CHAPTER-III

RESEARCH METHODOLOGY
In planning a study the investigator attempts to select the method or methods most appropriate to the particular problem under consideration. In this chapter the investigator dealt with a detailed description of the methodology used in the research project which provides information of scientific steps taken in conducting the research work. The quality of research depends not only on the adequacy of the research design but also on the fruitfulness of the measurement procedures employed.

**Sample:**

A stratified random sample of 374 first year undergraduates (300 boys and 74 girls) pursuing their engineering courses in different institutes of Agra city was selected. All the subjects had qualified their high school and intermediate classes from U.P. Board. They had sound understanding of English language. Their age ranged from 17 to 20 years.

**Measures:**

1. Multidimensional Academic Locus of Control Scale (MALOCS):

   The scale was developed by Palenzuela (1988), comprised of 15 items, equally distributed among the three subscales: 1. Internality (e.g. “The overall marks I get at the end of the year will always be closely related to what I do during the year.”), 2. Helplessness (e.g. “The marks I get in my subjects are always determined by a series of random circumstances.”), 3. Luck (e.g.” Luck is something decisive in the kinds of marks I’ll get in my studies.”).

**Table-3.1**

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Subscales</th>
<th>Items No.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Internality</td>
<td>1,4,6,10,13.</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>Helplessness</td>
<td>5,7,8,11,15.</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>Luck</td>
<td>2,3,9,12,14.</td>
<td>5</td>
</tr>
</tbody>
</table>
The alpha coefficients for the various parts of the scale are 0.81, 0.82 and 0.84 respectively. It is a nine point Likert type scale indicating the extent to which the subject evaluates the item as a characteristic of himself/herself (1 completely disagree to 9 completely agree, Appendix-i).

2. Learning and Performance Goal Orientation Questionnaire (LPGOQ):

A 16 item questionnaire (8 items for each subset) aimed at assessing students' orientation toward learning and performance goal. The items for this scale were pooled from the scales of Bouffard et al. (1995), Button et al. (1996) and Nicholls et al. (1985). Students were instructed to respond to the items on a five point Likert type scale, ranging from 1 completely disagree to 5 completely agree (Appendix-ii).

Table-3.2

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Subscales</th>
<th>Items No.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Learning goal Orientation</td>
<td>1,4,6,8,9,12,13,16.</td>
<td>8</td>
</tr>
<tr>
<td>2.</td>
<td>Performance goal Orientation</td>
<td>2,3,5,7,10,11,14,15.</td>
<td>8</td>
</tr>
</tbody>
</table>

Representative items from the learning goal orientation scale are: “I prefer to work on tasks that force me to learn new things” and “the opportunity to learn new things is important to me.” Items representative of the performance goal orientation scale are: “I like to work on tasks that I have done well on in the past” and “I feel smart when I do something without making any mistake.”

The cronbach alpha coefficients calculated by Sinha and Kumari (2000) were .84 and .86 respectively for learning and performance goal orientation subscales. Test-retest reliability coefficients of correlation were .87 and .81 respectively for learning and performance goal orientation subscales.

3. Generalized Perceived Self-efficacy Scale:
A 10 item scale developed by Jerusalem and Schwarzer in 1992 was used. Typical items are "Thanks to my resourcefulness, I know how to handle unforeseen situations", and "When I am confronted with a problem, I can usually find several solutions". It has been used in numerous research projects where it typically yielded internal consistencies alpha between .75 and .91. The scale is not only parsimonious and reliable, it has also proven in terms of convergent and discriminant validity (Appendix-iii).

4. State Metacognitive Inventory:

This inventory was developed by O'Neil and Abedi in 1996 to measure self-regulation and consisted of 20 items, five items for each of the four subscales, that is: 1. Awareness (e.g. "I was aware of my own thinking.")), 2. Cognitive strategy (e.g. "I attempted to discover the main ideas in the test questions.")), 3. Planning (e.g. "I tried to determine what the test required."), 4. Self-checking (e.g. "I checked my work while I was doing it."). In this inventory the scoring is to be done as: 1. Not at all, 2. Some what, 3. Moderately so, 4. Very much so (Appendix-iv).

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Subscales</th>
<th>Items No.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Awareness</td>
<td>1,5,9,13,17.</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Cognitive strategy</td>
<td>3,7,11,15,19.</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Planning</td>
<td>4,8,12,16,20.</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Self-checking</td>
<td>2,6,10,14,18.</td>
<td>5</td>
</tr>
</tbody>
</table>

A single total score is to be generated. The reliability coefficients (as reported by the authors) for the self-checking, awareness, planning, and cognitive strategy, were 0.77, 0.78, 0.80 and 0.81, respectively.

5. Academic Achievement:
For the academic achievement scores investigator collected the total marks obtained by each subject in his/her last two public examinations i.e., X and XII classes, from the office records of the respective institutes. The total marks scored by each participant were converted into percentages and the average of the percent marks of the two examinations was calculated. This was treated as measure 1 of academic achievement scores.

To make academic achievement scores a valid measure the marks obtained by each subject in his/her first year final examination marks of B.Sc. engineering were also taken into consideration. This was treated as measure 2 of academic achievement scores.

**Design:**

To study the relationship among locus of control, self-efficacy, goal orientation, self-regulation strategies and academic achievement scores, correlational design was used.

**Variables:**

Predictor variables:

(1.) Locus of control:

(A) Internality,

(B) Helplessness,

(C) Luck,

(2.) Self-efficacy.

(3.) Goal orientation:

(A) Learning goal orientation,

(B) Performance goal orientation,

(4.) Self-regulation strategies.
Criterion Variable:

Academic achievement scores:

(A) Average of percentage of marks of 10th & 12th class.
(B) Percentage of first year final examination marks of B.Sc. Engineering class.

Control variables:

Age, class, type of institution, type of board, and the city were the control variables.

Procedure:

To administer the test on subjects the investigator obtained prior approval of the concerned heads of the institutions and fixed up date and time. The teacher was also approached for necessary co-operation in proper administration of the tests. All the participants were administered the goal orientation, locus of control, self-efficacy, and self-regulation questionnaires with instructions written on the questionnaires. Appropriate time was given to complete the questionnaires. After completion all the questionnaires were collected back and the scoring was done accordingly. The data were subjected to statistical analysis.