CHAPTER-III

METHODOLOGY

Research, according to J.W. Best, may be defined as the systematic and objective analysis and recording of controlled observations that may lead to the development of generalizations, principles or theories, resulting in prediction and possibly ultimate control of events. Educational research is a careful and systematic investigation into any aspect of education. It is derived from the French word ‘recherche’ which means to travel or survey (Dept. of Curriculum and Teaching, University of New York) Educational research is of various types.

The present study comes under the category of descriptive research. Descriptive research is the one, which describes, records, analyses and interprets the conditions, which exist. In such a research an attempt is made to discover the relationship between existing non-manipulated variables apart from some comparison or contrast among those variables. Thus descriptive research basically describes what is. This descriptive research is also of various types. The present study belongs to the category of ex post facto research.

Ex post facto research is that empirical investigation in which the investigator draws the inference regarding the relationship between the variables on the basis of such independent variables whose manifestations have already occurred. In the present study, the dependent variables are educational and vocational aspirations while the independent variables are parental encouragement, peer group acceptability and socio-economic status. In this type of research the investigator has no direct control over the independent variables because they occur much prior to producing their effects.
In this type of research the investigators attempt to trace an effect, which has already occurred to its probable causes. The effect becomes the dependent variable and the probable causes become the independent variable. Thus in this type of research the manifestation of independent variables occur first and then its effect becomes obvious to the investigator. Since the independent variables have already occurred, the investigator has no direct control over such variables. Manipulation of the independent variable becomes difficult.

This research is considered to be important in behavioural researches where variables cannot be manipulated. This research is useful in the studies where one wants to investigate causes on the basis of the effect.

3.1 UNIVERSE:– The data for the present study was taken from the schools of Aligarh city. This city is located in Western Uttar Pradesh. According to the 1991 census, the geographical area of Aligarh is 3700 square Km. Six schools have been selected for the present study. In fact no single institution can depict the true picture of our country in its entirety but there are advantages to limiting the study to a few institutions. Similar studies of a few institutions undertaken in different parts of the country may lead to generalizations to explain the phenomenon of aspirations of adolescents.

3.1.1 SAMPLE:– A sample is selected and studied to infer the characteristics of the whole population as it is not possible to study the entire population. A sample is a small representative portion of the population. There are a large number of sampling techniques available in research. In the present study, the investigator has used the technique of incidental as well as cluster sampling.
Incidental/Accidental Sampling:- It is a type of sampling procedure in which the investigator selects the persons according to his/her convenience. The researcher is mainly guided by convenience and economy. This method saves time, money and labour.

Cluster Sampling:- In cluster sampling, clusters are uniform groups. Clusters are selected randomly and combined to form a sample. Large scale surveys of political, religious and social behaviour are easily conducted by this method. Thus this sample also has the characteristics of cluster sampling besides, that of incidental sampling.

The investigator collected data from six schools of Aligarh city. They have been given in the following table:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of the School</th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>H.B. High School</td>
<td>112</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>D.S. High School</td>
<td>31</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>S.S. High School</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Modern Convent School</td>
<td>55</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>Chiranjilal High School</td>
<td>-</td>
<td>127</td>
</tr>
<tr>
<td>6</td>
<td>Maheshwari High School</td>
<td>-</td>
<td>65</td>
</tr>
</tbody>
</table>

The sample consisted of 400 students. Out of them, there were 200 boys and 200 girls. These students were adolescents belonging to the age group of 12-15 years. They belonged to the standards VII, VIII, IX and X. These students came from different socio-economic strata of the society.

3.2 DATA COLLECTION:- In this study the investigator has used standardized questionnaires to determine the parental encouragement, socio-economic status, peer acceptability, vocational as well as educational aspirations of the adolescents. These questionnaires were administered to the
students and they were asked to respond to all of them. The incomplete ones were rejected. Only the complete ones were included in the study. The questionnaires were in the vernacular language so that the students would find it easy to understand the questions.

**Tools used in the study:** The main tools used in this study were:

3.2.1 **Parental Encouragement Scale (PES) - R.R.Sharma**

Parental encouragement refers to the treatment originating from parents towards the child with a view to enhance the possibilities of future occurrences of good behaviour by care, concern, approval and guidance. The parental encouragement scale has been developed to measure the degree or amount of encouragement which a child receives from his parents and also to categorize the students in terms of the degree/amount of their perpetual encouragement. It has been designed for the student population upon higher secondary stage.

**Reliability:** The reliability of the scale was measured firstly by split half method and the value was found to be 0.83. Secondly, two test-retest reliabilities were determined – one after an interval of two weeks and the other of four weeks. The value of these two reliabilities were found to be 0.73 and 0.76 respectively.

**Validity:** Two indices of validity of the PES were worked out:

1) **Content Validity:** The contents of each item of the PES was critically examined by five judges specialized in the field of education, psychology and sociology. The opinion of these judges confirmed that the PES was sufficiently valid instrument.

2) **Convergent Validity:** The validity of the PES was ascertained by correlating the scores of this scale with Uniyal and Aggarwal’s PES. The coefficient of correlation was found to be 0.68. This indicates that the scale is fairly a valid tool.
**Administration:** The parental encouragement scale can be administered individually as well as in group. There is no time limit for the completion of the scale, however, ordinarily an individual student takes 25 – 30 minutes to complete it.

**Scoring:** There are three response alternatives in each item of the scale. The subject has to choose only one alternative. Thus the total score for each item ranges from 0 to 2, whereas the grand total of the PES ranges from 0 to 80. Higher scores on the PES reveal greater amount/higher degree of parental encouragement whereas lower scores reveal the lower degree/amount of encouragement.

**3.2.2 Test for Social Acceptability Among Peers (TSAAP)-S.L.Chopra**

This test was a sociometric test. Sociometric tests consist of questionnaires in which each member of the group is asked to name the members of the group with whom he will like to associate for different activities. The form of the questions, therefore, depends upon the social setting of the group and the questions must indicate the scope of the choice. The activities chosen for the purpose should be meaningful.

Since the purpose of the present sociometric test was the measurement of social acceptability of the students among their class fellows the activities chosen to have their choices were to sit within the class, to play with, to spend interval with and to spend leisure time with. These criteria are general and it was expected that they will provide stable and generally useful results.

**Reliability:** The present sociometric test was re-administered to the students after a gap of two weeks to test its stability. The stability coefficient worked out to be 0.94, which was comparable to the stability coefficient observed by Newstetter, Feldstein and Newcomb (1938) and Zeleney (1939).
Validity: The sociometric test is unlike the usual mental tests in that it does not attempt to measure behaviour of certain type by eliciting related responses but employs a sample of actual behaviour studied. As such the sample directly meaningful and need not be validated by relating it to an external criterion. Hence the mental test concept of validity as correlation with an external criterion does not apply to sociometric tests. It may, however, considered whether a sociometric test is valid in the sense that the behaviour which it is intended to elicit actually appears without falsification of responses on the part of the subject. The question here is how stable the behaviour is to be regarded as valid.

Administration: For the present test, the students were asked to select only three of their class fellows for each of the four activities. They could choose the same students for the different activities if they liked. But their choices were to be limited to students in their own section. They were allowed to select the students who might have been absent on the day of testing.

Scoring: One mark should be assigned for each choice received by a student. The total number of choices on all the four activities received from the class fellows studying in his or her section will denote his/her sociometric score.

3.2.3 Socio-Economic Status Scale (SESS) – R.L.Bharadwaj

Socio-Economic Status appears to be the resultant of the position of an individual in a society by virtue of a complex fusion of both (Social as well as Economic Status) of them, which often do not run parallel to each other their own areas. This intermingling takes place in an undefined and curious manner eventually to present an indicator to socio-economic status.

Socio-economic status would, therefore, be a ranking of an individual by the society he lives in, in terms of his material belongings
and cultural possessions along with the degree of respect, power and influence he wields.

**Reliability:** The reliability of the test of the revised scale has been calculated by test and retest method. This scale was administered on a sample of 200 students and after 21 days it was re-administered on the same sample. The correlation between two scores was calculated by Spearman – Brown formula.

**Validity:** The content validity of the revised scale, since areas and then item are solely based on research items is high and promising.

**Administration:** The investigator has administered the scale in the classroom after reading aloud the instructions of the test and explaining them to the students. The subjects have taken about 10 – 15 minutes to record their responses.

**Scoring:** Scoring of the test is very easy and of quantitative type. Scoring key provides the weightage score for each item. Scoring has been done with the help of stencil key prepared for this purpose. The total of all the answers give the total marks obtained by a subject. These marks are called raw scores.

### 3.2.4 Educational Aspiration Scale (EAS) - Sharma and Gupta

The term level of aspiration involves the estimation of one’s ability (whether over, under or realistic) for one’s future performance on the strength of one’s past experience (Goal Discrepancy), one’s ability and capacity, the efforts that one can make towards attaining the goal, thus set by the individual.

Keeping in view the level of understanding, educational maturity and growth pattern of pupils, two different scales have been developed. Form V and Form P both the form of the level of aspiration are different in the content, technique, standardization process and norms. EAS,
Form P has been designed for measuring the level of educational aspiration of pupils regardless of their grade or age; though norms have been primarily developed on secondary school pupil population, it could be widely used over other samples by interpreting the raw scores obtained in terms of levels of educational aspiration.

This scale has been developed on the rationale that (i) Past experience (Pe) in terms of marks obtained estimate or goal set, success or failure experienced, (ii) amount of efforts (Ae) made in the examination, (iii) ability and capacity (Ac) to stay for the examination have a direct bearing upon setting a future goal.

**Reliability:** (a) Coefficient of Stability by test retest method $r_{tt} = 0.98$
(b) Coefficient of Internal Consistency by odd even technique using S – B formula $r_{tt} = 0.803$

**Validity:** (a) Against Scholastic Achievement (Board Exam) $r = 0.692$
(b) Predictive Validity with EAS, Form V $r = 0.596$

**Administration:** EAS could be administered in group situation. It is a self explanatory scale, however, the tester should establish proper rapport before administering it. There is no time limit, however, it takes about 25 minutes to administer the whole scale.

**Scoring:** There is no right or wrong answer. The subject has to compare between a pair of statement given in each of the items, weight one of them by putting a cross mark against it. Two category responses admitted. Either the response would be scored as 1 or as 0. The maximum score is 45 whereas the minimum is 0. The total score determines the standing on the scale of the individual.

**3.2.5 Occupational Aspiration Scale (OAS) – J.S.Grewal**

The present scale was adopted by the author by getting the prestige rating of 150 occupational titles, identical with the NORC list.
This number was reduced to 108 by a panel of judges who were employed in different occupations. 80 out of 108 occupations of different prestige values were arranged in mixed order in 8 multiple-choice items. Each item contains 10 occupations nearly of all occupational status level arranged in a mixed order. The OAS asks for both short and long range realistic as well as idealistic expressions of the level of occupational preferences. Each of these four combinations, (i.e., Idealistic Short Range and Realistic Long Range) are assessed twice, thereby making the number of items to eight. All the occupations were arranged in a mixed order in the eight multiple-choice items given below:

<table>
<thead>
<tr>
<th>Expression Levels</th>
<th>Goal Periods</th>
<th>Long – Range (L) (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idealistic (I)</td>
<td>Short – Range (S) (a)</td>
<td>Of the jobs listed in this question, which ONE would you choose if you were FREE TO CHOOSE ANY of them you wished when your SCHOOLING IS OVER? (2 and 4)</td>
</tr>
<tr>
<td>Realistic (R)</td>
<td>Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE YOU CAN GET when your SCHOOLING IS OVER? (1 and 3)</td>
<td>Of the jobs listed in this question, which is the BEST ONE you are REALLY SURE YOU CAN HAVE by the time you are 30 YEARS OLD? (5 AND 7)</td>
</tr>
</tbody>
</table>

| (a) Initial Career-Point | (b) Mature Career-Point |

**Reliability:** Coefficient of stability as determined by the test retest method was found to be 0.84. The test was further divided into the following two parallel halves for assessing the internal consistency.
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<table>
<thead>
<tr>
<th>Content Assessed</th>
<th>OAS halves and Item Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A. Half</td>
</tr>
<tr>
<td>Realistic Short - Range</td>
<td>1</td>
</tr>
<tr>
<td>Idealistic Short - Range</td>
<td>2</td>
</tr>
<tr>
<td>Realistic Long - Range</td>
<td>5</td>
</tr>
<tr>
<td>Idealistic Long - Range</td>
<td>6</td>
</tr>
</tbody>
</table>

The coefficient of internal consistency between the above two halves, A and B, was found to be 0.54.

**Validity:** The OAS has been validated against Haller and Miller Occupational Aspiration Scale. The coefficient of validity was found to be 0.75.

**Administration:** The OAS can be administered in a group-testing situation. The eight items are prefaced by a set of written instructions, which the tester reads over group at the beginning of the test period.

**Scoring:** All the eight items are scored in the same way. There are ten alternatives for each question. Only one alternative may be checked. Responses are scored with the help of a scoring key. The score of each item ranges from '0' (Lowest) to '9' (Highest). A score of '9' indicates that a job from among the highest eight prestige occupations has been preferred and a score of '0' indicates that one of the lowest eight occupations has been preferred. The total score is the sum of the scores for each of the eight questions. An individual's score for the whole inventory ranges from 0 to 72.

**3.2.6 REASONS FOR SELECTING ADOLESCENTS:** The investigator has selected adolescents for studying their aspirations because they are at a stage in their lives where their aspirations are in a formative stage. Here, particularly the age group of 12-15 years has been taken. During this age
group, the aspirations of children are being formed and may tend to undergo drastic changes as they may be influenced by various factors like their socio-economic status, parental attitude towards them, peer group acceptability etc. These children, as they grow older, start becoming aware about their financial and economic resources as well as the extent to which their parents will support and encourage them in fulfilling their aspirations. They start having a very realistic idea about their family’s capacity in encouraging them in fulfilling their vocational as well as educational aspirations.

The children at this stage are aware about the future prospects of various professions because of the media exposure like TV channels, internet, newspapers, career exhibitions (conducted by Indian as well as foreign universities) etc. Due to enhanced transport and communication and other related aspects like instant money transactions, various professions, educational courses, institutions, universities etc. have become easily accessible.

Privatization of education has offered scope for large number of students to enter different types of professions. Internet has provided avenues for business process outsourcing, medical transcription etc. from developing countries like India. Industrialization and globalization have thrown open large number of employment/business opportunities. The children at this age are aware about all the above aspects. So, they may mould their aspirations according to the maximum benefits which a particular career can offer in terms of remuneration, power, social status, occupational satisfaction etc.

Academically, the age of 12-15 years is crucial for the career of adolescents, as they have to choose a particular stream of study (i.e. science, arts etc.) related to their vocational and educational aspirations. This is an important decision-making stage of their career. Therefore, their
decisions may be guided by their future vocational as well as educational aspirations.

3.3 VARIABLES OF THE STUDY:- A variable as the name implies, is something, which varies. This is the simplest and broadest way of defining a variable. However, a behavioural scientist attempts to define a variable more precisely and specifically. From his point of view, variables may be defined as those attributes of objects, events, things and beings, which vary and can be measured. In other words, variables are the characteristics or conditions that are manipulated, controlled or observed by the experimenter.

Variables can be classified in several ways. Some of the commonly accepted classifications are presented below.

1. **Independent Variable:-** It is defined as one which is manipulated, measured and selected by the experimenter for the purpose of producing observable changes in the behavioural measure (or dependent variable). In other words, the independent variable is the variable on the basis of which the predictions about the dependent variable are made. Underwood (1966) calls the independent variable as the stimulus variable. In the present study, the investigator has taken parental encouragement, socio-economic status and peer group acceptability as independent variables as their effect on the dependent variable (i.e. vocational and educational aspiration) is studied.

2. **Dependent Variable:-** The dependent variable which is also known as the response variable or output is an observable aspect of behaviour. It is the factor which is observed and measured to determine the effect of the independent variable i.e. the factor that appears, disappears or is modified on introducing, removing or changing the independent variable by the experimentation. In the present study the investigator has taken the vocational and the educational aspirations as the independent variables.
3.4 RESEARCH DESIGN: - It is a detailed plan of investigation. It is a blueprint of the detailed procedures of testing the hypothesis and analyzing the obtained data. It may be defined as a sequence of those steps taken ahead of time to ensure that the relevant data will be collected in a way that permits objective analysis of the different hypotheses formulated with respect to research problems. The selection of the research design is based on the purpose of the investigation, types of variables and conditions under which the research is to be conducted. Thus the research design helps the researcher in testing the hypothesis by reaching valid and objective conclusions regarding the relationship between independent and dependent variables. The present study is based on factorial research design.

3.4.1 FACTORIAL DESIGN: - It is the design in which selected values of two or more than two independent variables are used in all possible combinations so that their independent as well as interactive effects upon the dependent variable may be studied. The theme of the factorial design is that the different subgroups of subjects work under every possible combination of the factors (or the independent variables) of the design. Therefore, factorial design has the following main characteristics: 1) two or more independent variables are used in all possible combinations 2) for a design to be called factorial, different subgroups or subjects must serve under every possible combination of the independent variables. As far as possible an equal number of subjects in all the subgroups is preferred. 3) The factorial design enables the investigator to study the independent effects as well as the interactive effects of two or more independent variables. The factorial design is directly classified on the basis of the number of independent variables used. In the present study, the investigator has used three independent variables each having two levels. Therefore, the present study is
based on the factorial design with three independent variables i.e. 2x2x2 factorial design.

3.5 STATISTICAL TECHNIQUES:- The following statistical techniques have been used in the present study for analyzing the data:

1) **Mean:-** Arithmetic Mean or Mean is the value obtained by adding together all the scores and by dividing this sum by the number of scores.

\[ X = \frac{X_1 + X_2 + \ldots + X_n}{N} = \frac{\sum X}{N} \]

Where \( X \) = Arithmetic Mean  
\( \sum X \) = Total of Individual Scores  
\( N \) = Number of Scores  

The Arithmetic Mean of a sample is designated by the symbol \( \bar{X} \)

2) **Standard Deviation:-** It is also known as ‘root mean square deviation’ because it is the square root of the mean of the squared deviations from the arithmetic mean. It is denoted by the Greek letter \( \sigma \).

\[ \sigma = \sqrt{\frac{\sum d^2}{N} - \left(\frac{\sum d}{N}\right)^2} \]

Where \( \sigma \) = Standard Deviation  
\( d \) = Deviations where \( d = X - A \)  
where \( X \) = Score and \( A \) = Assumed Mean  
\( N \) = Number of Scores

Standard Deviation measures the absolute dispersion or variability of a distribution. The greater the amount of variability, the greater the S.D., the greater will be the magnitude of deviation of the values from their mean. A small S.D. means a high degree of uniformity of the observations as well as homogeneity of a series.

3) **Correlation:-** When variables co-vary or vary together they are said to be correlated. Correlational analysis helps in determining the degree of relationship between two or more variables. Correlation reduces the range
of uncertainty, as predictions based on correlational analysis are more reliable. It is also possible that when one variable increases the other decreases. When increase in one variable is accompanied by increase in the other variable i.e. change in variables is in the same direction then they are said to be positively correlated. When one variable increases and the other decreases i.e. change in variables is in the opposite direction then they are said to be negatively correlated.

Coefficient of correlation is the ratio which expresses the extent to which change in one variable are accompanied by or are dependent upon changes in the other variable. Coefficient of correlation is denoted by ‘r’. Values of correlation vary from -1 to +1.

**Method of Calculating Coefficient of Correlation:**- There are two major methods of calculating the coefficient of correlation – Rank Difference method and Product Moment Method. In the present study the investigator has used the Product Moment method for calculating the coefficient of correlation. This method was given by Karl Pearson.

\[ r = \frac{N \Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{(N \Sigma X^2 - (\Sigma X)^2)}[N \Sigma Y^2 - (\Sigma Y)^2]} \]

This method is based on individual raw scores. This method is used in large samples with proper arrangement of data. This gives the accurate degree of correlation. This calculated correlation coefficient was compared with the critical values of the correlation coefficient (Snedecor, G.W.) to determine whether it was significant or not.

4) **Analysis of Variance (ANOVA):**- This method was given by R.F. Fisher. Analysis of variance is a class of statistical techniques through which the overall difference among two or more than two sample means is studied.
and it’s significance is tested. Analysis of Variance is also referred to by its abbreviation i.e. ANOVA.

ANOVA is of two types – Simple ANOVA and Complex ANOVA. In the present study the investigator has used Complex ANOVA.

**Complex ANOVA/Two-Way ANOVA:** In Complex ANOVA there are two or more than two independent variables which form the basis of classification of groups. Such an ANOVA is suitable for the factorial design. Statistically, the F ratio is calculated as

\[
F = \frac{\sigma_1^2}{\sigma_2^2}
\]

Where \( F \) = F ratio

\( \sigma_1^2 \) = Larger Variance/Between Groups Variance

\( \sigma_2^2 \) = Smaller Variance/Within Groups Variance

Between Groups Variance refers to variation among the means of each group from the total or grand mean of all groups. Within Groups Variance refers to the average variability of scores within each group.

In the present study, the investigator has used a website (Lowry, R., 1998) for the automatic calculation of ANOVA. The calculated F values obtained from this site have been compared to the critical values of the F ratio to determine whether they are significant or not. If the F ratio for an interaction is significant that finding is followed by post hoc tests. While examining a significant interaction with post hoc tests it is actually the individual cell means that are being compared (Price, I., 2000).

**5) Tukey Test:** Tukey’s HSD (i.e. abbreviation for John Tukey’s Honestly Significant Difference Test) is used to make all possible comparisons when means are taken two at a time. It is the most powerful multiple comparison test for making pairwise comparisons (Inferential Statistics II: Beyond Two Means).
This test is used when the researcher is interested in evaluating the significance of all possible differences between pairs of group means. It involves calculating a minimum difference between pairs of group means that must be exceeded for the group means to be significantly different (Research Corner: The When and Why of Statistical Tests). This test is only usable when the sample sizes are the same (Stats: Scheffe’ and Tukey Tests). Statistically the Tukey test is calculated as:

\[ T = (q) \sqrt{\text{Variance}_{\text{within}}/N} \]

Where \( N \) = Number in each group or the number of scores from which each mean is calculated

\( q \) = percentage points of the Studentized Range

The \( q \) value in the table is calculated by consulting the Tukey tables ‘a’ and ‘b’ for the 0.05 and 0.01 level of significance and determining the value corresponding to the number of means (\( n \)) in the Tukey table and the degrees of freedom (\( r \)) for the denominator of the F test. If this calculated \( T \) value is smaller than the difference between two means, then the means are considered significantly different and on the basis of the greater mean the interpretation is made.