CHAPTER-IV

ANALYSIS OF SOCIOMETRIC DATA-IDENTIFICATION OF

SOCIOMETRIC GROUPS

In this chapter, the description of the sociometric technique and administration of sociometric questionnaire has been given. The sociometric questionnaire provides the data which consist of choices given by each member in a group on each sociometric criterion. The data is organized in such a way that the results are usefully and economically obtained. A two-fold “n x n” table called the “Sociomatrix” is regarded as a convenient way of organizing the sociometric results, prepared for each class as a group. In the present study, the sociomatrices (Appendix-16) were prepared by the investigator himself. The sociometric questionnaire was administered to the students in order to identify only three sociometric groups viz. neglected, rejected and isolate out of seven sociometric categories (Table-4). The whole sociometric material presented in this chapter has been organized under the following headings:

IV.1 MEANING OF SOCIOMETRY

The term ‘Sociometry’ is defined as the measurement of the social relationships that exist among the members of a group. The word ‘Sociometry’ comes from two Latin words ‘socius’ meaning social and ‘metrum’ meaning measure. As these roots imply, sociometry is a way of measuring the degree of relatedness among people. Measurement of relatedness can be useful not only in assessment of behavior within the groups, but also for interventions to bring about positive changes. For a work group, sociometry can be a powerful tool for
reducing conflict and improving communication because it allows the group to see itself objectively and to analyze its own dynamics.

Chapin (1940) defined Sociometrics as the study and use of social measurements. He classified social measurements into three categories:

1. Psychometrics or psychological measurements.
2. Demogrametrics or measurements of large units of population.
3. Sociometrics, including (a) scales to measure the interaction process within social groups, and (b) those that attempt to measure the family group and the home environment.

According to Moreno (1953), the founder father of sociometry, “Sociometry is a method of discovering, describing and evaluating the social status structure and development through measuring the extent of acceptance or unacceptance among individuals in a group.” This means that it is a method of assessing the attraction and repulsion within a group. The degree to which individuals are accepted in a group, the relationship that exists among group members, the group structure and subdivisions within the group positions can be determined by the sociometry.

A useful working definition of sociometry is that it is a methodology for tracking the energy vectors of interpersonal relationships in a group. It shows the patterns of how individuals associate with each other when acting in a group toward a specified end or goal. Sociometry refers to the mapping of interpersonal likes and preferences within a classroom. Students can be more productive when they are socially comfortable or at ease in a social situation.
Sociometry is based on the fact that people make choices in interpersonal relationships. Whenever people gather, they make choices—where to sit or stand; choices about who is perceived as friendly and who not, who is central to the group, who is rejected, who is isolated. As Moreno says, “Choices are fundamental facts in all ongoing human relations, choices of people and choices of things. It is immaterial whether the motivations are known to the chooser or not; it is immaterial whether the choices are inarticulate or highly expressive, whether rational or irrational. They do not require any special justification as long as they are spontaneous and true to the self of the chooser. They are facts of the first existential order.” (Moreno, 1953, P.720).

It may be considered that Moreno (1955) made too high-sounding a claim when he wrote: “The aim of sociometry is to help in the formation of a world in which every individual whatever his intelligence, race, creed, religion or ideological affiliation, is given an equal opportunity to survive and to apply his spontaneity and creativity within it. Through the measurement of attractions and rejections between the individual group members, the sociometric test is uniquely adopted to the study of social structure of groups. He maintains that the modern teacher’s increasing concern with the social and emotional development of his pupils has resulted in the need for an objective approach to improve the social relations in the classroom. Sociometry has provided the basis for such an approach. Through sociometric testing, the teacher is able to analyze the social relations among the class members to organize classroom groups, which have a beneficial effect on pupil’s social relations.” In order to evaluate the social development of individual pupils when combined with other procedures, the sociometric test can also make constructive contribution to the solution of many
of the educational problems faced by teachers, counselors, supervisors and administrators (Gronlund, 1959).

IV.2 SOCIOMETRIC TECHNIQUE AS A DETERMINANT OF INTERNAL SOCIAL STRUCTURE OF GROUP

Sociometry is simply a survey, which is administered to subjects to determine the direction of certain relationships, although sometimes this can be assessed through simple observation. The technique for evaluating the extent to which pupils are accepted by their peers and for determining the internal social structure of group was called a sociometric technique by its originator, Moreno (1953). Afterwards this has been used by the sociologists as well as the psychologists in the study of group structure, social status and personality traits.

As classroom is a dynamic group, sociometric technique studies this classroom dynamics. It is a powerful tool for assessing dynamics and development in groups devoted to the therapy or training. It is means of assessing the attractions and repulsions within a given group. It usually involves each member of group with whom he would like to engage in some particular activity and further a number of persons he would not like to participate in activity.

It is a technique for measuring the extent to which the individuals are accepted by other group members and for determining the internal structure of a group. In its administration, it requires individuals to choose a given number of associates for some group activity. The basis of choices is commonly called the sociometric question or the sociometric criterion. Regardless of variation, the sociometric test is basically a method of evaluating the feeling of the group members towards each other with respect to common criterion. The number of choices that each individual receives is referred to as his sociometric status, his
social status or his group status. The pattern of choices to and from individuals revealing the network of interpersonal relations among members is called the sociometric structure.

It is of course, recognized that sociometric test does not indicate why the resulting social structure is present in the classroom, neither it specifies the therapeutic procedure necessary for improving the interpersonal relations. Like any diagnostic tool, it merely identifies the present situation. However, it also provides a graphical representation of interpersonal relations among the pupils, which is not available by other methods. Combined with classroom observation and other diagnostic information, the sociometric test serves as a firm base for improving the social structure of groups. It has proved to be a good method of studying a classroom group. It finds out who chooses, to be associated with whom in a group. Sociometric data reveals a variety of things about each member of the group-his sociometric status, his relations with other members, his perception of other members and so on. It helps in understanding the group, which may be of great help to the teacher in understanding the dynamics of the group.

Thus sociometry is the study of those aspects of the socio-emotional climate in the classroom having to do with the feelings of attraction, rejection and indifference which pupils express towards each other when faced with situations calling for interaction within the classroom. Its purpose is to discover the nature of social relationship of individual within a group. It offers an excellent opportunity to identify personality problems, especially in isolates and the rejectees. It provides clues to the reasons for behavior problems. The assumption behind using this technique lies in the fact that adolescents are excellent judges of
their associates. Moreover they see their classmates in many situations and relationships other than those observed by teachers. The sociometry also offers a means to improve human relations, as the society is basically an attraction-repulsion system.

IV.3  CONSTRUCTION OF SOCIOMETRIC TECHNIQUE

Although little time and skill are required for designing a sociometric tool, yet it is important that the implications of procedures are carefully considered. The wording of sociometric questions should be clear and simple. The tool should have proper direction and format to bring valid responses.

Sharma (1970) gave the following steps, which are considered in designing a Sociometric Test: (i) The selection of choosing situation-the sociometric criterion; (ii) The determination of number of choices to be used; (iii) Working of sociometric questions; and (iv) The development of directions and format of tools to bring out the valid responses.

The criteria which were included in the sociometric questionnaire as used in the present study are given below:

(i) Which three students from your class would you like to take with you, if you are told to shift to some other classroom?
(ii) Which three students from your class would you like to play with during the recess time in the school?
(iii) If you are told to do any best activity, which you like the most, with which three students of your class would you like to do that activity?
(iv) Name any one student of your class with whom you would not like to associate in any activity.
(a) Selection of sociometric criteria:

The selection of criteria mainly depends on the purposes for giving the test. If the sociometric results are to be used for organizing temporary classroom groups, such as for an art project, science project, school party, trip to picnic spot etc., a specific criterion limited to the particular activity could be used. Criteria based on specific and transitory situation tend to have little diagnostic value, even though they are based on the realistic choosing situations. The general criteria based on more permanent aspect of group structure tend to provide the most stable and generally useful results. Such criteria as work companions, play companions, seating companions have provided measures of group structure that changed very little over a period of several months (Bronfenbrenner, 1944).

In general, any choosing situation requiring social proximity could serve as a basis for sociometric test. However, the sociometric criteria must provide the most valid results for both evaluating the social structure of group and social acceptability of individual group members. Careful selection of criteria will minimize the extent to which sociometric results are contaminated. The purpose of the present study was to get a complete picture of social relationship of students among themselves in the classroom group in order to identify three sociometric categories viz. Neglected, Rejected and Isolate. It was therefore, decided to have pupils choose classmates for the situations like seating, working and playing. The investigator used three choice criteria in the present study. However one choice rejection criterion was also used to identify the rejected students in the classroom group.
(b) **Number of criteria:**

The number of criteria used in studies have been found to range from one to ten and neither experimental evidence nor explanation has been given to justify the number, but it appears that number of criteria to be used depends both on nature and purpose of the study. Gronlund (1959) writes if the general criteria such as seating, playing, working etc. are used, three criteria may be sufficient. Sharma (1970) writes if the general criteria are used, two or three will suffice to obtain the same coverage. In the present study, the general three criteria viz. seating, playing and working were used as they were sufficient to identify the neglected and isolate group of students. However to identify the rejected group of students in the classroom situation, one choice rejection criterion was used.

(c) **Rationale for selecting number of choices:**

Ideally the number of choices and rejections made by each member in the group should be unrestricted. Only in this way it is possible to identify positively the individuals to whom any one person is really indifferent and the individuals who are completely unchosen. But in practice, difficulty of dealing with very long lists makes it expedient to restrict the number of choices and rejections. Three of each is the most usual number. Fewer than that would present an inadequate picture of the group. More choices are difficult to handle. Borgatta (1951) suggested that five to seven choices are quite a usual range to find.

Moreno (1942) recommended one choice for infants, two choices for children upto the age of ten years and three choices or more for ones with the age of eleven years and above. Northway (1952) suggested the use of three choices for each criterion. In view of general nature of activities considered in the present
study, three choices were regarded sufficient for class-XII students of the arts and science streams.

(d) Weighting of sociometric choices:

The perennial problem is the differential weighting of first, second and third choices in sociometry. Northway (1952) assigned arbitrary weights to various choice levels where weights are used. The first choice is usually given a value equal to the total number of choices allotted and each succeeding choice decreases in value by one. For instance, with three choices, the first choice would be given value of 3 points, the second choice 2 points and the third choice 1 point. This is based on the assumption that a first choice has more social significance and, therefore, should count more. Although this assumption may have some validity, it should be pointed out that there is no experimental evidence to justify any particular system of weights and assigning arbitrary weights is, therefore, dubious practice.

Gronlund (1955) and Bjeratedt (1956) have shown that stability of sociometric result is not improved by weightage of sociometric choice. Gronlund (1959) thus contends that until evidences are presented to justify the assigning of weights to sociometric choices, it is suggested that each choice be given a value of one regardless of the level of choice. However, recording the levels of choices in the matrix table is important as it tells about the degree of reciprocation and is useful in organizing small groups and intensive work. In the present study no distinction was made in the first, second and third choices. All the choices were given the value of one (1) regardless of levels of choice. In other words, no weightage was given to the first, second and third choices.
(e) Use of Negative Criteria:

Asking subjects to indicate those whom they would least/do not prefer as associates or companions for some activity or situation has generally been known as negative criterion. The use of negative criteria is sometimes essential for certain teaching situations and research purposes. This is also useful in distinguishing between those who are simply not chosen and those who are actively rejected by the members of the group. They help in understanding and dealing with the classroom hostility. It is useful to know and understand the unexpressed feelings of rejection or unacceptance. But some investigators feel that the negative criterion causes resentment in the group. Hence they point out to eliminate the negative criterion from the most classroom testing situations. They suggest that the same results can be obtained by asking the subjects to indicate whom they would choose ‘Last’ in a particular situation. But in particular researches such as those concerning the social rejection, negative criterion cannot be avoided. In the present study, in order to identify the rejected students in the class as a group, a negative criterion was used i.e. “Name any one student of your class with whom you would not like to associate in any activity?”

IV.4 ADMINISTRATION OF SOCIOMETRIC QUESTIONNAIRE

The sociometric questionnaire prepared by Sharma (1970) was used by the investigator in order to identify three sociometric groups of students viz. neglected, rejected and isolate. This questionnaire was administered to the students of class XII of arts and science streams. There were 66 classrooms as groups (33 arts and 33 science groups) comprising of the students from randomly selected 33 schools of three districts of Jammu province. The questions put in the sociometric questionnaire were quite easy to understand, simple in use and
speedy in administration. The investigator stressed on the confidential nature of choices and thus encouraged the students to give truthful spontaneous responses.

The purpose of the present study was explained to the students and they were assured that the information would be kept strictly confidential and it will not harm them in any way. A rapport was established and the Sociometric Questionnaire was explained to them. Necessary instructions were given to them and then they were told to furnish all the information required. On the basis of the choices given on each of the criterion, sociomatrices were prepared and the unaccepted students viz. neglected, rejected and isolate were identified in the present study.

IV.5 CONSTRUCTION, TABULATION, ANALYSIS AND PRESENTATION OF SOCIOMATRIX BASED ON SOCIOMETRIC DATA

When a Sociometric Questionnaire is administered to a classroom group, the resulting data consisting of choices by each student on each sociometric criterion is obtained. In the present study too, the sociometric questionnaire was administered to different classroom groups one by one and the required data was collected. After collecting the data from the students, it was organized in such a way that the results were usefully and economically obtained. Sociomatrix (a two-fold table) was regarded as a convenient and appropriate way of organizing the sociometric results. Tabulating the data into sociomatrix table was usually the first step in analyzing the sociometric results.

Sociomatrix generally reveals the choices each pupil has given and received. The choices may be positive or negative. It tells about the sociometric status of
each student in the class, the number of neglectees, rejectees, isolates, stars, average, above average, below average student in a class, the number of reciprocal choices, the number of cross choices, the number of students who choose a student, the number of different students chosen by each student and the intensity of each choice. It is a pool from which the teacher or researcher or counselor can draw any information he may need for practical or research purpose. It is the complete picture of the status of students in a classroom as a group.

(a) Construction of Sociomatrix:

The sociomatrix was constructed by applying the following steps:

(i) A large sheet of rectangular paper was taken which contained Roll Numbers of the students in each class, both vertically and horizontally. It contained at least four squares more than the number of students in the class.

(ii) In the left hand margin down in the rows, the names and sex of all the students of a class according to their roll numbers were written.

(iii) The roll numbers of the students were also written in columns in the same order as in the rows across top margin of the table.

(iv) The bottom rows were used for summarizing information on choices received from other students.

(v) The rejections given to the students were summarized in columns next to choices.
(b) Tabulation of Data:

First of all the sociometric questionnaires completed by the students of a class were arranged in serial order beginning with Roll No.1. Then they were tabulated one by one. The choices were recorded in the rows meant for roll numbers by entering three choices received in the three criterion in the vertical columns. The students getting first choice for any criterion, were allotted 1, those getting second choice were allotted 2 and those getting third choice were allotted 3. The students getting no choice on any criterion were allotted 0. For instance-if a student in a group/class obtained second preference for Criterion No.I, first preference for Criterion No.II, third preference for Criterion No.III, the investigator entered 2 1 3 in the square against the column of that particular student. Further a student getting no choice for Criterion I & III and third preference for the Criterion II, the investigator entered 0 3 0 in the square against the column of that student. The rejections of students were indicated by placing a cross (X) in the columns. Thus looking across the sociomatrix table from Roll No. 1 to last, the choices and rejections were readily apparent. The use of symbol (X) for rejection prevents confusion with positive choices. The squares of students who were not chosen by their classmates were left blank.

(c) Basis of Analyzing Data:

The sociomatrix table can provide a wide variety of information, which can be readily obtained from it.

(i) Sociometric status score:

The choices received by a student were obtained by counting each entry made in each student’s vertical column as one, regardless of whether the choice is
given 1, 2 or 3. These totals were entered in the row labeled “Total on each criterion” at the bottom of the sociometric table. Summing the three totals in each column, the overall “Sociometric Status Score” of each student was obtained. This score was entered in row “Totals combined (Sociometric Status Score)”. In the next row, after the totals combined, the rejections received by the group members were counted against each roll number and the sum was put in the box against the particular roll number.

(ii) Sociometric categories:

After getting the “Totals combined” and “Rejections received” the students of neglected, rejected and isolate categories were identified on the basis of “Sociometric Status Score and Rejections received”. The method of classifying students into three sociometric categories is based on Bronfenbrenner’s fixed frame of reference. Bronfenbrenner (1945) worked out critical sociometric status scores for varying number of choices upto three sociometric criteria.

In the present study, three positive criteria of three choices each and one negative criterion of one choice were used. The sociometric analysis of data was based on these four criteria. The students who received three or less than three positive choices were identified as neglected students in a particular classroom as a group and the students who received three or more than three negative choices irrespective of positive choices were classified as rejected students. The students who received neither positive nor negative choices were identified as isolate students.
(d) Presentation of Sociomatrix and identification of different sociometric categories:

The substance of each sociomatrix table has been represented as sociometric basis. The sociomatrices prepared for different groups of 33 schools have been presented in the Appendix-16. These include the preferences of each student for his classmates. Three sociometric categories viz. neglected, rejected and isolate have been identified on the basis of choices and rejections they received from classmates. The sample of sociomatrix has been presented as follows:

(Sociomatrix : Three criteria, three choice and one rejection)

<table>
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<tr>
<th>Name of the student</th>
<th>Sex</th>
<th>Roll No.</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>-50</th>
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<td>Total on each criterion</td>
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<td>Totals Combined ( Sociometric Status Score)</td>
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<tr>
<td>Rejections Received</td>
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<tr>
<td>Sociometric Category</td>
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</table>

The method of classifying members of a group in different Sociometric categories, given in Table-4 has been adopted from Bronfenbrenner’s (1945) fixed frame of reference. The students are classified on the basis of Sociometric status scores and rejections they received from their classmates. The Table-4 indicates the critical Sociometric status scores for a varying number of choices upto three positive Sociometric criteria and one negative Sociometric criterion. The category of neglectees has three or less positive choices and the category of isolates has neither positive nor negative choices. Moreover the category of
rejectees has received three or more negative choices irrespective of the positive choices they received.

**Table-4: Critical Raw Sociometric Status Scores for Diverse Sociometric Situations**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Sociometric category</th>
<th>No. of positive choices received</th>
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<tbody>
<tr>
<td>1</td>
<td>Popular</td>
<td>15 and above</td>
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<tr>
<td>2</td>
<td>Above Average</td>
<td>10-14</td>
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<tr>
<td>3</td>
<td>Average</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Below Average</td>
<td>4-8</td>
</tr>
<tr>
<td>5</td>
<td>Neglected</td>
<td>1-3</td>
</tr>
<tr>
<td>6</td>
<td>Rejected</td>
<td>3 or above negative choices irrespective of positive choices</td>
</tr>
<tr>
<td>7</td>
<td>Isolate</td>
<td>0 (Neither positive nor negative choice)</td>
</tr>
</tbody>
</table>

The different sociometric categories considered in the present study are explained below:

(i) **Neglectee**: The term ‘neglectee’ is used to identify an individual who receives relatively fewer positive choices on a Sociometric Test. Although he receives fewer positive choices, yet he tends to be neglected by the majority of group members. Bronfenbrenner (1945) defined this term by indicating that a neglectee was any individual in a group who received fewer Sociometric Choices than could be expected by chance where three choice Sociometric Criteria is used. Any individual receiving 1 to 3 positive choices would be classified as neglectee. These are also called as ‘Fringers’ since they are located on fringe of group. In the present study those who received 1 to 3 positive choices on the Sociometric Test, were considered as neglected students.

(ii) **Rejectee**: A rejectee is the individual in the group who receives many negative choices on a Sociometric Test. Negative choices are those which
result from requesting members of a group to indicate those whom they least like or do not like for group activity. The ‘Rejectee’ may receive some or no positive choices from group members but he/she receives large number of negative or rejection choices. In the present study, the students who received three or more than three negative choices, irrespective of positive choices were considered as rejected students of the group.

(iii) Isolate: The isolate is an individual or member of group who receives no choice neither positive nor negative on a Sociometric Test. Although he/she is a physical member of the group but psychologically isolated from the other members of the group as he/she attracts no attention from the group members. So isolates are those who make their choices but remain unchosen by others. No one gives them positive or negative choices. They do not have a place in the classroom peer group. Sometimes they are referred to as ‘Outsiders’ or ‘Social Islands’. However these designations are not common as the term ‘isolate’ is.