CHAPTER III
METHODOLOGY
The need to understand salient characteristics of academic achievement and factors influencing the degree of achievement has become more relevant in the current fast changing socio-economic settings and technology playing a vital role in shaping the societal behavior. This would pave way for the development of sound educational practices, informed administrative measures fostering student’s adaptive behavior that enhance their academic performance. And it is possible to encourage development of students’ talent based on valid assumptions about their nature of academic behavior.

The present study is one of the several investigation planned to explore the characteristics of academic achievement and their Psychological correlates among college students/adolescents. Earlier studies have tested a large number of hypotheses about variables which were often assumed to be associated with academic achievement. A very few studies have explored about academic achievement variables in the context of Indian settings.

The current research explored four Psychological correlates/factors related to academic achievement, namely learning style preferences, sources of stress perceived, coping strategies employed and level of achievement motivation. This chapter discusses the sample selection, procedure adopted, variables, model used for the research and the statistical techniques. The focus of the study specifically enthralled on students who seem to struggle in their studies and who lack interest and motivation. They seem to simply trudge on without any vision or ambition, constituting the low academic achievement. Thus the special emphasis was to enhance their academic achievement by intervening with an enrichment program.
**Research Title:**

“Academic Achievement of College Students and its Psychological Correlates: Developing An Enrichment Program to Enhance Academic Achievement”.

**Research questions:**

Research questions are concise, clear, focused, and arguable statements which have to be answered by the researcher. The following research questions were framed for the study-

- Is there a difference in learning style preferences of students pursuing undergraduate program in science courses?
- Is there a difference in perceived sources of stress among students pursuing undergraduate program in science courses?
- Is there a difference in coping strategies adopted by students pursuing undergraduate program in science courses?
- Is there a difference in level of achievement motivation by students pursuing undergraduate program in science courses?
- Is there a difference in learning style preference between students pursuing undergraduate program in pure science and applied science courses?
- Does sources of stress perceived between students pursuing undergraduate program in pure science and applied science courses differ?
- Is there a difference in coping strategies adopted between students pursuing undergraduate program in pure science and applied science courses?
- Is there a difference in level of achievement motivation students pursuing undergraduate program in pure science and applied science courses?
- Does a learning style preference of high, average and low academic achievement students differ?
Does a source of stress perceived by high, average and low academic achievement students differ?

Does a coping strategies adopted by high, average and low academic achievement students differ?

Does a level of achievement motivation among high, average and low academic achievement students differ?

Do learning style preferences differ among boys and girls?

Does a source of stress differ among boys and girls?

Do coping strategies employed by boys and girls differ?

Does level of achievement motivation differ among boys and girls?

Does the enrichment/training program enhance the academic achievement of low academic achievement students?

Objectives:

An objective is a general statement, which reflects the intention or purpose of the chosen area of research. It is a specific statement defining the goal/aim of the research. Hypotheses are in turn coined based on the objectives.

To examine the learning style preferences of students pursuing undergraduate program in science course.

To study the sources of stress perceived among students pursuing undergraduate program in science course.

To examine the coping strategies adopted by students pursuing undergraduate program in science course.

To identify the level of achievement motivation of students pursuing undergraduate programs in science course.
To compare the learning style preferences of students pursuing undergraduate program in pure science and applied science courses.

To compare the sources of stress perceived among students pursuing undergraduate program in pure science and applied science courses.

To compare the coping strategies adopted by students pursuing undergraduate program in pure science and applied science courses.

To compare the level of achievement motivation of students pursuing undergraduate program in pure science and applied science courses.

To compare the learning style preferences of high, average and low academic achievement students.

To compare the sources of stress perceived among high, average and low academic achievement students.

To compare the coping strategies adopted by high, average and low academic achievement students.

To compare the level of achievement motivation of high, average and low academic achievement students.

To examine the gender differences in learning style preferences of students pursuing undergraduate program in science course.

To study the gender differences in sources of stress perceived among students pursuing undergraduate program in science course.

To examine the gender differences in coping strategies adopted by students pursuing undergraduate program in science course.
o To examine the gender differences in level of achievement motivation of students pursuing undergraduate program in science course.

o To develop the enrichment program to enhance the academic achievement of low academic achievement students.

o To test the effectiveness of the enrichment program using a quasi experimental method.

HYPOTHESES:

In the current study the null hypotheses has been considered since there are many studies/literature which contradict the opinions on Psychological correlates of academic achievement.

Null hypothesis is a hypothesis of no effect. In other words; a null hypothesis directly contradicts the hypothesis of the proposed research by stating that the independent variable (cause) will not have any influence on the dependent variable (effect), and that any differences between the control and experimental groups in the chosen research are only incidental or by chance. A null hypothesis is where the researcher assumes that there is no relationship or difference between the variables chosen for the study. It is used at the start of an experiment in the absence of any formed opinion about the outcome of experiments to be carried out during the research. This enables the research to be more scientific because opinions or expectations do not influence any observations or questions during the experimentation.

Phase I:

Specific hypotheses formulated under different themes were on:
1. Learning Style Preferences.

2. Sources of Stress.


4. Achievement Motivation.

**Theme 1: Learning Style Preferences.**

H1.1. There is no significant difference in learning style preferences of students pursuing undergraduate program in pure science and applied science courses.

H1.2. There is no significant difference in learning style preferences among high, average and low academic achievement students.

H1.3. There is no significant gender difference in learning style preferences of students pursuing undergraduate program in science course.

**Theme 2: Sources of Stress**

H2.1. There is no significant difference in sources of stress perceived among students pursuing undergraduate program in pure science and applied science courses.

H2.2. There is no significant difference in sources of stress perceived among high, average and low academic achievement students.

H2.3. There is no significant gender difference in sources of stress perceived by students pursuing undergraduate program in science course.
Theme 3: Coping Strategy

H3.1. There is no significant difference in coping strategies adopted by students pursuing undergraduate program in pure science and applied science courses.

H3.2. There is no significant difference in coping strategies adopted by high, average and low academic achievement students.

H3.3. There is no significant gender difference in coping strategies adopted by students pursuing undergraduate program in science course.

Theme 4: Achievement Motivation

H4.1. There is no significant differences in the level of achievement motivation of students pursuing undergraduate program in pure science and applied science courses.

H4.2. There is no significant differences in the level of achievement motivation of high, average and low academic achievement students.

H4.3. There is no significant gender differences in level of achievement motivation of students pursuing undergraduate program in science course.

Phase II:

In the current study, phase II was focused group discussion (qualitative method). This phase aimed to gain insights, patterns/trends of the low academic achievement students in terms of Psychological correlates of academic achievement. Therefore no hypothesis was formulated.
Phase III: After the Enrichment Program

H1. There will be a significant difference in learning style preferences among low academic achievement students in the pre and post test.

H2. There will be a significant difference in overall stress domain among low academic achievement students in the pre and post test.

H3. There will be a significant difference in coping strategies adopted among low academic achievement students in the pre and post test.

H4. There will be a significant difference in the level of achievement motivation among low academic achievement students in the pre and post test.

H5. There will be a significant difference in academic achievement among low academic achievement students in the pre and post test.

OPERATIONAL DEFINITION:

- Learning Style Preferences:

  Learning styles are the preferences in which the information is taken-in and given-out. (Fleming 2001). The VARK questionnaire was used to assess the learning style preferences. There are four learning style preferences in VARK Questionnaire as stated below-


  ✓ Read/Write Learning Preference (R): This preference is for information displayed as words (Text-based input and output).

  ✓ Kinesthetic Learning Preference (K): By definition, this modality refers to the perceptual preference related to the use of experience and practice (simulated or real).
• **Sources of Stress:**

Stress refers to the events experienced by the person in his/her life. (Albuquerque et.al, 1990).

The inventory has seven areas/sources/domains of stresses, namely

- **Educational Area** - refers to the problems in college life/academics.
- **Heterosexual Area** - refers to the relationship issues among adults in college.
- **Family Area** - refers to the family problems, pressure or crisis.
- **Financial Area** - refers to the money matters.
- **Health Area** - refers to health issues related to physical illness or Psychological disturbances.
- **Bereavement Area** - refers to the loss of the closed. (Grieving or traumatic experience).
- **Miscellaneous Area** - refers to other related/varied issues.

• **Coping Strategy:**

Coping refers to what the person actually does in a stressful encounter and how this changes over time. (Rao, Subbakrishna, & Prabhu, 1989). There are three different coping strategies, as mentioned below

- **Problem-Focused Coping** - targets the causes of stress in practical ways which tackles the problem or stressful situation that is causing stress, consequently reducing the stress.

- **Emotion-Focused Coping** - involves trying to reduce the negative emotional responses associated with stress such as embarrassment, fear, anxiety, depression, excitement and frustration.

- **Problem and Emotion-Focused Coping** - adopting the combination of both problem and emotion-focused coping strategies.
• **Achievement Motivation:**
Achievement motivation is a disposition to strive for success in competition with others with some standard of excellence, set by the individual. (Deo & Mohan 1985).

• **Pure Science:**
Students pursuing Bachelor of Science (B.Sc) course with Physics, Chemistry, and Mathematics (PCM) combination studying II through V semester, affiliated to Bangalore University.

• **Applied Science:**
Applied science course students were those from Vishvesvaraya Technological University, under graduate colleges, studying II through V semester, Bachelor of Engineering (B.E) in Computer Science and Information Technology.

• **Academic Achievement:**
The measure of academic achievement of students was based on the examination marks declared by the University to gauge how far and how much the learning objectives have been achieved by them. It is widely used as a benchmark to qualify students to gain admission to university or jobs either in the public sector or private firms. In this study, students’ academic achievement was based upon the final semester examination result (based on theory, practical and internal assessment). This data was gathered from the educational institution/students marks sheet. During Phase I of the study (quantitative), the researcher also obtained data from the students about their previous semester results to draw conclusion on the students’ performance for the purpose of the study.

Educational institution considers the total marks obtained in each semester examination to declare their academic achievement, where a score of 70% and above are considered distinction, 50% and below are considered as pass class. In the present study the same criteria was considered to determine the academic achievement.
✔ **High Academic Achievement**- Students who have scored 70% and above were considered as “high academic achievement”.

✔ **Average Academic Achievement**- students scoring 69-51% were considered as “average academic achievement”.

✔ **Low Academic Achievement**- 50% and below were considered as “low academic achievement”.

Academic achievement is commonly measured by examinations or continuous assessment (CA) but there is no general agreement on how it is best tested or which aspects are most important. (Imeokparia et al 2013).

**VARIABLES:**

**Dependent Variable:**

- Academic achievement (Final semester exam scores).

**Independent Variables:**

- Learning style preference.
- Sources of Stress.
- Coping Strategies.
- Achievement Motivation.

**Inclusion Criteria:**

- English medium of instruction.
- Urban population.
- Pure science students who were from undergraduate colleges, studying from II through V semester B.Sc opted PCM combination, affiliated to Bangalore University.
o Applied science student who were from the department of computer science and information technology, studying in II through V semester affiliated to Visvesvaraya Technological University.

**Exclusion Criteria:**

- Students from Bachelor of Arts, Commerce, medical and other applied courses.
- Rural population.
- Post graduate students.

**Research Design:**

Bearing in mind, the aims and objectives of the study and what study purports to measure, the research design made use for this study was mixed approach method. Quantitative and qualitative techniques were utilized to delineate the Psychological factors of academic achievement. It was also used to understand the nature of phenomenon under study in terms of various variables and explaining the association among the variables, which in turn lead to hypothetical formulations for further study.

The study was conducted in III Phases.

**Phase I: Quantitative Method:**

In this phase the academic achievement of students was divided into three categories- high, average and low across two streams- pure science and applied science. Thus the factorial design was adopted. The data was generated from participants through paper pencil tests to determine the psychological correlates of academic achievement among undergraduate students pursuing science programs.
Phase II: Qualitative Method: Focused Group Discussion (FGD):

Phase II employed qualitative method. In this phase only low academic achievement students were randomly selected from both the faculties (pure science and applied science). In this part of the study, the qualitative data was obtained through focused group discussion, the open ended questions with 36 students across pure science and applied science students was conducted. The focus group questions were based on the trends/patterns identified in phase I (Quantitative data) and also an unstructured interview, with students and teachers across both the disciplines.

Phase III: Quasi Experimental Design:

The Quasi experimental design was adopted. In this design, a single group was selected, that is students with low academic achievement. The variables like Learning style preferences, sources of stress, coping strategies and level of achievement motivation was assessed before enrichment program and after the enrichment program (pre and post test design).

This phase comprised four stages.

Stage 1: Pre test: (Quantitative Method)

In this stage of study, the quantitative data was obtained through questionnaires from 141 students across pure science (75 students) and applied science (66 students). The variables like learning style preferences, sources of stress perceived, coping strategies adopted and level of achievement motivation was assessed.
Stage 2: Development of Modules: (Qualitative Method)

Based on the quantitative and qualitative data generated from students the trends and patterns in perception of the academic achievement and related psychological factors were identified, the modules were developed based on the systematic analysis of the discussions, clues and insights provided by the students. Thus the enrichment program model was named as need-based eclectic enrichment program.

Stage 3: Administration of Workshop: (Qualitative Method)

The enrichment program was conducted for 16 sessions (one session per week) for both streams (pure science and applied science). The training was delivered to 27 students’ pure science (16 students) and applied science (11 students). But only 15 students from both streams that is, pure science (07 students) and applied science (08 students) completed the enrichment program.

Stage 4: Post Test: (Quantitative Method)

In this stage of study, the quantitative data was obtained through questionnaires from 15 students’ pure science (07 students) and applied science (08 students). The participants were asked to respond to paper pencil tests assessing learning style preferences, sources of stress perceived, coping strategies employed and level of achievement motivation after three weeks of the enrichment program. The researcher also obtained the final semester results to compare the academic achievement of students on pre and post test.
Sample Selection:

The colleges which included the inclusion criteria were identified and penned out. These colleges were contacted and permission sought for data collection. All students of second through fifth semester, who were studying in both Bachelor of Science and engineering course colleges situated in Bangalore city, were considered as the study population.

Participants comprised 656 undergraduate students aged 18-23 years. Three pure science undergraduate colleges and five engineering/applied science colleges were considered for the present study. Students of high academic achievement constituted 39%, average academic achievement composed of 39%, and low academic achievement made up 22% of the total number of participants. Among these participants, 48% were from pure science course and 52% were from applied science course. Boys constituted 47% and girls 53%.

Phase I: Quantitative Method:

For this phase an attempt was made to obtain data from undergraduate students across second through fifth semester, where applied science student (339 students) were from the Department of Computer Science and Information Technology, studying from II through V semester affiliated to Visveswaraya Technological University and pure science students (317 students) were from undergraduate colleges, studying from II through V semester B.Sc opted Physics, Chemistry & Mathematics combination, affiliated to Bangalore university. Students who gave consent and completed the paper pencil tests constituted the sample. All the respondents were in the age group of 18-23 years.
Phase II: Qualitative Method: Focused Group Discussion:

Qualitative data was obtained using Focused group discussion, a total of 36 students were considered for the study. The sample comprised sub-sample of students across two groups from pure science (20 students) and applied science (16 students), who were low academic achievement students, where their performance in the final semester exams was 50% and below and who had consented to participate constituted the sample. The random sampling method was used.

Phase III: Quasi Experimental Method:

Stage 1: Pre test: In this stage, data was obtained through questionnaires from 141 students across pure science (75 students) and applied science (66 students). The variables like learning style preferences, sources of stress, coping strategies and achievement motivation were assessed.

Stage 2: Development of Training Modules: The modules were developed for the low academic achievement students based on their need to enhance their academic achievement.

Stage 3: Workshop for Low Academic Achievement students: 37 students were contacted initially for the enrichment program. Among them the training was imparted to 27 students across pure science (16 students) and applied science (11 students). But only 15 students from both streams- pure science (07 students) and applied science (08 students) completed the enrichment program. Students who were not able to attend or who missed one session in between were not considered for the analysis. The random sampling method was used.
**Stage 4: Post Test:** In this stage, data was obtained through questionnaires from 15 students across pure science (07 students) and applied science (08 students) those who completed the enrichment program. The participants were asked to respond to questionnaires assessing learning style preferences, sources of stress, coping strategies and achievement motivation. The researcher also obtained the final semester results to compare the academic achievement between pre and post test.

**Figure 3.1 Schematic Representation of Sample Size of the Study.**

**Phase I- Quantitative Method**
Phase II: Qualitative Method: Focused Group Discussion

Phase III: Quasi Experimental Method

Stage 1: Pre-Test

Stage 2: Workshop

Stage 3: Participated 27

Stage 4: Post Test

Completed 15
Tools of Assessment:

- **Informed Consent Form**

  The student consent form was prepared by the researcher to take the consent from the participant to take part in the research. [Appendix A, (Pg. 279)].

- **Socio-Demographic Data**

  To document the respondents’ identification data viz., age, gender, education, class, percentage obtained in the previous semester, institution, the socio-demographic data sheet was prepared by the investigator; the data was elicited from the study sample. [Appendix B, (Pg.280)].

- **Kuppaswamy Socio-Economic Status Updated Scale (Kumar et al., 2007)**

  This scale takes account of education, occupation and income of the family to classify study groups into high, middle and low socio-economic status categories. (Appendix B, (Pg. 281)].

- **VARK Learning Style Questionnaire (Version 7.0), (Fleming ND, 2001)**

  VARK provides the learning style preferences. VARK stands for Visual, Aural, Read/Write, and Kinesthetic sensory modalities that are used for learning information. The questionnaire has sixteen questions with four options.

  ✓ **Visual Learning Style Preference (V):** This preference includes the depiction of information in maps, spider diagrams, charts, graphs, flow charts, labeled diagrams, and all the symbolic arrows, circles, hierarchies and other devices.
Aural / Auditory Style Learning Preference (A): This perceptual mode describes a preference for information that is "heard or spoken." Learners who have this as their main preference report that they learn best from lectures, group discussion, radio, email, using mobile phones, speaking, web-chat and talking things through.

Read/Write Learning Style preference (R): This preference emphasizes text-based input and output - reading and writing in all its forms. Students who prefer aural forms of information dissemination report that they learn best from lectures, tutorials, and discussion with other students and faculty.

Kinesthetic Learning Style Preference (K): kinesthetic preference is defined as one in which all or any of these perceptual modes are used to connect the student to reality, either through experience, example, practice, or simulation.

The reliability of the scale for visual, auditory, reading and kinesthetic is 0.85, 0.82, 0.84, and 0.77 respectively. [Appendix C, (Pg. 282-286)].

Stressful Life Events Inventory (Albuquerque et al 1990)

The student form, which was developed for Indian context was employed for the present study. It was open ended and consisted of 56 discrete events covering seven different areas of stress (Educational, heterosexual, family, financial, health, bereavement, and miscellaneous stress). A one year time span was used and events were dated to nearest month. Dimensions of desirability (positive, neutral and negative) and controllability (within and beyond control) were measured. The distress for each item experienced was rated on a 5 point scale from no distress (0) to severe distress (5). The reliability of the test using Cronbach’s alpha was 0.75. This scale was developed for college students in Indian context. [Appendix D, Pg. 287-293].
Following are the different sources of stress measured in this scale:

- Educational Area- has 10 items
- Heterosexual Area-7 items
- Family Area-16 items
- Financial Area- 6 items
- Health Area-7 items
- Bereavement Area- 5 items
- Miscellaneous Area-5 items
- Overall / total Stress- 56 items.

**Coping Checklist- CCL (Rao, Subbakrishna, & Prabhu 1989)**

This checklist comprises of 76 items, describing a wide range of emotional, cognitive and behavioral responses that may be used to handle stress. It is applicable to college students of both genders, having a minimum of ten years of education. Items were scored in yes/no format, indicating the presence of a particular coping behavior. The coping checklist has seven sub scales developed on an “Apriori” basis and validated in a normal adult community sample. There was one problem-focused scale (Problem solving-11 items), five emotion-focused scales (distraction-positive methods-14 items, distraction-negative method-9 items, acceptance/redefinition-13 items, religion/faith-9 items and denial/blame-12 items) and the last one was social support which was a combination of both problem & emotion-focused coping.

- **Problem-Focused Coping**
  
  ✓ Problem solving (11 items) 1,12,30,44,52,53,54,55,56,70,71.
o **Emotion-Focused Coping**

✓ Distraction (Positive-14 items)
  4,10,11,22,29,37,40,45,48,50,57,59,63,64.

✓ Distraction (Negative-9 items) 8, 14, 17,24,34,46,58,60,69.

✓ Acceptance/Re-definition (13 items)
  2,5,13,16,118,20,28,41,43,47,61,72,75.

✓ Religion/Faith (9 items) 9, 21, 25,27,33,36,39,62,66.

✓ Denial/Blame (12 items) 6,19,23,31,32,35,38,49,51,67,68,74.

o **Problem & Emotion-Focused Coping**

✓ Social support (8 items) 3, 7,15,26,42,65,73,76.

The coping checklist was meant for use in an urban population and is applicable for both genders. The test-retest reliability using product moment correlation for a period of one month was 0.74 (p<0.01) and the internal consistency was 0.85. [Appendix E, (Pg. 294-297)].

- **Achievement Motivation Scale (n-Ach) (Deo - Mohan 1985)**

The questionnaire was developed by Deo & Mohan (1985). This is a self rating questionnaire. It has 50 items and has no time limit. There are 37 positive items and 13 negative items. The positive items has a response choice on a 5 point scale, given as always, frequently, sometimes, rarely and never which carries the scores as 4,3,2,1, and 0 ,whereas, the negative items has a response choice , given as similar to the positive items but the scoring is done as 0,1,2,3, and 4. There are two separate stencil keys provided for the scoring of positive and negative items scores. The minimum score obtained can be 0 and maximum
score can be 200. The reliability coefficient is reasonably high \( r = 0.69 \), 4 weeks interval) using the test retest method and the item validity is established by high low discrimination method and it was accepted as the validity of the whole measure.

Deo-Mohan achievement motivation scale (1985) was used to measure the achievement motivation of adolescents. The scale has been constructed by Dr. (Mrs.) Pratibha Deo and Asha Mohan in 1985, Hindi and English version. English form of Achievement motivation scale was used in the present study.

The scale consisted of 50 items having 15 factors distributed as following:

1. Achievement Motivation (4)
2. Need For Achievement (4)
3. Academic Challenge (4)
4. Achievement Anxiety (1)
5. Importance of Grades (2)
6. Meaningfulness of Task (4)
7. Relevance of School/College to Future Goals (2)
8. Attitude towards Education (4)
9. Work Methods (5)
10. Attitude towards Teachers (3)
11. Interpersonal Relations (4)
12. Individual Concern (2)
13. General Interests (4)
14. Dramatics (2)
15. Sports (5)

Out of 50 items, 13 are negative and 37 are positive items. The scale is of the self-rating type and can be administered in a group with 5 points to rate viz always, frequently,
sometimes, rarely, never. It has no time limit. The scoring device was simple stencil type having a numerical weight age from 4 to 0 for positive in the above order of rating scale and the reverse of it for the negative items. The scale has test-retest reliability and split-half reliability of 0.56 and item validity of 0.54. [Appendix F, (Pg 298-303)].

- **Focused Group Discussion (FGD):**

  The discussion were focused on the Psychological correlates of academic achievement like challenging experiences faced in college and exploration of how challenge was to overcome, sources of stress faced, means of coping employed, the discussion also explored participants perception of factors that could enhance their academic achievement. (Appendix G, (Pg 304-306)].

  The following are the Focused group questions:

- **Specific Questions for FGD:**
  - How do you study?
  - What are the problems you face while you are studying?
  - When do you feel comfortable to study?
  - What strategy do you use while studying?
  - What is stressful for you, when you study?
  - How do you manage to deal with stress when you are studying?
  - How often do you face stress?
  - List out the stress you often face.
  - What measures you take to ward off your stress?
- Is examination a common cause of stress?
- How do you manage to deal with examination stress?
- Why do you think you need to study?
- What motivates you most in studying?
- How do you measure your academic success in college?
- What are the hindrances you face in achieving your academic goals?
- What will you do to overcome that hindrances/obstacle?

**Enrichment Program:**

The researcher designed appropriate enrichment program to enhance academic achievement of college students. They were prepared after reviewing the literature and based on information derived from the quantitative and qualitative (focused group discussion) data collected from students, teachers as well during discussions with the experts. The program content included training on study skills, reading skills, concentration, memory techniques, time management, goal setting, coping with stress, well being and motivation. The enrichment program model was named as need-based eclectic enrichment program. Because the enrichment program modules content was purely based on the needs of students an eclectic approach was adopted to prepare these modules. (Appendix H – P, (Pg 308-375)].
PROCEDURE:

The study was carried out in two stages, a pilot study followed by a main study.

• Pilot Study-

This was carried out on a random sample of 10 students. The pilot study was conducted with following aims-

- To familiarize the researcher with the tools.
- To check the feasibility.
- To estimate the time needed to complete the questionnaire.
- To find out if there is any problems in the questions and to finalize the tools.
- To make any changes in the tools if necessary.

• Main Study-

Main study includes III phases.

Phase I: Quantitative Method:

The quantitative data was collected from the students enrolled in applied science and pure science colleges, where the medium of instruction was English. Applied science students were from Department of computer science and information technology, affiliated to Visvesvaraya Technological University and Pure science students affiliated to Bangalore University, they were from Bachelor of Science opted Physics, chemistry, and mathematics combination, and they were from II through V semester. The assessment was conducted in a group format during the scheduled class hour. Students were distributed the questionnaire packet containing:

- Informed Consent Form.
- Socio-Demographic Data.
- Kupparasamy’s Socio-Economic Status Updated Scale (Kumar et al., 2007).
- VARK Learning Style Questionnaire (Version 7.0), (Fleming, 2001).
Data collection in phase I was followed with a brief introduction about the research, which was conducted in the duration of the academic year.

The objectives of Phase I was:

- To assess the influencing factors of students’ academic achievement in relation to learning style preferences, sources of stress, coping strategies, and achievement motivation.
- Creating awareness among students about the factors which influence their academic achievement.
- Providing students with resources for further information on the influencing factors of academic achievement.

Data was collected from students and processed for further analysis.

**Phase II: Qualitative Data: Focused Group Discussion (FGD):**

Students who had completed the quantitative assessment and who were low academic achievers were randomly selected. After a brief introduction, the purpose and scope of the discussion were explained. Participants were asked to give their names and short background information about themselves. The discussion was structured around the key themes, which was collected from the unstructured interview with few students and teachers across both the streams during the phase I of the study. Thus the focused group discussion questions were framed on the basis of the factors/issues which students experienced. A total of 36 members
with low academic achievement participated in the discussion to understand the issues related to low academic achievement. The discussions featured several open-ended questions, and used probes at their discretion and this varied across groups.

Researcher alternatively used brainstorming to control the tempo of discussions and to optimize uniform participation across members. During the discussion, all participants were given an opportunity to participate, using a variety of moderating strategies to facilitate the group discussions. Some of the strategies used by the moderator were:

• Stimulate the participants to talk to each other, not necessarily with the moderator.
• Encourage shy participants to speak.
• Use in-depth probing without leading the participant.

The moderator/researcher noted the findings and conclusions of the group discussions as well as the non-verbal expressions of the participants.

Focused group discussions were conducted to facilitate the development of the enrichment program for low academic achievement students to enhance their academic achievement.

The objectives of Phase II (FGD) were:

○ To gain information from students about their opinion on academic achievement.

○ To gain a better understanding of the perceptions and attitudes of low academic achievers in terms of their current academic performance.

○ To facilitate the expression of ideas and experiences that might be left unanswered and to illuminate the research participants’ perspectives through focused group discussion.

○ To produce insights for developing strategies for outreach.
To obtain input from students on the content and design the enrichment program to help the targeted participants.

To plan and design the modules for the low academic achievers according to their needs.

Phase III: Stage 1: Pre test:

The quantitative data was obtained through questionnaires from 141 students across pure science (75 students) and applied science (66 students). The psychological variables like learning style preferences, sources of stress, coping strategies and achievement motivation were measured.

Stage 2: Enrichment Program: Development of the Modules:

After the focused group discussion, researcher prepared an enrichment program with a focus of intervening and improving the academic performance of the low academic achievement students. The content of the package was mainly based on the students’ need and feasibility after the phase I (Quantitative) and phase II (focused group discussion). Low academic achievement students were offered the enrichment program. The broad goals of the enrichment program included training in study skills, reading skill, concentration, memory techniques, time management, goal setting, coping with stress, increase well being, motivation.
Content of Enrichment Program:

Session 1: Introduction/Ice Breaking: [Appendix I, (Pg 308-309)].

The session began with a brief introduction of the researcher and a brief orientation of the modules and the format in which it will be conducted. This was then followed by an activity designed to serve as an ice breaker. Participants were asked to introduce themselves by using an adjectives before their name, add place from where the person has come from, their interest and hobbies. They were also asked to discuss among their groups what they expect from the program. The participants were engaged in the activity “Face it”. This was followed by a power point presentation on overview of the workshop program.

Then participants were asked to divide themselves into three groups. This was done by calling out number 1-2, which participants of the same number forming a group. This was done to overcome the clique formation that may have persisted if participants were to form groups of their own accord. The group was given a group task (sharing). Each group was given a topic and fifteen minutes to engage in discussion of the topic and prepare a presentation to make before all participants. The groups were asked to nominate a leader to present the ideas of the group. The participants were encouraged to make presentations interesting and innovative.

The topics given included-

- What are the learning strengths?
- What are the learning weaknesses?
- How do you plan to overcome/work with your learning weaknesses?
Each presentation was followed by a discussion with all participants. Participants were encouraged to add points that they felt could also have been incorporated and also share their own experiences on the matter.

The action plan was assigned to the participants to work on it till the next session begins. [Appendix I.1, (Pg 310)]. After the termination of the session students were asked to evaluate the session in the feedback form [Appendix I.2, (Pg 311)].

**Session 2: Study Skills and Learning Styles: [Appendix J, (Pg. 312-313)].**

The session began with a brief summary of the previous session following with the researcher engaged the group in a discussion on the aim of the current session on study skills and learning styles.

Then participants were asked to divide themselves into three groups. This was done by calling out number from 1-3, which participants of the same number forming a group. This was done to overcome the clique formation that may have persisted if participants were to form groups of their own accord. The group was given a group task. Each group was given a topic and fifteen minutes to engage in discussion of the topic and prepare a presentation to make before all participants. The groups were asked to nominate a leader to present the ideas of the group. The participants were encouraged to make presentations interesting and innovative. [Appendix J.1 (Pg. 314-318)].

The topics given included-

- What are study skills and learning preference/ styles?

- Are study skills and learning preference important? If yes why? And if no why?
What is your approach/what are your study skills? And what learning preference do you adopt?

Each presentation was followed by a discussion with all participants. Participants were encouraged to add points that they felt could also have been incorporated and also share their own experiences on the matter.

This was followed by an interactive lecture presentation on study skills and learning style preference by the researcher to facilitate greater clarity on the study skills and learning style preferences. The presentation focused on study habits, organizing the material; note taking, focus on importance of studying and gaining good grades, prospects in future. The presentation also incorporated an explanation on learning preferences/styles in understanding and utilizing the multimodal preferences to perform well in academics. The presentation ended with the researcher highlighting factors that served them to enhance their academic performance and handouts was given regarding the study habits for students to follow it. [Appendix J.2, (Pg.319)].

The assessment of learning style was introduced to students by giving them to work out on the learning style questionnaire, since the learning style concept was new for them. [Appendix J3, (Pg 320)]. The handout on learning style strategies was provided to students to practice it. [Appendix J4, (Pg. 321-324)].

After the termination of the session students were asked to individually rate their feedback of the session on feedback form. [Appendix J5, (Pg.325)]. The action plan was assigned to the participants to work on it till the next session begins. The question given for action plan was- what do I need to do in order to improve my current study habits/skills? (Appendix J6 & J7, (Pg. 326-327)).
Session 3: Reading Strategy and Concentration: [Appendix K, (Pg. 328-329)].

The session began with a summary by participants of the concepts covered in session II on study skills and learning styles, and reviewing with the group if they had practiced the skill taught in the previous workshop. The researcher then made a presentation on the concept of reading strategy and concentration. The presentation focused on reading techniques like skimming and scanning and also SQ4R methods. This was followed with an assessment of their reading activity [Appendix K1, (Pg. 330)] and the activity on skimming and scanning technique. [Appendix K2, (Pg. 331-334)]. The participants were given the handouts on reading strategies to practice it. [Appendix K3, (Pg. 334-336)].

This was followed with a lecture method on the importance of concentration and its techniques. Then followed with assessment [Appendix K4, (Pg. 337)] and activity on concentration – spill the beans, here the participants were given different beans together and asked to separate them, this was done in order to make them understand the concept of concentration and how important it is in academic achievement. Participants were given the handout on the concentration techniques to practice. [Appendix K5, (Pg. 338)].

After termination of the session participants were asked to give the feedback. [Appendix K6, (Pg. 339)]. The session was concluded and action plan was given to practice the reading techniques taught in the workshop. [Appendix K7, (Pg.340-341)].

Session 4: Memory, Note Taking and Listening: [Appendix L, (Pg. 342-343)].

The session began with a brief summary of the previous session following with the researcher engaged the group in a discussion on reading and concentration. The participants were assessed of their memory problems. [Appendix L1, (Pg. 344)].
The researcher made a presentation on memory techniques which covered method of loci, method of association with the aim of sensitizing them to aid with the mnemonic techniques to utilize to enhance their academic performance. The participants were then given the handout of mnemonic techniques to practice. [Appendix L2, (Pg.345)].

This was followed by a presentation on a topic on note taking method. The presentation concentrated on the importance of taking notes, and ways to take notes. The assessment of note taking method was done in order to understand the importance of note taking method. (Appendix L3, (Pg. 346)]. The Cornell note taking method was introduced to the participants and the exercise was demonstrated to the participants and the handout to practice the note taking method was given to them. (Appendix L4, (Pg. 347)].

This was followed with an activity on listening – word play, where the participants have to frame a word and pass it to the next person and continue to frame another word and repeat the chain of words. This was done in order to understand the concept of listening.

The session was concluded and action plan was given to practice the memory techniques taught in the workshop [Appendix L6, Pg. 349]), after termination of the session participants were asked to give the feedback. (Appendix L5, (Pg.348)].

**Session 5: Stress Management:** [Appendix M, Pg. 350-351])

The session began with a brief summary of the previous session following with the researcher engaged the group in a discussion on the aim of the current session on stress and stress management by assessing their stressors by engaging them in brain storming session. After this the participants were given an activity “potholes.” Then the assessment handout was given to know their stress experiences [Appendix M1, (Pg. 352)].
This was followed with a presentation on definition of stress, stressor, types of stressors and factors predisposing to stress. Following the presentation participants were asked to divide themselves into three groups using the same method described earlier. Each group was given a topic related to what had been presented. The groups were given fifteen minutes to discuss the same and elect a leader and prepare a presentation. The topics given were-

- What is stress? Signs and symptoms of stress? How does one identify when oneself or someone else is stressed?
- Stressors at college.
- Stressors in the family context.

Each presentation was followed by a discussion with all participants. Participants were encouraged to add points that they felt could also have been incorporated and also share their own experiences on the matter.

The activity was followed by an interactive presentation by the researcher to facilitate greater clarity on signs and symptoms of stress. The presentations focused on positive and negative impact of stress on performance, with the aim of sensitizing future professionals and improve their stress management skills.

The workshop on stress was concluded with introducing the participants to Jacobson’s progressive muscular relaxation (JPMR) technique and also deep breathing techniques. Participants were engaged in JPMR for 20 minutes and were requested to practice it on daily basis. Also researcher introduced the deep breathing technique. Debriefing was done before the termination. The handout on stress management was distributed to follow [Appendix M2, (Pg. 353-355)].
After the termination of the session students were asked to individually rate their feedback of the session (Appendix M3, (Pg. 356)] and action plan was assigned [Appendix M4, (Pg.357)].

Session 6: Time Management & Goal Setting: [Appendix N, Pg. 358-359)]

The session began with a summary by participants of the concepts covered in session five on stress management and reviewing with the group if they had practiced the skill taught in the previous workshop. The researcher then assessed participants’ time management. [Appendix N1, (Pg. 360)]. This was followed by a presentation on the concept of time management and goal setting. The presentation focused on importance of time and goals in life. Then the participants were asked to give their outlook on the same (group discussion). The handout on time management was given to practice. [Appendix N2, (Pg. 361-362)].

Followed with an exercise/activity on time management/planner on a pie chart and also make a note which is important and which is not on priority basis.

This was followed with an activity on goal setting – participants were asked to list out three most important goals in their life at present. [Appendix N3, (Pg.363)]. Participants were given the handout on the goal setting. [Appendix N4, (Pg. 364)].

The session was concluded and action plan was given to practice the time management techniques taught in the workshop, [Appendix N6, (Pg. 366)] after termination of the session participants were asked to give the feedback. (Appendix N5, (Pg. 365)).
Session 7: Coping Strategy and Motivation: [Appendix O, (Pg. 367-368)].

The session began with a brief summary of the previous session following with the researcher engaged the group in a discussion on time management and goal setting. The researcher asked the participants to talk about emotions and coping strategies which they apply (brainstorming). The researcher then made a presentation on the related concept of coping. The presentation focused on types of coping behavior such as problem-focused coping, emotion-focused coping. The assessment form was given regarding the coping strategies. [Appendix O1, (Pg. 369)].

Following the presentation participants were asked divide to themselves into three groups using the same method described earlier. Each group was given a topic related to what had been presented. The groups were given fifteen minutes to discuss the same and elect a leader and prepare a presentation. Participants were encouraged to role play the situation presented following each group presentation, participants were encouraged to identify and label the type of coping used associated thoughts determined the feeling. This was followed by a discussion on alternative means of resolving the same situation.

The scenarios presented includes-

- You have been an average student academically and you find your grades are getting low through next semester. You feel that you are living up to your own expectations; furthermore there is a pressure from your family to do well. How will you handle the situation?

- Your parents constantly compare you to your sibling who is also doing the engineering course. They constantly ask you to study all the time. How will you manage the situation
You and your friend had a fight on a trivial issue, and later you find a change in his/her behavior. How can you possibly handle or deal with the situation?

This was followed with an assessment [Appendix O2, (Pg. 370)] and activity on motivation – participants were shown a video on the concept motivation and explained the importance of motivation in the present situation and also in their future goals to achieve.

The session was concluded, after termination of the session participants were asked to give the feedback and action plan was given to work out. [Appendix O3 & O4, (Pg. 371-372)].

**Session 8: Closure: [Appendix P, (Pg. 373)]**

The session began with a summary by participants of the concepts covered from session I through VII and reviewing with the group if they had practiced the skill taught in the previous workshops. The researcher then made a presentation on all the concepts from I through VII and concluded the sessions.

Researcher also informed the participants if they required the individual attention required the same would be provided. The session was concluded, after termination of the session participants were asked to give the feedback. [Appendix P1, (Pg. 374)].
The overview of the program is as follows.

**Table T3: Overview of Enrichment Program.**

<table>
<thead>
<tr>
<th>Sl no</th>
<th>Modules/ Sessions</th>
<th>Activities</th>
<th>Duration</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Introduction/ Ice Breaker</strong></td>
<td>Personal Introduction</td>
<td>10 Min</td>
<td>Lecture Method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ice Breaker</td>
<td>30 Min</td>
<td>Activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overview of The Workshop</td>
<td>30 Min</td>
<td>PPT / Handouts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sharing</td>
<td>30 Min</td>
<td>Group Discussion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Debriefing</td>
<td>10 Min</td>
<td>Lecture Method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feedback</td>
<td>10 Min</td>
<td>Evaluation Form</td>
</tr>
<tr>
<td>2</td>
<td><strong>Study Skills &amp; Learning Style Preference</strong></td>
<td>Summarization of Previous Session</td>
<td>15 Min</td>
<td>Lecture Method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Study Skills</td>
<td>30 Min</td>
<td>Group Discussion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Introduction on Study Skills &amp; Learning Styles</td>
<td>40 Min</td>
<td>Lecture Method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assessment of Learning Style</td>
<td>20 Min</td>
<td>Activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Debriefing</td>
<td>10 min</td>
<td>Lecture Method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feedback</td>
<td>05 min</td>
<td>Evaluation Handout</td>
</tr>
</tbody>
</table>
### Week 3

<table>
<thead>
<tr>
<th>3</th>
<th>Reading Strategy &amp; Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Summary of Previous Session</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Introduction on Reading Strategy</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Reading Strategy</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Introduction on Concentration</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Concentration Technique</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Debriefing</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Feedback</strong></td>
</tr>
</tbody>
</table>

### Week 4

<table>
<thead>
<tr>
<th>4</th>
<th>Memory Techniques, Note Taking &amp; Listening Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Summary Of Previous Session</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Mnemonic Methods &amp; Note Taking</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Note Taking Method</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Listening Technique</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Debriefing</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Feedback</strong></td>
</tr>
</tbody>
</table>
### Week 5

<table>
<thead>
<tr>
<th>5</th>
<th><strong>Stress Management</strong></th>
<th><strong>Summary of Previous Session</strong></th>
<th>10 Min</th>
<th><strong>Group Discussion</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Stress Sources</strong></td>
<td></td>
<td>25 Min</td>
<td><strong>Lecture Method</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Concept of Stress</strong></td>
<td></td>
<td>30 Min</td>
<td><strong>Group Discussion</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Jacobson’s Relaxation Technique</strong></td>
<td></td>
<td>30 Min</td>
<td><strong>Activity</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Meditation/Deep Breathing Techniques</strong></td>
<td></td>
<td>10 Min</td>
<td><strong>Activity</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Debriefing</strong></td>
<td></td>
<td>10 Min</td>
<td><strong>Lecture Method by Students</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Feedback</strong></td>
<td></td>
<td>05 Min</td>
<td><strong>Handout</strong></td>
</tr>
</tbody>
</table>

### Week 6

<table>
<thead>
<tr>
<th>6</th>
<th><strong>Time Management &amp; Goal Setting</strong></th>
<th><strong>Summary of Previous Session</strong></th>
<th>15 Min</th>
<th><strong>Lecture Method</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Time Management &amp; Goal Setting</strong></td>
<td></td>
<td>45 Min</td>
<td><strong>Lecture Method</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Time Management</strong></td>
<td></td>
<td>20 Min</td>
<td><strong>Activity (Time Planner)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Goal Setting Technique</strong></td>
<td></td>
<td>20 Min</td>
<td><strong>Video/Activity</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Debriefing</strong></td>
<td></td>
<td>10 Min</td>
<td><strong>Lecture Method by Students</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Feedback</strong></td>
<td></td>
<td>10 Min</td>
<td><strong>Handout</strong></td>
</tr>
<tr>
<td>Week 7</td>
<td>7</td>
<td><strong>Coping Strategy &amp; Motivation</strong></td>
<td>Summary Of Previous Session</td>
<td>10 Min</td>
</tr>
<tr>
<td>--------</td>
<td>---</td>
<td>---------------------------------</td>
<td>-----------------------------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Understanding of Emotions &amp; Coping</td>
<td>10 Min</td>
<td>Brain Storming</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emotions &amp; Coping Strategies</td>
<td>15 Min</td>
<td>Lecture Method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Management of Emotions</td>
<td>30 Min</td>
<td>Group Discussion &amp; Role Play</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Motivation</td>
<td>20 Min</td>
<td>Group Discussion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Energizer</td>
<td>10 Min</td>
<td>Video Clip</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Debriefing</td>
<td>10 Min</td>
<td>Lecture Method By Students</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feedback</td>
<td>15 min</td>
<td>Handout</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 8</th>
<th>8</th>
<th><strong>Closure</strong></th>
<th>Recap of Concepts</th>
<th>60 Min</th>
<th>Open Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Energizer</td>
<td>20 Min</td>
<td>Video Clip</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feedback</td>
<td>20 Min</td>
<td>Handout</td>
<td></td>
</tr>
</tbody>
</table>
Stage-3: Administering the Enrichment Program to Low Academic Achievement Students.

The enrichment program was administered at 8 sessions, each sessions ranged from 120-130 minutes. The training was spread over 7-8 weeks. For convenience, the researcher formed two training groups, each having 8 students. This was done to handle the groups effectively, as researcher felt the large group cannot be effectively managed. Also to bring the two separate groups were not possible in terms of place and time. The training was imparted to students through means of games, brainstorming, role-play, group discussions and the like. The program consisted of 8 sessions, 2 hours per day and once in a week. Each activity was followed by energizer, which meant to refresh students’ after each activity and lighten the situation. The workshop was completed across four months period during the mid-term semester of the academics for both the streams (pure science and applied science).

The objectives of Phase III (Stage 3) were:

- Creating awareness among students about the factors which influence their academic achievement.
- Providing students with resources to facilitate their academic achievement.

Workshop Setting:

The workshop comprising of eight modules/sessions were delivered to participants before or after working hours within the college campus. Modules were delivered to two groups of participants. Each group consisted of maximum of eighteen students. Each workshop lasted for approximately 2-2 1/2 hours within a 15 minutes refreshment break in between the session.
Format of Workshop:

The workshop was interactive and experiential in nature. The workshop began with an interactive power point presentation which was then followed by group discussion, role plays, games and exercises to elucidate the topic under discussion. Each workshop ended with participants providing a brief overview of the point and experiences discussed.

Students were asked to provide a feedback after each workshop following its completion by rating the workshop and also an action plan was assigned to students in order to practice what was taught in the workshop. A record was maintained by the researcher of the participants attending each session. The enrichment program was held for almost a period of three months- sixteen weeks for two groups each.

Stage 4: Post test:

The respondents were assessed after three weeks of the enrichment program to check the feasibility/impact/effectiveness of enrichment program. The respondents were given the questionnaires to answer them like- learning style preferences, sources of stress, coping strategies and achievement motivation. The researcher also obtained the final semester results to compare the academic performance in the examination after the enrichment program was delivered to test the pre and post test differences.
Figure F3.2 Showing the Schematic Flow Chart of the Design and Procedure for the Main Study.

Phase I: Quantitative Data: Assessment of Psychological variables-
Socio demographic details, Learning Style Preferences, Sources of Stress, Coping Strategies and Achievement Motivation

Phase II: Qualitative Data: Focused Group Discussion (FGD)

Phase III: Quasi Experimental Design:
Stage 1: Pre Test
Socio Demographic Details, Learning Style Preferences, Sources of Stress, Coping Strategies and Achievement Motivation

Stage 2
Development of Modules

Stage 3
Conducting Workshop for Low Academic Achievement Students

Stage 4
Post Test
Learning Style Preferences, Sources of Stress, Coping Strategies and Achievement Motivation
Statistical Tools Used:

Data was subjected to quantitative and qualitative analysis and then coded for computer analysis and analyzed using the statistical package for social sciences (SPSS 15 Version). Analysis included non parametric statistical test non-normal variable. Descriptive statistics like frequency, percentage, mean, standard deviation were computed. Inferential statistics like Mann Whitney U test was used to see the course and gender differences, Kruskal Wallis test was used to check the differences in academic achievement and psychological variables, Wilcoxon signed rank test was used to check the pre and post test results. The qualitative data was coded and analyzed for recurrent themes.

Ethical Considerations:

- The research proposal was scrutinized and approved from the institute/college following this, access to the student population was granted.
- The written informed consent of participant was sought from all participants prior to the pre-test. Written consent was also sought from students participating in the workshop program and also in post test. They were given the option of withdrawing from the study at any point in time without providing reasons for the same. They were told that they could contact the researcher for further clarification if any.
- Participation was voluntary and incentive was not offered for participating in research. However tea and refreshments were offered to the participants before/after each of the enrichment/training modules as the workshop were held at the end of the working day.
- Participants were assured of confidentiality.
- Participants requiring individual intervention were offered the same.
- Participants indentified with any psychological problem were referred for appropriate help.
Problems faced:

Researcher had few difficulties in conducting this research.

- Getting permission from the colleges was difficult within their administrative rules.

- Finding appropriate class timing in their schedule was difficult, which caused data collection to happen over months and also same problem was faced during the Enrichment/training program.

Chapter IV provides an analysis of the data collected to address the research questions and research hypotheses. It details the results obtained from undergraduate students pursuing pure science and applied science program and also academic achievement groups (high, average academic and low) as well as gender differences. It also gives the predictors of low academic achievement data and also the pre and post test results.