspector of Schools, Jorhat District Circle for effective co-operation and smooth participation of the teachers and students for conducting the proposed research. With the approval of the Inspector of Schools, Jorhat District Circle; the investigator visited about 10% of the total number of schools in the district and during the time of visit equal emphasis was given to rural and urban area of the district.

The investigator collected data from the students and teachers of 34 Assamese medium Secondary Schools and 8 English medium Secondary Schools in Jorhat district of Assam. During the time of administrating the scales, the investigator took every care so that the teachers and students did not find any difficulty in attempting the tools. The investigator visited the sample schools himself and administered personally the conducting of the test of the Environmental Awareness Scale, Environmental Attitude Scale and Socio-economic Status Scale among the teachers and students.
Before going to distribute the environmental awareness scale among the teachers and students, the investigator explained to them the procedure of attempting the scale with a few examples. It being completed, the teachers and students were asked to follow the instruction mentioned in the scale. They were earnestly advised to try their level best to attempt all the questions of the scale in half an hour. It was found that half an hour time is sufficient for the teachers and students to complete the test. Teachers and students completed the test within the stipulated time.

After a gap of 10 minutes, the teachers and students were given instructions about the attitude scale. This scale is used to measure the attitude to environmental education. The investigator explained to the teachers and students the procedure of attempting the scale with example. When the system was clear to them, they were requested to proceed for the next step. They were requested to give their responses in half an hour by going through each statements of the attitude scale. Teachers and students completed the test within the stipulated time.

After a gap of an hour, the investigator administered the socio-economic status scale among the students only. They were given an hour to complete the task.

In this way, the investigator visited all the selected schools and collected the data from the sample teachers and students.

4.3. Scoring Procedures:

(i) Environmental Awareness Scale for students and teachers:

The investigator developed the scoring keys for the Environmental Awareness Scale of teachers and students. Weightage determined for the correct response was 4. The maximum highest score fixed for both scales was 120 and the lowest score was 0.
(ii) Socio-economic Status Scale for students:

The socio-economic status scale was divided into nine segments and each segment has different items. The details of the weightage given to each item are as follows:

**Segment – 1. Educational Qualification:**

Father/mother/guardian according to his/her educational qualification was divided into six categories – (i) Illiterate (ii) Class I-IV (iii) Class V- VII (iv) Class VIII -HSLC (v) HSLC- Graduate (vi) Graduate to post-graduate etc. and weightage was given 0, 2, 4, 6, 8 and 10 respectively to each category.

**Segment – 2. Occupation:**

Father/mother/guardian according to his/her occupation was divided into six categories – (i) Class I service (ii) Class II service (iii) Class III service (iv) Businessman and (v) Farmers (vi) Skilled workers. The weightage to each category of occupation was also given as 9 for Class I service, 8 for Class II service, 7 for Class III service, 6 for businessman and 5-3 for farmers and 2 for skilled workers respectively. Farmers having 10 bighas or more than 10 bighas of cultivating land were given 5 points, farmers having less than 10 bighas but more than 4 bighas of cultivating land were given 4 points and the farmers having less than 4 bighas of cultivating land were given 3 points.

**Segment – 3. Family structure:**

Families according to their structure were divided into two categories– (i) single family and (ii) joint family, weightage given to each category of family structure was 4 and 2 respectively. In addition to it family on the strength of its members also was divided into three categories – (i) a family having fewer than 5 members (ii) a family having 5-10 members and (iii) a family having more than 10 members. The weightage given to each category was 2, 4 and 6 respectively.
Segment – 4. Sources of information:

The sources of information were divided into four categories – (i) T.V (ii) Newspaper (iii) Radio and (iv) Magazine. Weightage given to each category was 5, 4, 3 and 2 respectively.

Segment – 5. Sources of energy:

The sources of energy were divided into three categories – (i) fire wood (ii) Kerosin and (iii) LPG. Weightage given to each category was 1, 2 and 3 respectively.

Segment – 6. Sanitary system:

The sanitary system was divided into three categories – (i) open place (ii) katcha and (iii) pukka. Weightage given to each category of sanitary system was 1, 2 and 3 respectively.

Segment – 7. Transportation facilities:

The transportation facilities in the family were divided into five categories – (i) Cycle (ii) Motorcycle (iii) three wheeler (iv) four wheeler (v) six wheeler. Weightage given to each category of transportation facilities was 2, 4, 6, 8 and 10 respectively.

Segment – 8. Live-stock:

The live-stocks in the family were divided into six categories – (i) Cow (ii) Buffalo (iii) Goat (iv) Hen (v) Duck (vi) others. Weightage given to each category of live-stocks in the family was 6, 5, 4, 3, 2 and 1 respectively.

Segment – 9. Income:

On the basis of the total income of the family it was categorized into four i.e. (i) a family having the income less than 5000/- per month, (ii) a family having the income more than 5000/- but less than 10,000/- per month, (iii) a family having the income more than 10,000/- but less than 15,000/- per month and (iv) a family having the income more than 15,000/- per month. Weightage given to each group was 1, 2, 3 and 4 respectively.
By following above mentioned weightage, the investigator did the scoring of the socio-economic status of the students.

4.4 **Tabulation and Organization of Data:**

The raw scores of 400 students on Socio-economic status have been taken into consideration for preparing the frequency table to find out the high and low Socio-economic status of the Assamese and English medium Secondary School students in Jorhat district of Assam.

<table>
<thead>
<tr>
<th>Class interval</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 – 129</td>
<td>4</td>
</tr>
<tr>
<td>110 – 119</td>
<td>6</td>
</tr>
<tr>
<td>100 – 109</td>
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<td>50 – 59</td>
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<td>40 – 49</td>
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<td>30 – 39</td>
<td>22</td>
</tr>
<tr>
<td>20 – 29</td>
<td>18</td>
</tr>
</tbody>
</table>
Calculation made to find out the 33rd and 66th percentile of the Assamese and English medium Secondary School students in Jorhat district of Assam relating to their socio-economic status is as follows:-

\[ P_p = l + \left( \frac{pN-F}{f_p} \right) \times i \]

\[ P_{33} = 59.5 + \left( \frac{132-52}{106} \right) \times 10 \]

\[ = 59.5 + \left( \frac{80}{106} \right) \times 10 \]

\[ = 59.5 + 7.547 \]

\[ = 59.5 + 7.55 \]

\[ = 67.05 \]

\[ = 67 \]

33rd percentile \[ = 67.05 \]

\[ = 67 \text{ and below low.} \]

\[ P_p = l + \left( \frac{pN-F}{f_p} \right) \times i \]

\[ P_{66} = 69.5 + \left( \frac{264-132}{158} \right) \times 10 \]

\[ = 69.5 + \left( \frac{132}{158} \right) \times 10 \]

\[ = 69.5 + 8.35 \]
66th percentile  = 77.85
= 78 and above high.

4.5. Academic Achievement:

The raw scores of 400 students on Academic achievement have been taken into consideration for preparing the frequency table to find out the high and low Academic achievement of Assamese and English medium Secondary School students in Jorhat district of Assam.

<table>
<thead>
<tr>
<th>Class Interval</th>
<th>Frequency</th>
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<tbody>
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<td>80 – 84</td>
<td>2</td>
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<tr>
<td>75 – 79</td>
<td>4</td>
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<tr>
<td>70 – 74</td>
<td>6</td>
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<td>65 – 69</td>
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<td>60 – 64</td>
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<tr>
<td>55 – 59</td>
<td>276</td>
</tr>
<tr>
<td>50 – 54</td>
<td>30</td>
</tr>
<tr>
<td>45 – 49</td>
<td>18</td>
</tr>
<tr>
<td>40 – 44</td>
<td>12</td>
</tr>
</tbody>
</table>
Calculation made to find out the 33rd and 66th percentile of Assamese and English medium Secondary School students Jorhat district of Assam relating to their Academic achievement is as follows:-

\[ P_p = l + \left( \frac{pN-F}{f_p} \right) \times i \]

\[ P_{33} = 54.5 + \left( \frac{132-70}{276} \right) \times 5 \]

\[ = 54.5 + \left( \frac{63}{276} \right) \times 5 \]

\[ = 54.5 + \frac{315}{276} \]

\[ = 54.5 + 1.14 \]

\[ = 55.64 \]

\[ 33^{rd} \text{ percentile} = 55.64 \]

\[ = 56 \text{ and below low.} \]

\[ P_p = l + \left( \frac{pN-F}{f_p} \right) \times i \]

\[ P_{66} = 54.5 + \left( \frac{254-70}{276} \right) \times 5 \]

\[ = 54.5 + \left( \frac{184}{276} \right) \times 5 \]

\[ = 54.5 + \frac{920}{276} \]

\[ 192 \]
\[
\begin{align*}
= 54.5 + 3.33 \\
= 57.83 \\
= 58
\end{align*}
\]

\[66^{\text{th}} \text{ percentile} = 57.83\]

\[= 58 \text{ and above high.}\]

### 4.6. Teaching Experience:

The raw scores of 240 teachers on Teaching Experience have been taken into consideration for preparing the frequency table to find out the high and low Teaching Experience of Assamese and English medium Secondary School teachers in Jorhat district of Assam.

<table>
<thead>
<tr>
<th>Class interval</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 – 27</td>
<td>6</td>
</tr>
<tr>
<td>22 – 24</td>
<td>16</td>
</tr>
<tr>
<td>19 – 21</td>
<td>30</td>
</tr>
<tr>
<td>16 – 18</td>
<td>70</td>
</tr>
<tr>
<td>13 – 15</td>
<td>82</td>
</tr>
<tr>
<td>10 – 12</td>
<td>12</td>
</tr>
<tr>
<td>7 – 9</td>
<td>10</td>
</tr>
<tr>
<td>4 – 6</td>
<td>8</td>
</tr>
<tr>
<td>1 – 3</td>
<td>6</td>
</tr>
</tbody>
</table>
Calculation made to find out the 33rd and 66th percentile Assamese and English medium Secondary School teachers in Jorhat district of Assam relating to their Teaching Experience is as follows:

\[ P_p = l + \left( \frac{pN-F}{f_p} \right) \times i \]

\[ P_{33} = 12.5 + \left( \frac{79.2 - 36}{82} \right) \times 3 \]

\[ = 12.5 + \left( \frac{43.2}{82} \right) \times 3 \]

\[ = 12.5 + \frac{129.6}{82} \]

\[ = 12.5 + 1.58 \]

\[ = 14.08 \]

\[ = 14 \]

33rd percentile \( = 14.08 \)

= 14 and below low.

\[ P_p = l + \left( \frac{pN-F}{f_p} \right) \times i \]

\[ P_{66} = 15.5 + \left( \frac{158.4 - 118}{70} \right) \times 3 \]

\[ = 15.5 + \left( \frac{40.4}{70} \right) \times 3 \]

\[ = 15.5 + \frac{121.2}{70} \]

\[ = 15.5 + 1.73 \]

\[ = 17.23 \]

\[ = 17 \]

66th percentile \( = 17.23 \)
4.7. Multivariate Categories of Sample Teachers and Students

It was assumed that the awareness and attitude of teachers and students on various phenomena are not identical since the teachers and students of a district comprised of different teaching experience, different educational and ethnic background, academic achievement and medium of teaching-learning i.e. Assamese and English medium. Therefore in order to study any of the differences and influences caused by the said variables the sample teachers and students were categorised as under mentioned.

1) AMSST / ENV. ARS. × EMSST / ENV. ARS.
2) AMSST / ENV. ATT. × EMSST / ENV. ATT.
3) AMSSS / ENV. ARS. × EMSSS / ENV. ARS.
4) AMSES / ENV. ATT. × EMSES / ENV. ATT.
5) AMSST (F) / TX (H) / EDU. QF. / ENV. ARS. × EMSST (M) / TX (H) / EDU. QF. / ENV. ARS.
6) AMSST (F) / TX (L) / EDU. QF. / ENV. ARS. × EMSST (M) / TX (L) / EDU. QF. / ENV. ARS.
7) AMSST (F) / TX (H) / EDU. QF. / ENV. ATT. × EMSST (M) / TX (H) / EDU. QF. / ENV. ATT.
8) AMSST (F) / TX (L) / EDU. QF / ENV. ATT. × EMSST (M) / TX (L) / EDU. QF. / ENV. ATT.
9) AMSSS (F) / AA (H) / SLT. / ENV. ARS. × EMSSS (M) / AA. (H) / SLT. / ENV. ARS.
10) AMSSS (F) / AA (L) / SLT. / ENV. ARS × EMSSS (M) / AA (L) / SLT. / ENV. ARS.
11) AMSSS (F) / AA (H) / SLT. / ENV. ATT. × EMSSS (M) / AA (H) / SLT. / ENV. ATT.
AMSST = Assamese Medium Secondary School Teachers; EMSST = English Medium Secondary School Teachers; ENV. ARS. = Environmental Awareness; ENV. ATT. = Environmental Attitude; AMSST (M) = Assamese Medium Secondary School Male Teachers; AMSST (F) = Assamese Medium Secondary School Female Teachers; EMSST (M) = English Medium Secondary School Male Teachers; EMSST (F) = English Medium Secondary School Female Teachers; AMSSS = Assamese Medium Secondary School Students; EMSSS = English Medium Secondary School Students; AMSSS (M) = Assamese Medium Secondary School Male Students; AMSSS (F) = Assamese Medium Secondary School Female Students; EMSSS (M) = English Medium Secondary School Male Students; EMSSS (F) = English Medium Secondary School Female Students; TX (H) = High Teaching Experiences; TX (L) = Low Teaching Experiences; EDU. QF. = Educational Qualifications; AA (H) = High Academic Achievement; SLT. = Settlement; AA (H) = High Academic Achievement; AA (L) = Low Academic Achievement; SES (H) = High Socio-economic Status; SES (L) = Low Socio-economic Status.