RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research is considered to be a formal, systematic and intensive process of carrying out a scientific analysis. It demands accurate observation and description. The quality of the research programme largely depends on the procedure adopted by the investigator. Formulation of a suitable and systematic research design requires a deep knowledge of research methods. Hence with better understanding of the teaching learning process, guidance from experts in the field and with review of related studies, the investigator was able to adopt the experimental research procedure. The entire chapter was discussed under various sub-headings. Such as rationale for the study, statement of the problem, operational definition of key terms, objectives formulated, hypotheses framed, research procedure, , operationalization of variables, sampling procedure, construction of tools and validation, experimentation, techniques of data collection and statistical techniques employed.

3.2 RATIONALE FOR THE STUDY

The term "mindfulness" has been used to refer to a psychological state of awareness, the practices that promote this awareness, a mode of processing information and a character trait. Several disciplines and practices can cultivate mindfulness but most of the literature has focused on mindfulness that is developed through mindfulness meditation — those self-regulation practices that focus on training attention and awareness in order to bring mental processes under greater voluntary control and thereby foster general mental well-being and development and/or specific capacities such as calmness, clarity and concentration (Walsh & Shapiro, 2006). Mindfulness meditation
promotes metacognitive awareness, decreases rumination via disengagement from preservative cognitive activities and enhances attention capacities through gains in working memory. These cognitive gains, in turn, contribute to effective emotion-regulation strategies. Improvements to working memory appear to be another benefit of mindfulness.

Mindfulness meditation is a nonjudgmental awareness of thoughts and emotions it is known for its anxiety to bust the powers. Meditation has effects on activity of particular brain regions, namely the anterior cingulate cortex which controls thinking and emotions and the ventromedial prefrontal cortex which controls worrying. Meditation seems to increase activity in the ventromedial prefrontal cortex, and decrease activity in the anterior cingulate cortex.

"Mindfulness is premised on sustaining attention in the present moment and controlling the way we react to daily thoughts and feelings. Interestingly, the present findings revealed that the brain regions associated with meditation-related anxiety relief are remarkably consistent with the principles of being mindful." The mindfulness meditation training decreases the levels of anxiety and linked with the activation and deactivation of particular brain regions.

The previous studies provide evidence that mindfulness meditation attenuates anxiety, stress and depression through mechanisms involved in the regulation of self-referential thought processes.

The investigator feels that mindfulness meditation is the solutions for good performance and goal achieving in their academic performance hence, the researcher undertook this study.

3.3 RESEARCH PROCEDURE
Experimental method among other research methods is considered to be a scientific method of research. It provides a systematic and logical way of answering the research questions. It is the best way to establish cause and effect relationships between the variables. It helps to test hypothesis of casual relationships between the variables. It begins with questions concerning about the relationship between two (or) more variables.

Experimental research enables the researcher to go beyond description and prediction beyond identification of relationships to partial determination of what causes them. The immediate purpose of experimentation is to predict events in the experimental setting. Based on the advantages of experimental research, the investigator has adopted an experimental design for the present investigation

Experimentation is the most scientifically sophisticated process. It is defined as “observation under controlled conditions”. Experiments are studies involving intervention by the researcher beyond that required for measurement. Experimental designs are unique to the experimental method. They serve as positional and statistical plans to designate relationship between experimental treatments and the experimenter’s observations or measurement points in the temporal scheme of the study. Judicious selection of the design improves the probability that the observed change in the dependent variable was caused by the manipulation of the independent variable and not by other factors.

3.4 EXPERIMENTAL DESIGN

In this design, two groups are formed of the subjects selected by random. They serve as positional and statistical plans to designate relationship between experimental treatments and the experimenter’s observations or measurement points in the temporal scheme of the study. Judicious selection of the design improves the probability that the observed change in the dependent variable was caused by the manipulation of the
independent variable and not by other factors. The procedure in this design is listed below:

- Testing the group
- Introducing the intervention
- Giving the treatment
- Testing again
- Noting the gains

3.5 SELECTION OF SUBJECTS

The sample selected for this experiment was random sampling technique. 120 students during the academic year 2011-2012 in XII STD has formed the sample for the study. Mindfulness meditation therapy is useful and effective to enhance the performance in the academic achievement of students, if they are ready to accept the training strategies. Hence the investigator selected 120 students of 2011 to 2012 batch for the sample. They were divided into two groups. Each group had 60 subjects. The first was control group, the second was experimental group.

### TABLE 3.1

<table>
<thead>
<tr>
<th>Name of the group</th>
<th>+2 students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group-I control group</td>
<td>60</td>
</tr>
<tr>
<td>Group-II experimental group.</td>
<td>60</td>
</tr>
<tr>
<td>TOTAL</td>
<td>120</td>
</tr>
</tbody>
</table>

### TABLE 3.2
### 3.6 VARIABLES OF THE STUDY

The dependent variable of the study is academic achievement test, anxiety, depression and stress among +2 students and the independent variable is mindfulness meditation among +2 students in schools.

### 3.7 RESEARCH TOOLS

In the present study, the investigator used three types of tools.

(A) **TOOL-1 (ANXIETY)**

The first tool was the tool to assess anxiety developed by Spielberger. Anxiety was measured through the sports competition anxiety questionnaire. The anxiety questionnaire was designed to measure the degree of anxiety experience prior to the competition.
Spielbergers trait anxiety questionnaire was giving to all subjects. Twenty items were adopted from spiebergers trait anxiety questionnaire for this investigation. The complete questionnaire scores are as follows.

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Response</th>
<th>Score of positive statements</th>
<th>Scores of negative statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not at all</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Somewhat</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Moderately so</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Very much</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Positive statements

1, 2, 5, 8, 10, 11, 15, 16, 19, 20.

Negative statements

3, 4, 6, 7, 9, 12, 13, 14, 17, 18.

(B) TOOL-2 (STRESS)

The second type of tool was to assess the stress developed by Don Ardell. Don Ardell developed a stress assessment that is unique in its holistic approach to stress. In the test incorporates physical, mental, emotional, spiritual, and social aspects of health for a balanced assessment.

Rate the satisfaction with each of the following items by using this scale:

+ 3 = Ecstatic -1 = Mildly disappointed
+ 2 = Very happy - 2 = Very disappointed
+ 1 = Mildly happy - 3 = Completely dismayed
0 = Indifferent

STRESS TEST INTERPRETATION
+ 51 to + 75 You are a self-actualized person, nearly immune from the ravages of stress. There are few, if any, challenges likely to untrack you from a sense of near total well-being.

+ 25 to + 50 You have mastered the wellness approach to life and have the capacity to deal creatively and efficiently with events and circumstances.

+ 1 to + 24 You are a wellness-oriented person, with an ability to prosper as a whole person, but you should give a bit more attention to optimal health concepts and skill building.

0 to - 24 You are a candidate for additional training in how to deal with stress. A sudden increase in potentially negative events and circumstances could cause a severe emotional setback.

- 25 to - 50 You are a candidate for counseling. You are either too pessimistic or have severe problems in dealing with stress.

- 51 to - 75 You are a candidate for major psychological care with virtually no capacity for coping with life's problems.

(C)TOOL-3 (DEPRESSION)

The third type of tool was to assess the stress developed by Geriatric Depression Scale—GDS. The depression inventory questionnaire was to measure the depression of the students.

SCORING PROCEDURE

“Yes” to questions 1, 5, 7, 11, 13; “NO” to other questions

Normal is scores above 5, 0-5 suggests depression

3.8 TOOL ADMINISTRATION AND DATA COLLECTION
In the present investigation the level of anxiety, stress and depression level among +2 students were found with administration of Spielberger’s trait anxiety questionnaire, Don Ardell stress test and Geriatric Depression Scale—GDS respectively. The scores secured by the students were collected and computed for analysis.

3.9 EXECUTION OF THE RESEARCH

MINDFULNESS EXERCISE 1

**Position** - Sitting Position

**Procedure**

- Sit in a relaxed position.
- Slowly inhale through your nose, counting to five in your head.
- Let the air out from your mouth, counting to eight in your head as it leaves your lungs. Repeat several times.
- Focus on our breathing.
- Breathe from our belly rather than from our chest

**DURATION**

- To start with try to maintain this for 5 to 10 seconds. Do not take unnecessary strain, if you feel uncomfortable then release the posture immediately

MINDFULNESS EXERCISE 2

**Position** - Sit in an upright and poised position.
Procedure.

- Gently close your eyes and direct your focus inward.
- Notice the thoughts that emerge in your mind with openness, acceptance, and curiosity.
- Try to avoid judging any aspects of your experience and simply allow it to be just as it is.
- Notice any emotions that you may be experiencing – relate to them with kindness and compassion.
- Observe your bodily sensations with the same mindful attitude.

DURATION

- As much as possible, allow yourself to fully open up to the reality of your experience for a few minutes.

MINDFULNESS EXERCISE 3

Position - Sit in an upright and poised position

Procedure

- Place your hand on your belly and feel your belly rise and fall with your breath.
- Allow your attention to gently rest on this step.
- Bring your complete mindful awareness to the sensation of your belly rising and falling in unison with your breath.
- Allow your breath to become slow and steady as you make the connection between your thoughts, emotions, and physical experience.
- If anxious thoughts or emotions arise, acknowledge them and bring your awareness back to your breath.
• If you find yourself judging any aspects of your experience, imagine yourself breathing out the judgment with each breath as you let go and surrender to the present moment.

DURATION

• As much as possible, allow yourself to Continue until your breath feels calm and steady.

MINDFULNESS EXERCISE 4

Position - Sit in an upright and poised position

Procedure

• Expand your awareness to a sense of your entire body breathing, with wide and spacious attention, rather than focused attention on the belly breath alone.

• Visualize your entire being breathing in the oxygen that nourishes your body.

• Picture yourself breathing in fresh, pure, and clean air, and then imagine yourself breathing out any anxious thoughts, judgments, or self-criticisms.

• Let go of the need to judge your experience and allow yourself to “be” in this moment. Become centered into your body as a whole as you allow your mindful awareness to fully notice your breath.
**Duration**

- As much as possible, allow yourself to continue until your mindful awareness to fully notice your breath.

**MINDFULNESS EXERCISE 5**

**Position** - Sit in an upright and poised position

**Procedure**

- **Note the transition from this mindfulness exercise back into your daily life.**
- When you feel yourself fully centered, calm, and present with your body, thoughts, and emotions, gently open your eyes.
- Bring your full awareness back to your presence in the room.
- Notice the feel of the chair or sofa underneath you.
- Wiggle your toes and fingers and blink your eyes.
- Begin to reflect on how you can bring this same mindful sense of calm awareness and acceptance into your daily life.
3.10 EXPERIMENTATION IN PHASES

EXPERIMENTATION PHASES FLOW CHART

- Pre - Assessment
- Grouping of sample
- Designing the Strategies
- Theoretical Orientation to the student
- Demonstration by the Investigator
- Practice by the students them self
- Post – Assessment
- Findings
PHASE: I
PRE – ASSESSMENT

The pre-assessment of the level of anxiety, depression, stress and academic achievement of students were assessed by the investigator.

PHASE: II
IDENTIFICATION OF LEVELS

Assessment is a judgment process. It measures the level of anxiety, depression, stress and academic achievement. The pre-assessment was examined to the investigator in three general purposes in Research.

1. To provide information about the students and their academic achievement.
2. To provide information to the investigator about how to design the successful strategies in helping the students to achieve the academic achievement.

PHASE: III
DESIGNING THE STRATEGIES

The investigator planned the activities for enhancing the student’s academic achievement. It is crucial to sensitize the student players to develop their own performance. Only the one who himself / herself empowered can empower others. The process is intense but effective.
PHASE IV TREATMENT

DURATION OF THE TREATMENT

The duration of experiment is three months

I - Week  
Pre assessment of the variables

II - Week  
Identification of the level

III - Week  
Treatment theoretical orientation

IV - Week  
Demonstration by the investigator

V - Week  
Demonstration by the investigator

VI - Week  
Demonstration by the investigator

VII - Week  
Practice by the Students

VIII - Week  
Practice by the Students

IX - Week  
Practice by the Students

X - Week  
Practice by the Students

XI - Week  
Practice by the Students

XII - Week  
Practice by the Students

XIII - Week  
Post Assessment
THEORETICAL ORIENTATION ON MINDFULNESS MEDITATION

After conduction of pre-assessment the investigator conducted theoretical orientation programme on mindfulness meditation for student. Before starting of orientation programme the student were never aware of mindfulness meditation. During this treatment period the investigator explained in detail about the role of mindfulness meditation. This help to enhance the knowledge on mindfulness meditation.

ORIENTATION PROGRAMME ON ANXIETY, STRESS AND DEPRESSION.

After conducting a pre-assessment the investigator conducted orientation programme on Anxiety, Stress and Depression which reduce the academic achievement of +2 students. During this period the details and various dimensions of Anxiety, Stress and Depression were discussed.

DEMONSTRATION ON MINDFULNESS MEDITATION

The mindfulness meditation therapy and the practice of mindfulness meditation were demonstrated by the investigator. The +2 students were allowed to practice during the training period.

PHASE V – POST ASSESSMENT

Post – Assessment was conducted by the investigator after implementation of treatment. During the post-assessment the same Anxiety, Stress and Depression levels were assed.

PHASE VI– DATA ANALYSIS

Data collected in pre-assessment and post assessment was analyzed using appropriate statistical techniques.
3.11 THREATS TO EXPERIMENTAL VALIDITY

The adequacy of experimental design is judged by the degree to which they eliminate or minimize threats to experimental validity. Experimental validity depends on many factors. If the extraneous variables are carefully controlled then the study will be internally valid. According to Campbell and Stanley (1966) there are two types of validity; (i) Internal validity and (ii) External validity

A) INTERNAL VALIDITY

(I) MATURATION

The number of factors associated with the passage of time not envisaged in the investigation might cause clashes in subject’s scores. This is known as “maturation threat”. Since the subjects selected were similar in age and the period of experimentation was for 3 months only, there was no scope for maturation. Hence this threat was eliminated.

(II) HISTORY THREAT

Unplanned events may occur during the research and affect the results. Such events are referred to “history threat”. During this experimentation unexpected events did not occur. Hence this threat was eliminated.

(III) TESTING

The effect of one test upon the scores of a subsequent test is called testing threat. In experimental studies it is common to test subjects at the beginning and end of the study. If considerable improvement is found in the post-test score, the investigator may conclude that the improvement is due to the experimentation, an alternative explanation
is that it may be due to the use of pre-test. In this investigation, pre-test and post test were conducted for the experimental group students. Hence this threat was eliminated.

(IV) INSTRUMENTATION

Differences in results due to changes in the measuring instrument between the pre-test and post-test may constitute a threat to the internal validity. No instrument was changed in this experiment. Hence this threat was nullified.

(V) STATISTICAL REGRESSION

An effect may be due to respondents being identified on the basis of extreme high or low scores. The subjects should be selected in equal numbers from all levels of scoring. In this study, the students were equal in their pre-test scores. Hence this threat was eliminated.

(VI) SELECTION BIAS

Difference between the subjects in the groups may result in outcomes. The random assignment of subjects to experimental groups ensures, according to the laws of probability that the groups compared do not significantly differ from one another in their composition. The subjects should be equal in all respects. In this study, complex group of 120 student players were selected. All the studies were assigned to the same group. So this threat was nullified.

(VII) EXPERIMENTAL MOTOR ABILITY

It is common to lose some of the subjects as the study progresses. This is called mortality threat. During the entire course the study, such subject loss did not occur.
B) EXTERNAL VALIDITY

External validity refers to difficulties in generalizing the finding of experimental research. Various threats to external validity are discussed below.

(I) MULTIPLE TREATMENT INTERFERENCE

When the same subjects receive two or more treatments there may be a carryover effect between treatments such that the results cannot be generalized to single treatment. There was no chance of this threat in this study as the four groups were given only one treatment each.

(II) INTERACTION EFFECT OF TESTING

Pre-testing interacts with the experimental treatment and causes some effect such that the results will not be generalized to an unprotected population.

All the student players were subjected to this type of programme. There is no interaction effect occurs it would be common to all students.

(III) INTERACTION EFFECTS OF SELECTION BIASES AND THE EXPERIMENTAL TREATMENT

This refers to the effect of some selection factor of in-fact groups interacting with the experimental treatment that would not be the case for groups had been randomly formed. All the available subjects were selected, so this threat was eliminated.

(IV) ARTIFICIALITY OF THE EXPERIMENTAL SETTING

In an effort to control extraneous variables the investigator imposes careful controls which may introduce a sterile or artificial atmosphere that is not at all like the real-life situation about which generalizations are desired. The reactive effect of the experimental process is a constant threat using innovative gadgets; anxiety, stress and
depression were very common. So the students allotted to the experimental group would not feel any artificiality and there was no chance of this threat.

3.12 SCHEME OF DATA ANALYSIS

In the present study, the relevant data obtained from assessment scores on the pre and post – assessment on Anxiety, Stress and Depression secured from 120 +2 students have been analyzed by follows.

A ) DESCRIPTIVE ANALYSIS

It provides the information about the nature of a particular group of individuals. Mean and SD was calculated for pre, progressive and post-assessment on teaching competency in science.

B) DIFFERENTIAL ANALYSIS

It provides inferences involving determination of statistical significance of difference among the students with reference to selected variables