CHAPTER - 3

DATABASE AND METHODOLOGY

In this chapter, an effort has been made to briefly discuss the nature of the study and also explain the various types of statistical methods applied to analyze the data connected with the empirical testing of the various objectives of the study.

This chapter explains the design of the study, the size and the selection of the sample, the variables and the controls employed, the source of data, the tools and methods of gathering the data and the statistical procedure used in the analysis.

DESIGN OF STUDY

Planning is the necessary step for a good research. Planning means pre-viewing or thinking about a certain activity before it is taken up for execution. It is an arrangement of all the important details of the activity before hand. It involves careful thinking about the tools to be used for successful completion. Planning provides a framework within which the goals of research are to be achieved. It facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible, yielding maximal information with minimal expenditure of effort, time and money. Research design decides the fate of any research proposal and its outcome. A systematic procedure is required to collect the necessary data which helps to achieve the objectives and to test the hypotheses formulated for the study.

The present study was designed to find the relationship of the creativity with academic interests and study habits of secondary school students. In order to study this relation, the descriptive survey method of investigation coupled with correlation analysis and factor analysis was used.

According to Best (1981), a descriptive study describes and interprets “What is”. It is concerned with conditions or relationships that exist, opinions that are held, processes that are going on, effects that are evident, or trends that are developing. It is
primarily concerned with the present, although it often considers past events and influences as they relate to current conditions. In other words, descriptive research studies are designed to obtain precise information concerning the current status of phenomena and whenever possible to draw general conclusions from the facts discovered.

According to Upasini (1987), descriptive research is a structured attempt to obtain facts and opinion about the correct status of things. It seeks to ascertain the prevailing conditions at the time of the study. Describing the current status is a kind of assessment that seems to be the basic, preliminary step to the solution of many educational problems.

Smith and Glass (1987) stated that the fundamental purpose of descriptive survey research is to describe the characteristics of variables in population by directly examining samples.

Fink (1995) explained that a survey is a system for collecting information to describe, compare, or explain knowledge, attitudes and behaviour. Survey involves setting objectives for information collecting, designing research, preparing a reliable and valid data collection instrument, administering and scoring the instruments, analyzing and reporting the results.

Best (1992) describes that survey method gathers data from a relatively large number of cases at a particular time. It is not concerned with characteristics of individuals as individuals. It is concerned with the generalized statistics that results when data are abstracted from a number of individual cases. It is essentially cross-sectional in nature. It involves a clearly defined problem and definite objectives. It requires expert and imaginative planning, careful analysis and interpretation of the data gathered and logical and skillful reporting of the findings. In other words, survey studies are conducted to collect detailed description of existing phenomenon with the
purpose of employing data to justify current conditions and practices or to make more intelligent plans for improving them.

Isaac and Michael (1981) suggested that researchers follow four guiding principles when embarking on survey research. Surveys should be systematic, representative, objective, and quantitative. They should be planned to (a) ensure appropriate content and efficient data collection, (b) reflect the population of all possible cases by including everyone or by using scientific sampling procedures, (c) ensure that data are as explicit as possible, and (d) yield data that can be stated in numerical terms.

In the light of above description, the present study is descriptive in the sense that it aims at describing the nature and distribution of variables. As such it describes the nature of creativity, academic interests and study habits of secondary school students. The study is survey, as it has definite objectives, planning, analysis and interpretation of the data gathered and skillful reporting of the findings. The study involves the comparisons of different subgroups, on the basis of sex and the area in which the school is located. The study is correlational in approach. It aims at finding out the relationship between the variables of creativity, variables of academic interests and study habits.

AREAS OF THE STUDY

The following areas are considered for the present study.

1. Boys vs. Girls
2. Rural school students vs. Urban school students

SAMPLE OF THE STUDY

The process of sampling makes it possible to draw valid inferences or generalizations on the basis of careful observation of variables within a relatively small proportion of the population. Sampling does not consist in collecting data casually from
any conveniently located units. Rather, to obtain a representative sample, one systematically selects each unit in a specified way.

For the present study, stratified random sampling technique was used for selecting the students of secondary schools. In the stratified sampling method, the entire population is divided into smaller homogeneous groups and then the sample is selected within each group. Every sampling unit in the population is placed in one of the strata prior to the selection of the sample so that the sum of the strata is identical with the population. Stratified sampling method has certain merits and advantages as a technique of sampling. Stratified sampling enables the researcher to make a comparison of properties of the strata as well as to estimate population characteristics.

In this stratified sampling method, the investigator has greater control over the selection of the sample when compared with random sampling. In random sampling, although every group has a chance of being selected and included in the sample, there is every possibility and sometimes it does happen that certain important groups are left unrepresented. But in stratified sampling method, no important group is likely to be left out.

Stratified sampling is the ideal one when comparison between different variables is made. For example, if comparison has to be made between private and government students or rural and urban students, it would be very difficult to select the required number of units through any other method of sampling. If any other method is used, the problem of bias and prejudice creeps in.

According to Garrett (1981), stratified sampling is applicable when the population is composed of subgroups or strata of different sizes. Therefore, a representative sample must contain individuals drawn from each subgroup in accordance with the sizes of the subgroups. Within each subgroup or strata, the sampling is random as nearly as possible.
Upasini (1987) stated that stratification is used when it can produce more accurate estimate of population characteristics than simple random sampling designs. There are various factors on which stratification is often done. Selection of these factors depends upon the nature of the study, the various dimensions included therein and the nature of the population to be used for the purpose.

According to Best (1992), a sample is a small section or proportion of a population selected for observation and analysis that represents all the traits and characteristics of the population.

In the present study, a sample of 500 students (both boys and girls) studying in XI and XII classes of different schools in rural and urban areas of Amritsar and Tarn Taran districts of Punjab were taken. Sample was selected by using Stratified Random Sampling Technique. The detailed breakup of the sample is shown below:

**Distribution of sample**

```
  Total Students  
    (500)

  Rural Students  
     (250)
   
  Boys (125)    Girls (125)

  Urban Students  
     (250)
   
  Boys (125)    Girls (125)
```

*Fig. 3.1*
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of School</th>
<th>Type of School</th>
<th>No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Boys</td>
</tr>
<tr>
<td>1.</td>
<td>Sri Guru Harkrishan Sr. Sec. Public School G.T. Road, Amritsar.</td>
<td>Urban</td>
<td>37</td>
</tr>
<tr>
<td>2.</td>
<td>Bhavan’s SL Public School, Shivala Road, Amritsar</td>
<td>Urban</td>
<td>07</td>
</tr>
<tr>
<td>3.</td>
<td>Ram Ashram Public School, Majitha Road, Amritsar</td>
<td>Urban</td>
<td>24</td>
</tr>
<tr>
<td>4.</td>
<td>Sri Guru Harkrishan Sr. Sec. Public School Majitha Road, Amritsar.</td>
<td>Urban</td>
<td>06</td>
</tr>
<tr>
<td>5.</td>
<td>Spring Dale Senior School, Fatehgarh Churian Road, Amritsar.</td>
<td>Urban</td>
<td>37</td>
</tr>
<tr>
<td>6.</td>
<td>Sri Guru Harkrishan International School Ranjit Avenue, Amritsar.</td>
<td>Urban</td>
<td>14</td>
</tr>
<tr>
<td>10.</td>
<td>Shaheed Darshan Singh Pheruman Public School Rayya, Distt. Amritsar.</td>
<td>Rural</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>250</strong></td>
</tr>
</tbody>
</table>
CRITERIA FOR SELECTION OF SCHOOLS

The present study was undertaken with the purpose of studying academic interests and study habits in relation to creativity among secondary school students. This objective was achieved within the framework of the hypotheses framed in chapter 1. For this purpose, primary data was collected for boys and girls from urban and rural areas of selected CBSE schools in Amritsar and Tarn Taran districts of Punjab (India). All these schools are co-educational. All these schools have science, commerce and arts as streams.

CRITERIA FOR SELECTION OF STUDENTS

Students were selected from XI and XII classes.

TOOLS USED

The researcher, depending upon the nature of the problem has to collect data using research tools. These tools are very important in determining the quality of data and in arriving at valid conclusions about the problem under study.

In the present study, following tools were used for achieving the framed objectives related with the undertaken study.

1. A new test of creativity (Verbal) by Dr. Roma Pal (1986)
2. Educational Interest Record by Dr. SP Kulshreshtha (1985)
3. PSSHI (Palsane and Sharma Study habit Inventory) by MN Palsane and Sadhna Sharma (1989)

DESCRIPTION OF TOOLS

While choosing the tests for present research, following things were kept in mind:

(a) Efficiency of the tool, which includes the reliability and validity.
(b) Ease of the administration and scoring i.e. can be administered on adolescents within age 16-18 years.
(c) Level of understanding of the respondents i.e. the test contains fairly simple items which could be understood by the subjects easily without much confusion
A New Test of Creativity (By Dr. Roma Pal, 1986)

In the present test, three components of creativity have been taken.

**Fluency**

It refers to a paid flow of ideas and tendencies to change directions and modify information. It is the quantitative representation of the units of products. It emphasizes the rate production of all the units within all the classes. Four types of fluency have been taken in this test-

(i) **Associational fluency** – It refers to the production of ideas or words from a restricted area in equal relationships.

(ii) **Expressional fluency** – It includes the production of new ideas to fit a system or logical theories which facilitates construction of sentences.

(iii) **Word fluency** – It refers to the generation of words of specifically required epithets, drawn by divergent production process using semantic contents to give a product of units in a table.

(iv) **Ideational fluency** – It refers to the generation or production of ideas where free expression is encouraged and where quality is not evaluated.

**Flexibility**

The readiness to change behaviour to meet changing circumstances is regarded as flexibility which represents the number of classes of objects or trains ideas produced. It is an indication of the distinct ways an individual can respond to stimuli. Two types of flexibility is considered here –

i) **Spontaneous Flexibility** – It refers to the production of diversity of ideas in a relatively unrestricted situation.

ii) **Adaptive Flexibility** – It refers to the divergent transformation quality which involves changes.

**Originality**

It refers to the unusual idea and suggestion for unusual application of particular objects.
Usability of the Test

The present test has been standardized on a sample of VIII to XII class students but it can be administered on all groups of sample since creativity is not limited to a particular age. It continues from childhood to adulthood. This test can also be administered on Hindi and English knowing or speaking people or both.

Scoring - The scoring procedure of the test is simple. While scoring, care was taken regarding the meaning of fluency, flexibility and originality because scoring of the item was strictly based on the meaning of there respective areas. Hence scoring of each parts was done separately following specification given below –

Scoring for Fluency – This part consisted of four types of fluency. As such responses falling under these types should strictly have the meaning of the particular type. The scoring procedure for each type was as follows:

Associational Fluency- There were eight items or questions. In item no. 1 +1 mark was given to each such response which was round in shape and -1 was given to such response which was not round in shape. In item No. 2, +1 mark was given to each such response which represented the name of such bird and animal which is white in color and -1 to each such response which is not the name of bird or animal white in color. In item No. 3, +1 mark was given to each such response that is the name of vehicle run by petrol and -1 was given to each such response that is not the vehicle not run by petrol. In item No. 4, +1 mark was given to each such response which is the name of such things that produce sound and -1 mark to the names of such things that don’t produce sound. In item No. 5, +1 mark was given to each such response which is square in shape and -1 mark was given to each such response that is not square in shape. In Item No. 6, +1 mark was given to each such response which is the name of each such flower that has natural fragrance and -1 to the name of each such flower that doesn’t have natural fragrance. In item No. 7, +1 mark was given to the name of each drinking thing that is fluid in nature and -1 mark to each such thing that is not fluid in nature. In item No. 8, +1 mark was given to each such response which is the name of the thing that function through electricity and -1 mark was given to each such response which is not the name
of the thing that function through electricity. For getting the actual associational score, all the responses of associational fluency were first counted and from it the total numbers of minus responses of associational fluency were deducted. The score obtained after deducting the minus responses from the total number of associational fluency responses were the actual associational fluency score.

**Expressional Fluency** - It has three items with seven sub items, in item no. 9, +1 mark was given to each such word that starts with alphabet ‘A’ and -1 mark was given to each such word that neither starts with alphabet ‘A’ or is repeated or doesn’t have any sense. In item No. 10, +1 mark was given to each such sentence that is related to lamp and had some sense and -1 mark was given to each such response that is not related to lamp or didn’t have any sense or was a repetition of a sentence. In item no. 11, some idioms were given as such while scoring, +1 mark was given to the response which gave the right meaning of the related idioms and -1 mark was given to each such response which didn’t reveal the real meaning of the related idiom. For getting the actual expressional fluency score, all the responses of expressional fluency were first counted and from it the total number of minus responses was deducted. The score obtained after deducting the minus responses from the total number of expressional fluency responses were the actual expressional fluency score.

**Word Fluency** - Item No. 12 of word fluency had ten sub items related to words. +1 mark was given to each such word that started with given alphabet and had some sense and was relevant. -1 mark was given to each such response which didn’t have any sense or was relevance. The score obtained after deducting minus responses from the total number of word fluency responses will be the actual word fluency scores. For getting the actual word fluency score, all the responses of word fluency were first counted and from it the total number of minus responses was deducted. The score obtained after deducting the minus responses from the total number of word fluency responses were the actual word fluency score.

**Ideational Fluency** – There are six items of ideational Fluency. In Item No. 13, 14, 15, 16, 17 and 18, +1 mark was given to such idea in which free expression was encouraged
i.e., if the ideas of a response were relevant and appropriate then +1 mark was given to each such response else -1 mark. The score obtained after deducting minus responses from the total number of ideational fluency responses will be the actual ideational scores.

For getting actual fluency scores, the scores of associational fluency, expressional fluency, word fluency and ideational fluency should be added which will be the actual fluency score.

**Scoring for Flexibility** – This part consists of two types of flexibility. As such responses falling under these types, should strictly have the meaning of the particular type. The scoring procedure for each type was as follows:-

**Spontaneous Flexibility**- There are eight items. +1 mark was given to each response that was relevant and appropriate i.e., that depicts clearly the different uses of knife and -1 mark was given to each such response that is irrelevant, inappropriate and is repeated. In item No. 2, +1 mark was given to each such response that depicts clearly the different uses of colour and was relevant and quite appropriate and -1 mark was given to each such response that was repeated, or irrelevant. In item no. 3, +1 mark was given to each response that depicted clearly the different uses of television and were relevant and quite appropriate and rest of the responses were given -1 mark.

**Adaptive Flexibility** - There are eight items. In item no. 1, if a response depicted clearly the reaction to a situation when a thief comes to your house and was quite appropriate and relevant +1 mark was given but in case of irrelevant response -1 mark was given. Similarly, if a response was appropriate and relevant to the situation as well to the question and has divergent transformation quality which involved changes then to each response of the item no. 2, 3, 4, 5, 6, 7, 8 +1 mark was given else -1 mark.

**Scoring for Originality** – The scoring for originality cannot be restricted to objective only since originality refers to the unusual ideas which are subjective as well. As such for getting the objective source of originality, weightage was given on the basis of uncommonness of responses. The more uncommon a response, the higher is the
originality weight. Three marks for the most uncommon and original response, two marks for uncommon response and one mark for some responses.

Reliability of the test- The Test-retest Reliability and split half reliability have been obtained for the creativity factors as the total creativity.

Table 3.2
Showing Test-retest Reliabilities of Creativity components and the total creativity scores (N = 100 and 15 days interval).

<table>
<thead>
<tr>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
<th>Total Creativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>.961</td>
<td>.879</td>
<td>.792</td>
<td>.939</td>
</tr>
</tbody>
</table>

Table 3.3
Showing Split-Half Reliabilities of Creativity components and the total creativity scores (N = 50; Odd-even method)

<table>
<thead>
<tr>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
<th>Total Creativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>.891</td>
<td>.938</td>
<td>.912</td>
<td>.948</td>
</tr>
</tbody>
</table>

Validity of the test

For the validity coefficient of this test, the factor-validity and validity coefficients against the teacher rating have been calculated.

For the factor validity, the Correlation Coefficient between the components of creativity and the total creativity scores have been calculated which are given below:

A. For the Urban Sample (N=200)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
<th>Total Creativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluency</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Flexibility</td>
<td>.892</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Originality</td>
<td>.698</td>
<td>.710</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Creativity</td>
<td>.938</td>
<td>.948</td>
<td>.879</td>
<td>-</td>
</tr>
</tbody>
</table>
B. For the Rural Sample (N=100).

<table>
<thead>
<tr>
<th>Factor</th>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
<th>Total Creativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluency</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td>.792</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Originality</td>
<td>.516</td>
<td>.481</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Total Creativity</td>
<td>.869</td>
<td>.820</td>
<td>.689</td>
<td>-</td>
</tr>
</tbody>
</table>

The validity coefficient of the test against the teacher rating for (N=200) each component are found to be as –

<table>
<thead>
<tr>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
<th>Total Creativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>.41</td>
<td>.35</td>
<td>.31</td>
<td>.37</td>
</tr>
</tbody>
</table>

The validity coefficient for component scores and the total creativity scores were found to be high enough (significant at .01 level) to place confidence in the use of the test.

**Educational Interest Record (EIR) 1985**

In the present study academic interests mean the interest of the students in different streams/courses in the field of education. In the present study, academic interests and educational interests are taken as synonyms.

EIR was first developed in the year 1965 which was thoroughly revised in 1970, 1975, 1978 and 1985.

Educational interests are defined as one’s own pattern of preferences, likes and dislikes preferred in any manner, wisely or unwisely, by self or by any other sources for a given educational area or subject. Therefore the purpose of present record is to aid the students to adjust themselves to their education by making wise choice of the subjects of study. Only by making a right choice each child will be able to utilize his educational potentialities to the maximum possible extent.
Description of the EIR

The present record contains 98 educational subjects / activities belonging to seven different educational interest areas. They are:

1. **Agriculture (AG):** The agricultural interest area includes the activities and subjects like animal husbandry, farming, study of manures, fruit preservation, dairying, agricultural extension, reforms in villages, veterinary sciences, rural sociology, agricultural botany, etc.

2. **Commerce (CO):** Commerce area has been covered through elements of commerce, transport principals, typing, commercial mathematics, business correspondence, shorthand, accountancy, banking, shop management, insurance, foreign trade, etc.

3. **Fine Arts (FA):** Fine Arts area of interest is represented by the subjects/activities like sculpture, music, songs, toy making, wood craft, art, drawing and painting, art of decoration, dances, etc.

4. **Home Science (HS):** Home Science area is covered through the subjects of general home science, preparation of home budget, hygiene, cooking, home management, home decoration, sewing, embroidery, knitting, child care, musical dance, etc.

5. **Humanities (HU):** Humanities area of interest is represented by subjects like Hindi, Logic, History, Geography, Economics, English literature, Anthropology, Philosophy, Sociology, Education, Psychology, Civics, etc.


7. **Technology (TE):** Technology field of interest is represented by the subject / activities like fitters’ job, electric, mechanical and civil engineering, welding, engineering drawing, radio/T.V. engineering, applied mathematics, Indian technology, general technology, science of metals, etc.

Thus each of these educational areas (based on school faculties system) has fourteen subjects on the record, seven on horizontal and seven on vertical side.

**Scoring**

The maximum possible score under each educational interest area is 14 and the minimum is zero. One mark was assigned for each right marked ( √ ) response and
total scores under that interest area was counted. For example, to know the interest in Agriculture (AG) area, sum the total for AG 1 and AG 2. For AG 1 sum up all the right marked (✓) responses vertically for first figure in the first column add for AG 2 add all the right marked (✓) responses horizontally for second figure in first (horizontal) column. Thus both the sums for AG 1 (vertically) and AG 2 (horizontally) provide a total score for AG which indicates the interest in the agriculture field and was recorded on the last page of the blank. In the same manner, raw scores for other educational areas were counted. After obtaining raw scores on all the seven different educational areas, the scores were transcribed on profile area-wise.

Reliability
The test-retest reliability coefficient is obtained 0.76 with a time interval of 15 days.

Validity
1. The activities and subjects of different faculties were taken from syllabi of the different boards and universities of India. The format was scrutinized very thoroughly and systematically by five psychologists’ relevance of the test content.
2. The test scores were correlated with teacher’s opinion and follow-up study and r 0.90 and 0.70 was calculated respectively.
3. The coefficient of validity is found 0.78 when this record was compared with Labh Singh’s educational interest inventory.

Norms and Interpretation
Scores can be interpreted in two ways, quantitatively and qualitatively. The interest scores can be presented in hierarchical order through the profile and main educational interest area, second interest area, third interest area and the least interest area may be understood by counting the frequencies of each educational interest area. Percentage of each interest area can also be calculated. This is a qualitative interpretation of the scores.

The order quantitative method of interpretation is on the basis of classification and based on the revised norms as follows:
Table 3.4
Quantitative method for interpretation of Academic Interests

<table>
<thead>
<tr>
<th>Classification</th>
<th>Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Interest</td>
<td>10-14</td>
</tr>
<tr>
<td>Above average interest</td>
<td>6-9</td>
</tr>
<tr>
<td>Average interest</td>
<td>4-5</td>
</tr>
<tr>
<td>Below average interest</td>
<td>2-3</td>
</tr>
<tr>
<td>Low interest</td>
<td>0-1</td>
</tr>
</tbody>
</table>

ADMINISTRATION OF THE TOOL

EIR is a self-administering record and may be administered individually as well in group. It was administered personally on the sample in the secondary schools. The respondents were made comfortable and were asked to read the instructions on the title page of the test. Their queries regarding the test and any confusion in the instruction were explained and satisfied. They were asked to open the test. The following instructions with examples were given on the front page of the record as under:

1. The main objective of this record is to know your educational interest so what we can guide you for education.

2. In every box of this booklet two educational subjects are written. You can put your educational interest from the two given educational subjects keeping in view the salary, prestige and future of the subject. You have to mark your choice in the following way.

(a) if you choose the first educational subject of the box, then put a tick (√) against No. 1, e.g.

```
√   1. Hindi
Chemistry 2. □
```
(b) if you choose the second educational subject of the box, then put a tick ( √ ) against No. 2, e.g.

```
1. Agriculture
Art 2 √
```

(c) if you choose the both the two subjects of the box, then put a tick ( √ ) against both the Nos. e.g.

```
1. Home Science
Music 2. √
```

(d) if you dislike both the subjects of the box, then put a cross ( X ) mark against both the Nos. e.g.,

```
X 1. Geography
Economics 2. X
```

3. Though there is no time limit to complete this record even then answer quickly. Mostly 7 to 10 minutes are required to complete this.

4. Return this record sheet after marking your choice of the education subject in each of the box.

Now open the record and start your work.

**PALSANE AND SHARMA STUDY HABITS INVENTORY (1989)**

This inventory is only a small attempt at making the teacher, the student and the parents aware that certain habits of study are good and conducive to better achievement.

When students want to know about their study habits they can use this inventory to find out whether they should make any improvements and if so in what direction. This inventory can be used by the teachers and counselors for giving proper guidance to the students who should improve their study habits. They can help these students in the optimum use of their valuable time and energy. Parents can also use this inventory to guide their children.
Description of each area of Study-habits

The study habits of the individual cover mainly the reading habits, learning techniques, memory, time-schedule, physical conditions, examination, evaluation, etc.

The items of the inventory belong to the following eight areas:

1. **Budgeting Time**: It is very important to plan the budget of study time. Time schedule helps to adjust the study periods and other activities according to the needs of the individual. The best way to budgeting the time is to keep the record of all activities throughout the day for one week. The analysis of this diary will help in budgeting the time. By budgeting time, students can optimize their success in study as well as their extra curricular activities.

2. **Physical Conditions for study**: Physical conditions play an important part in study habits. The place for study should be calm and quiet. It should be clean and there should be proper illumination sufficient light. One should use diffused light. Study table should be clean and contain only and all the necessary things e.g. papers, pen, books, pencil, etc.

3. **Reading Ability**: Reading is the basic skill in any kind of study. Reading ability includes various factors as good vocabulary, speed of reading, comprehension, independent selection of appropriate material for reading and locating information. One should be able to read at least 300 words per minute in his mother tongue, 70 to 100 words in any foreign language. One must try to build up a good vocabulary by remembering the precise meaning of the words. Speed of reading is also an important factor. Silent reading is always faster than loud reading. It’s necessary to adjust the speed of reading according to the importance of matter. Technical material requires more time than usual one. An individual should try to understand what he is reading. He should try to remember the ideas he has grasped while reading and should be able to summarize the main ideas.

4. **Note Taking**: Taking note in the class-room is an important learning activity. Taking notes from book also helps a great deal in study. There are different ways of taking notes. One may copy every thing from the text book. One may take down only
important paragraph or one may take down the headings and sub-headings and important key paragraphs to make an outline. Paraphrasing in one’s own words and summarizing is supposed to be the best way of making one’s notes. It is good practice to combine class-note and notes from books to make a final note. With the help of regular practice note-taking can become a habit.

5. **Factors in Learning Motivation**: Apart from ability to learn, desire to learn is an important consideration. If one is genuinely interested in learning, he may learn quickly and retain it for a long time. There are individual differences in capacity to learn. Everybody can improve with extra efforts. Spirit of competition and co-operation helps in learning. One learns better in a group.

6. **Memory**: Improving memory means learning better. Distributing learning periods is preferable to continuous or massed learning. The better we learn the longer we retain. Over-learning helps in remembering for a longer period.

7. **Taking Examination**: Most of our examinations are essay type where a few questions are given and students are required to write long answers. It is good to prepare an outline and arrange the ideas properly, following a logical pattern of presentation. Use of simple language is advisable. Separate ideas should be discussed in paragraph. Heading and sub-heading should be properly placed. Important words and phrases may be underlined.

   (i) **Preparation for examination**: One should devote more time and attention to his weak points. A time schedule for study should be prepared. If one is regular in his study habits he is already prepared for the examination. Calm, cool and relaxed attitude towards the examination is necessary and can be achieved only after a good preparation.

   (ii) **Use of Examination Results**: From the results one can find out his strong and weak points. Knowledge of results can motivate an individual and direct his efforts.

8. **Health**: Regular and healthy habits of eating, exercise, recreation and sleep help in maintaining good health and sound mental state which is necessary to achieve success in the examination.
The following table shows the items belonging to various areas.

Table 3.5
Item numbers and areas of Study Habit Inventory

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Areas</th>
<th>No. of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Budgeting time</td>
<td>1, 2, 3, 4, 32</td>
</tr>
<tr>
<td>2.</td>
<td>Physical condition</td>
<td>5, 6, 7, 8, 9, 49</td>
</tr>
<tr>
<td>3.</td>
<td>Reading ability</td>
<td>10, 13, 14, 15, 16, 17, 22, 28</td>
</tr>
<tr>
<td>4.</td>
<td>Note taking</td>
<td>11, 18, 19</td>
</tr>
<tr>
<td>5.</td>
<td>Learning motivation</td>
<td>20, 21, 23, 24, 25, 40</td>
</tr>
<tr>
<td>6.</td>
<td>Memory</td>
<td>12, 26, 27, 37</td>
</tr>
<tr>
<td>7.</td>
<td>Taking examinations</td>
<td>29, 30, 31, 33, 34, 35, 36, 38, 39, 42</td>
</tr>
<tr>
<td>8.</td>
<td>Health</td>
<td>41, 44, 45</td>
</tr>
</tbody>
</table>

Administration of the Inventory

The inventory can be administered to individual as well as in groups of 25 to 50. Still larger numbers can be handled with the help of assistant supervisors and the public address system (Loud speakers).

The subjects were seated comfortably in a properly ventilated and well lighted room. The purpose of the test was explained to them. Instructions written on the first page were read aloud and made clear before asking them to attempt the test. Difficulties in understanding the meaning of the words were removed by the investigator himself. Although there is no time limit to complete the test, however, the subjects were able to complete it within 20-25 minutes.

Scoring

The procedure of scoring is quite simple. For ‘Always’ or ‘Mostly’ response, score of 2 was awarded, whereas 1 and 0 scores were to be given for ‘Sometimes’ or ‘Never’ responses respectively. In case of statement numbers 6, 9, 13, 15, 24, 26, 34, 36, 37, 41 & 42 the weightage of scoring was reversed and it was as 0, 1 and 2 for ‘always’ ‘sometimes’ and ‘never’ responses respectively. The maximum obtainable
score is 90. Higher score indicates good study habits. In the present study, the maximum score in the sample was 80 and minimum score was 34.

Reliability

The reliability of the inventory is determined by two methods:

(i) The reliability coefficient was found to be .88 by test retest method (with an interval of 4 weeks) on a sample of 200 male students of undergraduate classes

(ii) The reliability coefficient was found to be .67 with an interval of 3 months on a sample of 60 girls studying in intermediate classes.

(iii) Using split half technique on 150 boys of intermediate and undergraduate classes, the coefficient of correlation was found to be .56 between odd and even items.

Validity

The inventory, besides having high face validity, has the other validity coefficients which are given below:

(a) With External Criterion (Similar type of Study Habit Inventories)

Table 3.6
Validity Coefficients in Study Habit Inventories

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of other tests</th>
<th>N</th>
<th>Validity Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Study Habit Inventory</td>
<td>80</td>
<td>.69</td>
</tr>
<tr>
<td></td>
<td>- Mukhopadhyaya and Sansanwal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Test of Study Habits and Attitudes</td>
<td>80</td>
<td>.67</td>
</tr>
<tr>
<td></td>
<td>- C.P. Mathur</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Study Habits Inventory</td>
<td>80</td>
<td>.74</td>
</tr>
<tr>
<td></td>
<td>- B.V. Patel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Study Involvement Inventory</td>
<td>80</td>
<td>.83</td>
</tr>
<tr>
<td></td>
<td>- Asha Bhatnagar</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3.7

Validity Coefficients with other variable measures

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of other tests</th>
<th>N</th>
<th>Validity Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Verbal Achievement Motivation Test</td>
<td>50</td>
<td>.46</td>
</tr>
<tr>
<td></td>
<td>- V.P. Bhargava</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Scholastic Achievement (total marks in Annual Examination)</td>
<td>50</td>
<td>.42</td>
</tr>
<tr>
<td>3.</td>
<td>Level of Aspiration</td>
<td>50</td>
<td>.58</td>
</tr>
<tr>
<td></td>
<td>- Shah and Bhargava</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Projective Test of Achievement Motivation</td>
<td>50</td>
<td>.53</td>
</tr>
<tr>
<td></td>
<td>- P. Deo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Reading Comprehension Test</td>
<td>50</td>
<td>.76</td>
</tr>
<tr>
<td></td>
<td>- Ahuja &amp; Ahuja</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above validity Coefficients indicate that the inventory has sufficiently high validity with other similar inventories and allied Measures by other authors and have significant relationship with other variables which influence the study habits and academic performances. For research purpose, the inventory can be safely recommended for use with the sample for which it has been prepared.

**Norms**

The following are the norms obtained on students of both sexes studying from intermediate to postgraduate levels.
Table 3.8  
Interpretation of Study Habits Scores

<table>
<thead>
<tr>
<th>Percentile Level</th>
<th>Boys</th>
<th>Girls</th>
<th>Category</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>75</td>
<td>78</td>
<td>A</td>
<td>Excellent Study Habits</td>
</tr>
<tr>
<td>90</td>
<td>74</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>64</td>
<td>68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 (Q3)</td>
<td>62</td>
<td>67</td>
<td>B</td>
<td>Good Study Habits</td>
</tr>
<tr>
<td>70</td>
<td>61</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 (Md.) (40)</td>
<td>59</td>
<td>63</td>
<td>C</td>
<td>Average Study Habits</td>
</tr>
<tr>
<td>30</td>
<td>57</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 (Q1)</td>
<td>55</td>
<td>58</td>
<td>D</td>
<td>Unsatisfactory Study Habits</td>
</tr>
<tr>
<td>20</td>
<td>53</td>
<td>56</td>
<td>E</td>
<td>Very Unsatisfactory Study Habits</td>
</tr>
<tr>
<td>10</td>
<td>50</td>
<td>53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=</td>
<td>400</td>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean=</td>
<td>59.74</td>
<td>63.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median=</td>
<td>59.21</td>
<td>63.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.D. =</td>
<td>6.40</td>
<td>6.60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the above table, the percentile level or position of a student category of his performance and its interpretation can be made depending on his being a male or female.

**ADMINISTRATION OF THE TESTS**

The test has been personally administered on the secondary school students taking all the necessary precautions.
The data for the present study were collected by the investigator herself. The students were approached through the heads of the institutions for the collection of the data. The permission of the concerned head of the institution was sought and timings were fixed with the teachers-in-charge. All the tests were administered on different days in each institution. The purpose of the visit was explained to the students. They were also assured that the information received from them would be used only for research purpose. After establishing a good rapport with the students, the instructions were read allowed and explained to the students, as per manual for each test. All efforts were made to get maximum cooperation of the students. After completing one test, the answer sheets and booklets were collected and the next test was given to the students with sufficient gap similarly all the three tests were completed.

STATISTICAL TECHNIQUES

In order to meet the specified objectives of the study and arrive at the results following statistical techniques were applied to analyze the data:

The results were obtained with the help of the following statistical techniques:

1. Descriptive statistics i.e. mean, standard deviation, skewness and kurtosis;
2. Correlation analysis;
3. Factor analysis.

Descriptive Analysis

The objective of descriptive analysis was to find the nature and distribution of scores on all the variables. Accordingly, the results have been analyzed and interpreted in the light of mean, standard deviation, skewness and kurtosis on the variables of academic interests, study habits and creativity.

The variable of academic interest includes agriculture, commerce, fine arts, home science, humanities, science and technology whereas the components of creativity are fluency, flexibility and originality.
Correlation Analysis

The relationship between the variables of creativity, academic interests and study habits has been studied through Karl Pearson’s co-efficient of correlation. Its significance has been tested by applying student’s ‘t-statistic’ using the following formula:

\[ t_{n-2} = \frac{r \sqrt{n-2}}{\sqrt{1-r^2}} \]

Where \( n \) is the number of paired observations, \( r \) is the coefficient of correlation between various variables in different samples. Calculated value of ‘t’ has been compared with the tabular value of ‘t’ for \( n – 2 \) degree of freedom at 0.01 and 0.05 level of significance for two-tailed test.

Factor Analysis

In Factor Analysis, a given set of \( n \) variables is grouped into \( p \) number of groups called ‘Factors’ which are less in number than the set of original variables. The variables within a group (Factor) are of the same nature or are complementary with respect to the phenomenon under study but between two groups ‘Factors’ variables are independent. Thus factors \( F_i \) and \( F_j \) are orthogonal.

The technique of Factor Analysis, as used in the present study, is given as under:

\[ X = LF + U \]

Where \( X \) is vector of all the original variables.

\[ X' = [X_1, X_2, X_3, \ldots \ldots \ldots X_n] \]

\( F \) is vector of ‘Factors’ derived

\[ F' = [F_1, F_2, F_3, \ldots \ldots \ldots F_p] \]

\( U \) is vector of error terms

\[ U' = [E_1, E_2, E_3, \ldots \ldots \ldots E_n] \]

and \( X', F' \) and \( U' \) are the respective transposes.

\( L \) is matrix of Factor Loading (Loading Coefficient Matrix)
The coefficient (Factor Loading) $a_{ij}$ belongs to $i^{th}$ variable and $j^{th}$ factor which is similar to simple correlation coefficient and shows the extent to which variable $X_i$ is related to $F_j$ Factor. “A salient loading is one which is sufficiently high to assume that a relationship exists between the variable and the Factor. In addition, it usually means that relationship is high enough so that the variable can aid in interpreting the factor and vice-versa.” (Gorsuch, 1974)

The sum of the square of factor loadings of $X_i$ original variables under the derived $p$ Factors is called the communalities ($C_i$) for $X_i$ variables.

$\sum (a_{i1})^2 + (a_{i2})^2 + (a_{i3})^2 + \ldots + (a_{ip})^2 = (C_i)^2$

Communality in Factor Analysis is something like $R^2$ in the Regression Analysis and it shows the extent to which the derived factors explain the $i^{th}$ variables. Derived communality value generally should be larger (more than 70 percent) to be sure that each variable has been explained well. By definition, the communality of a variable is that proportion of its variance which can be accounted for the common factors (Lindeman et. al., 1980).

The Principal Component Analysis (Factor Analysis) produces components (Factors) in descending order of their importance and factor loadings which explain the relative importance of different variables in explaining variance in the phenomenon. Some studies using ‘Factor Analysis’ adopted ‘First Principal Component’ as guiding principle for determining individual indicator weights. In the present study, all the ‘Principal Components’ (Factors derived) are taken into account to determine relative
weights of selected variables so as to reflect maximum possible variations. The method for determining the relative weights for the variables is explained below:

\[ W_i = F_{ik} \lambda_k \]

Where,

- \( W_i \) = Weight of \( i^{th} \) variable
- \( F_{ik} \) = Factor loading of \( i^{th} \) variable and \( k^{th} \) factor which reflects the highest correlation between variable \( (X_i) \) and factor \( (F_k) \)
- \( \lambda_k \) = variation explained by \( k^{th} \) factor

The above mentioned various types of statistical methods are employed to analyze the data and results are interpreted accordingly.

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