

# Chapter – III

## Methodology and Research Design

### Design and Procedure

This chapter deals with the methodology and procedures used in the present study. Likewise, a description of the population, sample size and procedure of sampling, tools used, method of data collection, techniques of data analysis have been presented. This chapter contains two parts: Part – A subsumes research design, description of the universe and sample, locale of the study, data collection and Part – B comprised of description and development of tools used for the present study.

### PART – A

#### 3.1 Design of the study

The study is based on Ex-post facto research design. It is more convenient to justify the design of the study by highlighting some of the important points of the ex-post-facto research design and later related

with the present application. Ex- post facto designs are suitable in such circumstances where experimental method is not possible. Moreover, in the ex post facto research, control of independent variable is not possible. "Ex-post facto research is that in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependent variable or variables. The researcher is thus examining retrospectively the effects of a naturally occurring event on a subsequent outcome with view to establishing a causal link between them (Kerlinger, 1970)".

Landman (1988, p. 62) defined "The term 'ex-post' facto is used to refer to an experiment in which the researcher, rather than creating the treatment, examines the effect of a naturally occurring treatment after it has occurred. In other words, it is a study that attempts to discover the pre-existing casual conditions between groups."

According to Best & Khan (2006, p. 133), "What factors seem to be associated with certain occurrences, outcomes, conditions or types of behaviours? Because it is often impracticable or unethical to arrange occurrences, an analysis of the past events or of already existing conditions may be the only feasible way to study causation. This type of research is usually referred to as ex-post facto or casual-comparative research or, when correlational analyses are used, as correlational research."

Ex-post facto research method refers to those studies which investigate possible cause-and-effect relationships by observing an existing form of affairs and looking back in time for valid causal factors. Therefore, Ex-post facto research design is sometimes called as casual comparative research. Even though it has some weakness, Ex-post facto research is particularly suitable in social science, educational,

psychological contexts where the independent variable or variables lie outside the researcher's control. Ex-post-facto research is a procedure that is intended to transform a non-experimental research design into a pseudo-experimental form (Spector, 1993, p. 42).

The literal meaning of Ex-post facto means 'from what is done after wards'. In the context of social science and educational research the phrase means 'after the fact' or 'retrospectively'. It refers to those studies which investigate feasible cause-and-effect relationships by observing an existing condition and searching back in time for plausible causal factors. Thus, the effect becomes the dependent variable and the probable causes become the independent variable. The investigator has no direct control over such variables. Therefore, Ex-post facto research is conducted in social science and education; it is because many research problems in the social sciences and education do not lend the investigator(s) to do experimental inquiry. In social and educational research the purpose of investigation is an attempt to find out the cause-effect relationship between two or more variables, which can be observed either through experimentation or by Ex-post-facto method. Social science and educational research deals with human behaviour as well as social lives. So, all such cause-effect relationships cannot be investigated by using the experiments. However, in several conditions it is unethical, therefore there is no need for a control group or manipulates the independent variable or variables. It is therefore more suitable to adopt Ex-post facto perspective. In effect, the researcher investigates the factors seemed to be associated with certain occurrences or conditions or aspects of behaviour. It is a method of testing out possible antecedents of events that have happened and cannot be controlled or engineered or manipulated by the investigator (Cooper and Schindler, 2001, p. 136).

In the present study, three variables i.e. family environment, stress, and anxiety were considered as independent variables and academic achievement as dependent variable. It was intended to see the effect of these three independent variables on academic achievement of XI standard students of Jorhat district, Assam. As it was not possible to control all the three independent variables to realize the objectives, the present study followed Ex-post facto research design.

### 3.2 Population and Sample

#### Population

All the secondary school/college students studying in XI standard, Arts Stream of Jorhat district, Assam, constitutes the population of the study.

#### Sample

In the present research, the field of study is Jorhat district of Assam. Jorhat district has three Sub-divisions, i.e., Jorhat, Titabor and Majuli. Out of three sub-divisions, two sub-divisions were selected by the investigator purposively i.e., Jorhat and Titabor. Table 3.1 shows the number of schools/colleges offering Arts subjects in both sub-divisions.

Table 3.1 *Distribution of Sample Institutions*

Jorhat District						
Schools/ Colleges with Arts Stream	Jorhat Sub-division		Titabor Sub-division		Grand Total	
	Total Schools/ Colleges	Schools/ Colleges Selected	Total Schools/ Colleges	Schools/ Colleges Selected	Total Schools/ Colleges	Schools/ Colleges Selected
	24	9 (37.5)	17	6 (35.29)	41	15 (36.59)

\*Figures in Parentheses are percentages

There are 41 schools/colleges with Arts Stream in both sub-divisions. Out of which, 15 (approximately 36%) schools/colleges were selected randomly from Jorhat and Titabor sub-divisions (Annexure – VIII). Table 3.1 shows that out of 24 schools/colleges, nine were selected from Jorhat sub-division which constitute 37.5% and out of 17 schools/colleges, six were selected from Titabor sub-division which is 35.29% of the total schools/colleges. These schools/colleges were selected randomly. All the students enrolled in XI standard of Arts Stream of selected institutions, constitute the sample of the study. Finally, the sample consists of 1200 XI standard students.

### 3.2.1 Sex-wise distribution of the respondents

Table 3.2 shows distribution of respondents by their sex. The sample consists of 1200 secondary students. Out of which, 688 (57.33%) were female and 512 (42.67%) were male.

Table 3.2 *Sex-wise distribution of the respondents*

Jorhat Sub-division			Titabor Sub-division			Grand Total		
Male	Female	Total	Male	Female	Total	Male	Female	Total
298 (46.93)	337 (53.07)	635 (52.92) N=1200	214 (37.88)	351 (62.12)	565 (47.08) N=1200	512 (42.67)	688 (57.33)	1200

\*Figures in Parentheses are percentages

Out of 1200, approximately 53% respondents represents Jorhat sub-division and 47% represents from Titabor sub-division. Among 635 respondents of Jorhat sub-division, 53.07% were female and 46.93% were male. Out of 565 respondents of Titabor sub-division, approximately 62% were female and 38% were male.

### 3.2.2 Sex and Category-wise representation of Sample

Table 3.3 shows sex and category-wise representation of sample. Out of 1200 respondents, approximately 55% belong to OBC/MOBC followed by 27% General, 10% ST and 8% SC. Among 688 female respondents, 57.27% belongs to OBC/MOBC, 26.31% belongs to General, 8.43% belongs to ST and 7.99% belongs to SC category. In case of 512 male respondents, 51.56% belongs to OBC/MOBC followed by 27.54% General, 12.70% ST and 8.20% SC.

Out of 635 respondents of Jorhat sub-division, 50.87% belongs to OBC/MOBC followed by 30.71% General, 9.92% SC and 8.50% ST. Out of 337 female respondents, 53.12% belongs to OBC/MOBC, 31.75% belongs to General, 9.20% belongs to SC and 5.93% belongs to ST category. Among 298 male respondents, 48.32% belongs to OBC/MOBC followed by 29.53% General, 11.41% ST and 10.74% SC.

Out of 565 respondents of Titabor sub-division, 59.29% belongs to OBC/MOBC followed by 22.48% General, 12.21% ST and 6.02% SC. Among 351 female respondents, 61.25% belongs to OBC/MOBC, 21.08% belongs to General, 10.83% belongs to ST and 6.84% SC. Out of 214 male respondents, 56.07% belongs to OBC/MOBC followed by 24.77% General, 14.49% ST and 4.67% SC.

An observation of table 3.3 reflects that the OBC/MOBC representation is proportionately more in the sample which truly represents the population of the district. There are 79.07% General and OBC/MOBC population in Jorhat district followed by 12.81% Scheduled Tribes and 8.12% Scheduled Castes.\* This type of result is observed because of most of the people are belonging to Ahom, Chutiya/

---

\* Source: District Census Handbook, Jorhat, 2011. Series -19, Part XII-B, Published by - Directorate of Census Operations, Assam

Table 3.3 Sex and Category-wise representation of Sample

Sex	Jorhat Sub-division					Titabor Sub-division					Grand Total				
	General	OBC/ MOBC	ST	SC	Total	General	OBC/ MOBC	ST	SC	Total	General	OBC/ MOBC	ST	SC	Total
Male	88 (29.53)	144 (48.32)	34 (11.41)	32 (10.74)	298 (46.93)	53 (24.77)	120 (56.07)	31 (14.49)	10 (4.67)	214 (37.88)	141 (27.54)	264 (51.56)	65 (12.70)	42 (8.20)	512 (42.67)
Female	107 (31.75)	179 (53.12)	20 (5.93)	31 (9.20)	337 (53.07)	74 (21.08)	215 (61.25)	38 (10.83)	24 (6.84)	351 (62.12)	181 (26.31)	394 (57.27)	58 (8.43)	55 (7.99)	688 (57.33)
Total	195 (30.71)	323 (50.87)	54 (8.50)	63 (9.92)	635 (52.92) N=1200	127 (22.48)	335 (59.29)	69 (12.21)	34 (6.02)	565 (47.08) N=1200	322 (26.83)	658 (54.83)	123 (10.25)	97 (8.08)	1200

\*Figures in Parentheses are percentages

Chutia, Choudang, Moran, Matak, Tea garden Labourers and such as all these communities are under OBC/MOBC category.

### 3.2.3 Sex and Religion-wise representation of Sample

Table 3.4 shows sex and religion-wise representation of sample. Out of 1200 respondents, 81.67% were Hindu followed by 10.58% Muslim, 3.83% Christian, 2.25% Buddhist and 1.67% Sikh. Among 688 female respondents, 81.98% were Hindu, 11.19% Muslim, 3.34% Christian, 2.33% Buddhist and only 1.16% Sikh. In case of 512 male respondents, 81.25% were Hindu followed by 9.77% Muslim, 4.49% Christian, 2.34% Sikh and 2.15% Buddhist.

Out of 635 respondents of Jorhat sub-division, 78.58% were Hindu followed by 12.44% Muslim, 4.09% Christian, 2.52% Sikh and 2.36% Buddhist. Among 337 female respondents, 81.60% were Hindu, 11.87% Muslim, 2.67% Christian, 2.08% Sikh, 1.78% Buddhist. Out of 298 male respondents, 75.17% were Hindu followed by 13.09% Muslim, 5.70% Christian, 3.02% each Buddhist and Sikh.

Out of 565 respondents of Titabor sub-division, 85.13% were Hindu followed by 8.50% Muslim, 3.54% Christian, 2.12% Buddhist and 0.71% Sikh. Among 351 female respondents, 82.34% were Hindu, 10.54% Muslim, 3.99% Christian, 2.85% Buddhist and 0.28% Sikh. In case of 241 male respondents, 89.72% were Hindu followed by 5.14% Muslim, 2.80% Christian, 1.40% Sikh and 0.93% Buddhist.

An observation of table 3.4 reflects that majority of the respondents in both the sub-divisions belong to Hindu followed by Muslim, Christian, Buddhist and Sikh.



Table 3.4 Sex and Religion-wise representation of Sample

Sex	Religion of the respondents																	
	Jorhat Sub-division						Titabor Sub-division						Grand Total					
	Hinduism	Islam	Christianity	Buddhism	Sikhism	Total	Hinduism	Islam	Christianity	Buddhism	Sikhism	Total	Hinduism	Islam	Christianity	Buddhism	Sikhism	Total
Male	224 (75.17)	39 (13.09)	17 (5.70)	9 (3.02)	9 (3.02)	298 (46.93)	192 (89.72)	11 (5.14)	6 (2.80)	2 (0.93)	3 (1.40)	214 (37.88)	416 (81.25)	50 (9.77)	23 (4.49)	11 (2.15)	12 (2.34)	512 (42.67)
Female	275 (81.60)	40 (11.87)	9 (2.67)	6 (1.78)	7 (2.08)	337 (53.07)	289 (82.34)	37 (10.54)	14 (3.99)	10 (2.85)	1 (0.28)	351 (62.12)	564 (81.98)	77 (11.19)	23 (3.34)	16 (2.33)	08 (1.16)	688 (57.33)
Total	499 (78.58)	79 (12.44)	26 (4.09)	15 (2.36)	16 (2.52)	635 (52.92) N=1200	481 (85.13)	48 (8.50)	20 (3.54)	12 (2.12)	4 (0.71)	565 (47.08) N=1200	980 (81.67)	127 (10.58)	46 (3.83)	27 (2.25)	20 (1.67)	1200

\*Figures in Parentheses are percentages

### 3.2.4 Representation of Rural/Urban residence of the respondents

Table 3.5 shows the representation of rural/urban residence of the respondents. The sample consists of 69.17% rural and 30.83% urban residents. Out of 688 female respondents, 70.35% were rural and 29.65% were urban residents. Among 512 male respondents, 67.58% were rural and 32.42% were urban residents.

Table 3.5 *Representation of Rural/Urban residence of the respondents*

Sex	Rural/Urban residence								
	Jorhat Sub-division			Titabor Sub-division			Grand Total		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Male	183 (61.41)	115 (38.59)	298 (46.93)	163 (76.17)	51 (23.83)	214 (37.88)	346 (67.58)	166 (32.42)	512 (42.67)
Female	211 (62.61)	126 (37.39)	337 (53.07)	273 (77.78)	78 (22.22)	351 (62.12)	484 (70.35)	204 (29.65)	688 (57.33)
Total	394 (62.05)	241 (37.95)	635 (52.92) N=1200	436 (77.17)	129 (22.83)	565 (47.08) N=1200	830 (69.17)	370 (30.83)	1200

\*Figures in Parentheses are percentages

Out of 636 respondents of Jorhat sub-division, approximately 62% were rural and 38% were urban residents. Among 337 female respondents of this sub-division, 62.61% were rural and 37.39% were urban residents. In case of 298 male respondents, 61.41% were rural and 38.59% were urban residents.

Out of 565 respondents of Titabor sub-division, 77.17% were rural and 22.83% were urban residents. Among 351 female respondents, approximately 78% were rural and 22% were urban residents. Out of

214 male respondents, 76.17% were rural and 23.83% were urban residents.

Overall observation of table 3.5 reflects that majority of the male and female respondents of both the sub-divisions were from rural areas. This kind of result hints the population structure of concerning district.

### **3.2.5 Sex and Type of Family of the representation**

Table 3.6 shows the sex-wise representation of the respondents and the type of family in which they live in. Out of 1200 respondents, 79.67% lives in nuclear family followed by 18% joint family and 2% extended family. Among 688 female respondents, 81.69% lives in nuclear family, 16.72% lives in joint family and only 1.60% lives in extended family. In case of 512 male respondents, 76.95% lives in nuclear family followed by 19.73% joint family and 3.32% extended family.

Out of 635 respondents of Jorhat sub-division, 78.43% lives in nuclear family followed by 19.06% joint and 2.52% extended family. Among 337 female respondents, 81.01% lives in nuclear family, 17.51% lives in joint family and 1.48% lives in extended family. Out of 298 male respondents, 75.50% lives in nuclear family followed by 20.81% joint and 3.69% extended family.

Out of 565 respondents of Titabor sub-division, 81.06% lives in nuclear family followed by 16.81% joint family and 2.12% extended family. Out of 351 female respondents, 82.34% lives in nuclear family, 15.95% lives in joint family and 1.71% lives in extended family. In case of 214 male respondents, approximately 79% lives in nuclear family followed by 18% joint family and 3% extended family.

Table 3.6 Sex and Type of Family of the respondents

Sex	Type of Family											
	Jorhat Sub-division				Titabor Sub-division				Grand Total			
	Nuclear	Joint	Extended	Total	Nuclear	Joint	Extended	Total	Nuclear	Joint	Extended	Total
Male	225 (75.50)	62 (20.81)	11 (3.69)	298 (46.93)	169 (78.97)	39 (18.22)	6 (2.80)	214 (37.88)	394 (76.95)	101 (19.73)	17 (3.32)	512 (42.67)
Female	273 (81.01)	59 (17.51)	5 (1.48)	337 (53.07)	289 (82.34)	56 (15.95)	6 (1.71)	351 (62.12)	562 (81.69)	115 (16.72)	11 (1.60)	688 (57.33)
Total	498 (78.43)	121 (19.06)	16 (2.52)	635 (52.92) N=1200	458 (81.06)	95 (16.81)	12 (2.12)	565 (47.08) N=1200	956 (79.67)	216 (18.00)	28 (2.33)	1200

\*Figures in Parentheses are percentages

Overall observation of table 3.6 reflects that majority of male and female respondents of both the sub-divisions lives in nuclear family. Such representation indicates that nuclear family is most common in Jorhat district than that of joint and extended families.

### 3.2.6 Nature of distribution of Academic Achievement Scores of the respondents

To come across the nature of the distribution of academic achievement of the respondents, the frequency distribution of academic achievement scores was outfitted. Table 3.7 shows the frequency distribution of academic achievement scores of the respondents and its descriptive statistics. The mean, median, mode and standard deviation were computed from the frequency distribution. Likewise, Skewness and Kurtosis were also computed.

The Mean value of academic achievement scores of the respondents is 52.58 with a median of 51.6 and mode of 49.64. The standard deviation of the distribution is 13.5. The value of skewness and kurtosis is .218 and .245 respectively.

Table 3.7 *Frequency distribution of Academic Achievement Scores of the respondents along with other Statistics*

Academic Achievement Scores in term of %	Frequency	Other Statistics
90 – 99	3	N = 1200
80 – 89	60	Mean = 52.58
70 – 79	71	Median = 51.6
60 – 69	176	Mode = 49.64
50 – 59	367	Standard Deviation = 13.5
40 – 49	306	Skewness = .218
30 – 39	217	Kurtosis = .245

Table 3.7 depicts that out of a total 1200 respondent, only 03 respondents achieved 90% above marks in H.S.L.C. Examination, 60 respondents achieved between 80-89% marks, 71 respondents achieved 70-79% marks, 176 respondents achieved 60-69% marks, 367 respondents achieved 50-59% marks, 306 respondents achieved 40% - 49% marks and 217 respondents achieved 30-39% marks in their X class examination.

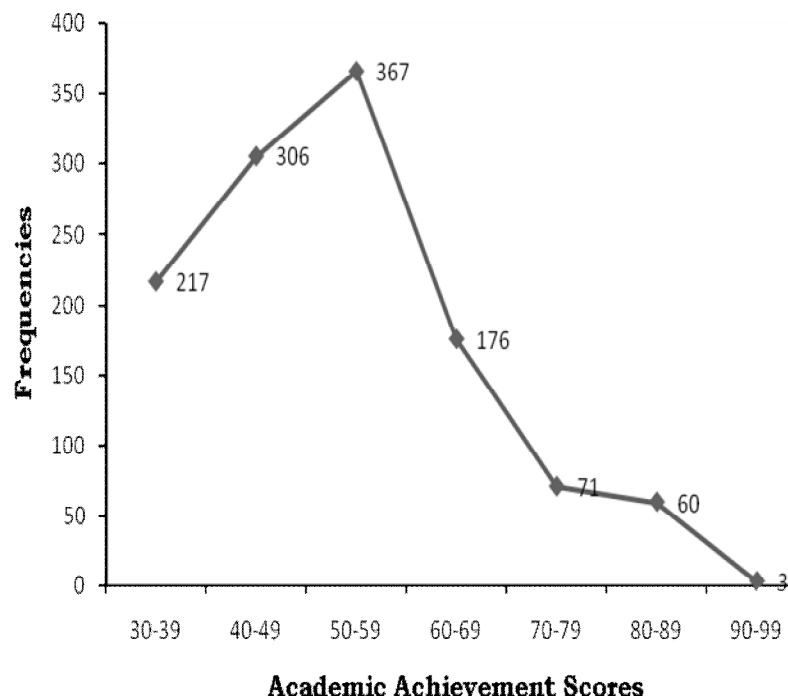


Fig. 3.1 *Frequency polygon of Academic Achievement Scores of the respondents*

Figure 3.1 shows the graphical representation of the frequency polygon of academic achievement scores of the respondents. Skewness is slightly positive and the distribution is almost mesokurtic. Since the value of kurtosis is less than .263, hence this group of distribution is similar with leptokurtic.

### 3.3 Locale of the Study

India has 28 States and 7 Union Territories. It covers an area of 3,287,240 sq. kms. (2.21% of total land area of the world). India is the second largest country on the basis of population which accounts for world's 17.5% (1,210,193,422) population. Out of which the number of male is 623.7 (623,724,248) million and female is 586.5 (586,469,174) million. The population has increased by more than 181 million (17.64%) during the decade 2001 – 2011. The literacy rate of India is 74.04%. The literacy rate among male are 82.14 % followed by female 65.46%. The sex ratio is 940 female against 1000 male population and density is 382 persons per sq. km\*. More than hundred crore resides in 28 states and 7 Union territories. It has a diversified social, cultural and geographical environment which influences the life of the people to a great extent and the problems of different states and union territories are varying from each other, especially the bordering states with international boundaries are facing several typical problems.

North-Eastern region of India consists of eight states i.e. Assam, Arunachal Pradesh, Meghalaya, Nagaland, Manipur, Mizoram, Tripura and Sikkim<sup>1</sup>. The region has highly undulating hilly terrains, covering 263,179 sq. kms., which is about 8% of the total geographical area of the country. North-Eastern region shares the international boundaries with five different countries i.e. Nepal, Bhutan, China, Myanmar and Bangladesh. The total population of North-Eastern states is 45,587,982. Out of which 23,309,165 are male and 22,278,817 are female\*. The region has a predominantly humid sub-tropical climate with hot, humid summer, severe monsoons and mild winters.

---

<sup>1</sup> Sikkim became the member of North East Council in December 2002 after an amendment of the NEC Act 1971.

\* Source: Census of India, 2011

North-Eastern states have shown a decent growth in literacy rate. The ratio of literacy rate of these states highlights better performance over each decade. Mizoram has been placed second position in terms of literacy rate (91.58%) of the country. Only Assam and Arunachal Pradesh with 73.18% and 66.95% are below the national average literacy rate (74.04%)\*. North-East region of India is one of the most ethnically and linguistically diverse regions in Asia. It has strong ethnic character and culture. Each state has its distinct culture and tradition. The region is known for its handicrafts, martial arts, natural resources and treasure of flora and fauna. But, this region has several burning problems viz. insurgency, unemployment, lack of infrastructure etc. The people of North-East India belong to different Communities i.e. Assamese, Adivasi, Bengali, Bodo, Bishnupriya, Manipuri, Chakma, Dimasa, Garo, Hmar, Karbi, Khasi, Kuki, Koch Rajbongshi, Mishing, Meitei, Mizo, Naga, Nepali, Purvottar Maithili, Rabha, Sylheti, Tiwa, Tripuri, Zeme Naga etc.

Assam is situated in the north-east corner of India which is Located between 24°10'N to 27°58'N Latitude and 89°49'E to 97°26'E Longitude. The state is spread over 78, 438 sq. km. (2.39% of the total land areas of the country) with the population of 31,205,576 persons. Out of which 15,939,443 (51.08%) are male and 15,266,133 (48.92%) are female. Moreover, 85.90% people lives in rural area whereas only 14.10% people lives in urban area. The density of the state is 398 persons per sq. km., while the sex ratio of the state is 958 females against 1000 male population\*.

Assam has 27 districts with two international and six state boundaries. Geographically, Assam may conveniently be divided into two

---

\* Source: Census of India, 2011



parts viz. the plane and the hills. There are various ethnic, linguistic, communities and even religious differentiation within the state. The Capital of Assam is the Gateway of North-Eastern states of India which is also the centre of educational institutions. The literacy rate of the state is 73.18 percent (Male-78.81% & Female-67.27%); while the literacy rate of rural and urban population is 70.44% and 88.88% respectively\*.

Jorhat is one of the important districts of Upper Assam, which is situated at 27.35°N to 26.30°N Latitude and 93.45°E to 94.30°E Longitude. The district is surrounded by Sivasagar in the East, Golaghat in the West, Lakhimpur in the North, Wokha and Mokokchung districts of Nagaland State in the South East. Before 1983, Jorhat was a sub-division of undivided Sibsagar District of Assam. In 1983 it was carved out of Sibsagar District and made a separate district. At present, Jorhat District is spread over 2,851 sq. km. (Rural 2758.82 and Urban 92.18 sq. km.) and it is divided into three Sub-Divisions viz. Jorhat, Majuli and Titabor. It includes six revenue circles, eight development blocks and six tehsils. Six tehsils are Jorhat East, Jorhat West, Titabor, Teok, Mariani and Majuli. The population of Jorhat district is 1,092,256 persons (3.50 percent of total Population of Assam) and having 556,805 (50.98%) male and 535,451 (49.02%) female. The density of population of this district is 383 persons per sq. km. Jorhat is mainly dominant by the rural population, approximately 80% resides in rural areas. The sex ratio of the district is 962 female against 1000 male population\*. The population comprises predominantly Hindus and Muslims. The climate is warm and moist.

---

\* Source: Census of India, 2011  
District Census Handbook, Jorhat. Series -19, Part – XII –B, Published by –  
Directorate of Census Operations, Assam

Jorhat was the last capital of the *Ahom* kings; it was also the *sadar* station of the district during the early British days. The name of the district signifies "a couple (*Jor*) of marts (*Hut*)", from these two parallel marts namely *Chowkihut* and *Macharhut*, which lay on the Eastern and Western banks of the river *Bhogdoi*. Jorhat today has grown into a blooming cosmopolitan town with a strong sense of character and identity.

Jorhat is an important commercial, cultural and educational centre of upper Assam. The district is known as the "*Tea capital of India*". Similarly, the people of Jorhat themselves be proud of being a part of its glorious heritage and culture. The cultural diversity which prevailed in Jorhat nearly a century ago has encouraged the people to participate in cultural activities through the decades. As a result Jorhat has been able to produce many creative writers, musician, actors, historians and journalists, terming Jorhat as "*The Cultural Capital of Assam*".

Jorhat district has the highest number of educational institutions in upper Assam and considered to be a good place for ethical modern educational pursuits. So, it is also nick named "*knowledge city of Assam*". The major higher educational institutions at Jorhat district are Assam Agricultural University, Jorhat Engineering College, North East Institute of Science and Technology, Prince of Wales Institute of Engineering & Technology, Tocklai Experimental Station, Jorhat Medical College and Hospital, Central Eri & Muga Research Training Institute, Indian Institute of Plantation Management, Institute of Biotechnology & Geotectonics Studies, National Bureau of Soil Survey & Land Use Planning, Rain Forest Research Institute, Kaziranga University, Jorhat Institute of Science and technology, North East Institute of Management Science, National Institute of Electronics and Information Technology,

Central Engineering Institute of Technology, Institute of Paramedical Sciences etc.

The literacy rate of the district has gone up from 76.34% in 2001 to 82.15% (Male 87.63% & Female 76.45%) in the year 2011, showing an increase of approximately 6%. The literacy rate of rural and urban population is 81.36% and 91.39% respectively\*. The literacy rate of the district is higher than the literacy rate of the state and even than the national literacy rate. It is also an interesting fact to note that female literacy rate of the district is approximately 11% higher than the national literacy rate of female which is a good sign that marks a better society.

### **3.4 Procedure of Data Collection**

To collect the requisite data for the study, three standardized tools and one personal information schedule was used. The investigator personally visited the schools and colleges located in these two sub-divisions of Jorhat district. The investigator sought permission from the Principals of the institutions for administering the tools. After taking permission from the Principals of the institutions, the investigator visited the particular institution on the assigned day. Thereafter, the researcher introduced himself and established a rapport with the students, tools were administered one after another and asked the students to go through the instructions carefully. In order to secure their valuable co-operation, they were assured that their views and other personal information supplied by them would be kept strictly

---

\* Source: Census of India, 2011  
District Census Handbook, Jorhat. Series -19, Part – XII –B, Published by –  
Directorate of Census Operations, Assam

confidential and data will be used only for research purpose. Students were instructed to read each item carefully and respond. After completion of all these tests, the researcher delivers thanks to the students for their extended cooperation. The records of the students' academic achievement, i.e. the photocopy of H.S.L.C. marksheets were collected from the concerned students and verified it with the office records.

### 3.5 Variables of the study

In the present study Family Environment, Stress, and Anxiety are independent variables and Academic Achievement of the students are considered as dependent variable (Figure 3.2).

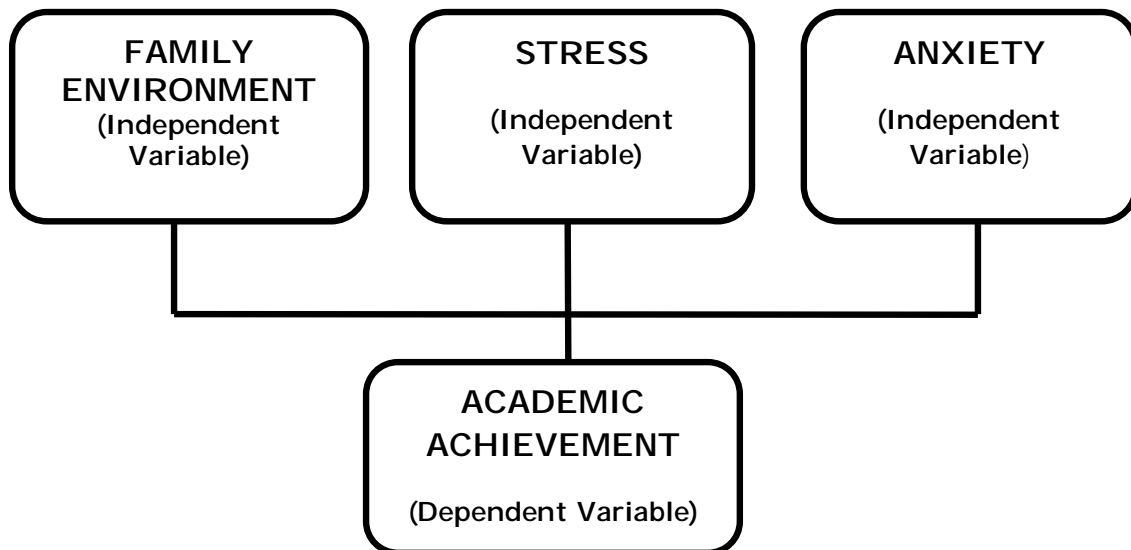


Fig. 3.2 Variables of the study

## **PART – B**

### **3.6 Description of Tools**

To collect the requisite data for the study three standardized tools and one personal information schedule were used. To collect the information regarding academic achievement, the photocopy of the mark sheets were collected from the students and verified it with the office records.

#### **3.6.1 Family Environment Inventory (FEI)**

To collect the information of the family environment of the students an Inventory was developed by the investigator. For this purpose the Family Environment Scale developed by Bhatia and Chadha in 1993 was taken into consideration, which has 8 dimensions viz. Cohesion, Expressiveness, Conflict, Acceptance and Caring, Independence, Active-Recreational Orientation, Organization, and Control. The investigator has also studied and analysed the Home Environment Inventory developed by K. S. Misra in 2010. This inventory contains 10 dimensions viz. Control, Protectiveness, Punishment, Conformity, Social Isolation, Reward, Deprivation of Privileges, Nurturance, Rejection, Permissiveness. Initially, the investigator has framed 150 items related to the family environment of the students. The items were written dimension wise to avoid overlapping of items. These items were circulated to 8 experts for comments. On the basis of experts' comments, 37 items were dropped and 18 were modified.

#### **The Try-out Form**

The try-out form of the inventory consisted of 113 items related to students' family environment and was administered on 50 students of

secondary level. In the light of difficulties faced by the students and field experience, 13 items were further rejected.

### Final Form of the Inventory

The final form of the Family Environment Inventory (FEI) consisted of 100 items of 'Yes' and 'No' types (Annexure -I). Each dimension of family environment contains 10 items. There is no time limit for the administration and completion of the inventory. It takes maximum of 40 to 45 minutes.

Table 3.8 *Dimension-wise Items of the Inventory*

Sl. No.	Dimensions	Items no.
1	Cohesion 'A'	1, 11, 21, 31, 41, 51, 61, 71, 81, 91
2	Acceptance 'B'	2, 12, 22, 32, 42, 52, 62, 72, 82, 92
3	Protectiveness Orientation 'C'	3, 13, 23, 33, 43, 53, 63, 73, 83, 93
4	Expressiveness 'D'	4, 14, 24, 34, 44, 54, 64, 74, 84, 94
5	Conflict 'E'	5, 15, 25, 35, 45, 55, 65, 75, 85, 95
6	Independence 'F'	6, 16, 26, 36, 46, 56, 66, 76, 86, 96
7	Active Recreational Orientation 'G'	7, 17, 27, 37, 47, 57, 67, 77, 87, 97
8	Control 'H'	8, 18, 28, 38, 48, 58, 68, 78, 88, 98
9	Punishment 'I'	9, 19, 29, 39, 49, 59, 69, 79, 89, 99
10	Organizational 'J'	10, 20, 30, 40, 50, 60, 70, 80, 90, 100

### Reliability of the Family Environment Inventory (FEI)

The Split-half method was used to establish the reliability of the scale. The items of each and every dimension were reshuffled. Then, the items were split into two equivalent halves. The odd-numbered items were considered as one part and the even-numbered items as the other.

The scores of each individual of these halves were then correlated. For finding out reliability, Pearson's Product Moment Coefficient of Correlation was applied. The value of ' $r$ ' was .75. The reliabilities were worked out separately for all the ten dimensions of the inventory. The scores of each dimension were split into two halves. The scores for each of these halves were also correlated and obtained value of ' $r$ ' has been shown in table 3.9.

Table 3.9 *Dimension-wise items and reliability coefficient of correlation of Family Environment Inventory*

Dimensions	Items no.		Total Item	Reliability coefficient
	Odd no	Even no		
Cohesion 'A'	1, 3, 5, 7, 9	2, 4, 6, 8, 10	10	.80
Acceptance 'B'	11, 13, 15, 17, 19	12, 14, 16, 18, 20	10	.73
Protectiveness Orientation 'C'	21, 23, 25, 27, 29	22, 24, 26, 28, 30	10	.79
Expressiveness 'D'	31, 33, 35, 37, 39	32, 34, 36, 38, 40	10	.76
Conflict 'E'	41, 43, 45, 47, 49	42, 44, 46, 48, 50	10	.74
Independence 'F'	51, 53, 55, 57, 59	52, 54, 56, 58, 60	10	.77
Active Recreational Orientation 'G'	61, 63, 65, 67, 69	62, 64, 66, 68, 70	10	.70
Control 'H'	71, 73, 75, 77, 79	72, 74, 76, 78, 80	10	.74
Punishment 'I'	81, 83, 85, 87, 89	82, 84, 86, 88, 90	10	.72
Organizational 'J'	91, 93, 95, 97, 99	92, 94, 96, 98, 100	10	.75
All the Items	1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63,65,67,69,71,73,75,77,79,81,83,85,87,89,91,93,95,97,99	2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72,74,76,78,80,82,84,86,88,90,92,94,96,98,100	100	.75

### Validity of the Scale

The investigator has attempted to establish the validity of the scale by following face and content validity. For face validity, the items were given to 8 experts to evaluate. Only those items with 75% agreement among the experts were retained in the scale.

To establish the content validity of the scale, the dimensions of the family environment were selected and clearly defined for the purpose of measuring the specific area of the environment. The items were given to 8 experts for their judgement in the first step. In this process, the final form of the scale was again given to 5 experts for their opinion. On the basis of experts' opinion and selection, all 100 items were kept in the final form and used for data collection.

### Scoring Key of Family Environment Inventory (FEI)

The scoring of family environment inventory is very simple. This inventory contains 77 positive and 23 Negative items regarding students' family environment. Table 3.10 shows the types of items of the inventory.

3.10 *Type of Items of Family Environment Inventory*

Types of Items	Items No.	Total
Positive	1, 2, 4, 6, 7, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 51, 52, 54, 55, 56, 57, 59, 60, 61, 63, 64, 65, 69, 71, 72, 74, 75, 76, 77, 79, 81, 82, 84, 86, 87, 88, 89, 91, 92, 94, 95, 96, 97, 98, 99, 100	77
Negative	3, 5, 8, 13, 22, 28, 38, 49, 50, 53, 58, 62, 66, 67, 68, 70, 73, 78, 80, 83, 85, 90, 93	23



Every favourable item marked by the subject was assigned a score of 'One' and unfavourable items 'Zero'. These scores were summed up and the total scores obtained by the students were considered as the total family environment scores.

Table 3.11 *Classification of total scores of Family Environment Inventory*

Family Environment	Range of Scores
Favourable	74 - 100
Moderate	28 - 73
Unfavourable	0 - 27

The respondents' total scores on Family Environment Inventory were classified into three categories i.e. favourable, moderate and unfavourable. Upper 27% and lower 27% scores considered as favourable and unfavourable; and middle 46% scores considered as moderate family environment (Table 3.11). Those who scored in between 74-100 were considered as having favourable family environment; those who scored in between 28-73 were considered as having moderate family environment and those who scored below 27 considered as having unfavourable family environment.

### **3.6.2 Stress Inventory (SI)**

In order to assess the level of stress of the adolescent students studying in XI standard, the investigator has developed an Inventory. Various sources related to personal life events that are likely to cause stress in a person were located for the purpose of developing a Stress Inventory. Initially, 100 items were framed. These items were related to

the personal life events. Each item contains three alternatives i.e. Never, Sometimes and Often/Frequently. The draft copies of this Inventory were given to 8 experts for their comments. On the basis of experts' comments 35 items were dropped and 20 were modified.

### **The Try-out Form**

The try-out form of the inventory consisted of 65 items and was administered on 50 secondary level students of Jorhat district. On the basis of difficulties faced by these students 15 items were further dropped and 10 items were modified.

### **Final Form of Stress Inventory (SI)**

The final form of stress inventory (Annexure - III) consisted of 50 items. There is no time limit for the administration and completion of this inventory. But, normally it takes 15 to 20 minutes to complete the inventory. First page of the inventory contains the instructions and essential information regarding the respondents.

### **Reliability of the Stress Inventory (SI)**

To establish the reliability of the Stress Inventory, the final form of the scale was administered on 50 secondary students of Jorhat district. Internal consistency reliability was established through split half method. The test items were divided into two halves. The odd-numbered items were considered as one part and the even-numbered items as another. The score of each individual for each half has been correlated to each other. For finding out reliability, Pearson's Product Moment Coefficient of correlation was applied.

### **Validity of the Stress Inventory (SI)**

The investigator has attempted to establish the validity of the Inventory by following content and concurrent validity. To establish the

content validity of the scale, the items were again given to 8 experts for their comment. On the basis of expert's judgement and selection, all the 50 items were kept in the final form.

The concurrent validity of the Inventory has been established by administering another standardized inventory developed by Singh and Singh (2004) on same 50 respondents. The two sets of stress inventory scores were tabulated and Pearson's Product Moment Coefficient of Correlation was employed. The calculated value of ' $r$ ' was .73, which indicates a high concurrent validity of the scale.

### **Scoring Key of Stress Inventory (SI)**

The scoring of Stress Inventory is very simple. Every negative item assigned a score of 'one' for 'never', 'Sometimes' assigned a score of 'two' and 'Often' assigned a score of 'three'. Any unmarked items were given a score of 'Zero'. These scores were added and the total score show the level of stress. Minimum and maximum scores of the respondents may range from 50 to 150. Table 3.12 shows the level of stress of the respondents.

Table 3.12 *Classification of total scores of Stress Inventory*

Level of Stress	Range of Scores
High	124 - 150
Average	78 - 123
Low	50 - 77

The respondents' total scores on stress inventory were classified into three categories i.e. high, average and low. Upper 27% and lower

27% scores considered as high and low level of stress; and middle 46% scores considered as average level of stress. Those who score in between 124-150 were considered as having high level of stress, those who score in between 78-123 were considered as having average level of stress and those who score in between 50-77 were considered as having low level of stress. A low score indicates that the respondent is less vulnerable to stressors and a high score indicates higher vulnerability to stressors (Annexure – IV).

### **3.6.3 Sinha's Comprehensive Anxiety Test (SCAT)**

To assess the level of anxiety of the students, Sinha's Comprehensive Anxiety Test (SCAT, English version, 2002) was adopted. This inventory consisted of 90 items. All these items were based on the symptoms of anxiety. The coefficient of correlation was .85 established through test-retest method and internal consistency reliability of the test was .92. The coefficient of validity between Comprehensive Anxiety Test and Taylor's Manifest Anxiety Scale was 0.62 which is significant at .01 level of confidence. Percentile norms were considered as a reference points for interpreting the test scores. The authors classified the individuals into five categories on the basis of scores obtained on the Inventory. Those individuals who score above 75 percentile were regarded as extremely high level of anxiety, in between 60 to 75 percentile were regarded as high level of anxiety; in between 40 to 60 percentile were regarded as normal anxiety; in between 25 to 40 percentile were regarded as low level of anxiety and those who scored below 25 percentile were regarded as extremely low level of anxiety (Annexure- V).

### **Scoring Key of Sinha's Comprehensive Anxiety Test (SCAT)**

The scoring key of this test is very simple. For any response, indicated as 'Yes', 'One' score is allotted and 'Zero' for 'No'. The sum of all the responses was considered as the total anxiety score of the individual (Annexure VI).

#### **3.6.4 Personal Information Schedule (PIS)**

To know the demographic background of the respondents, a Personal Information Schedule (PIS) was developed by the investigator (Annexure - VII). This Personal Information Schedule consisted of several information related to respondent's personal background viz. name, age, gender, category, religion, rural/urban residence and type of family. This Schedule also contains the items related to respondents' parental educational qualification, occupation, income, etc. Some items were also included to know the habit of the students towards exposure viz. television, radio, newspaper and magazine. Since, the academic achievement of the respondent was considered as the dependent variable in this study, some items were formed to know the respondents' academic performance i.e. total marks obtained by the students in X standard final examination, division or grade, percentage of marks etc.

### **3.7 Techniques of Data Analysis**

Analysis of data is a process of modeling data to achieve the goal. It has multiple approaches and diverse technique under variety of branches. The investigator has used some statistical tools to highlight the useful information, to draw the conclusion and making suggestions.

The collected data were classified and tabulated according to the requirement of the objectives of the study. To analyzed and interpreted the data, descriptive statistics like proportions, measures of central tendency, measures of variability, standard deviation etc were applied. To examine the relationship between the variables, Co-efficient of correlation, 't' test and ANCOVA were employed.