# INFLUENCE OF PARENTING STYLE, CLASSROOM CLIMATE AND ACADEMIC DELAY OF GRATIFICATION ON SELF-REGULATED LEARNING IN PHYSICS AMONG SECONDARY SCHOOL STUDENTS

## SINDHU C. M.

*Thesis*
*Submitted to the University of Calicut*
*in partial fulfillment of the requirements for the degree of*

### Doctor of Philosophy
### in
### Education

**FAROOK TRAINING COLLEGE**
**RESEARCH CENTRE IN EDUCATION**
**UNIVERSITY OF CALICUT**

**2017**

# DECLARATION

I, SINDHU C.M., do here by declare that this thesis **INFLUENCE OF PARENTING STYLE, CLASSROOM CLIMATE AND ACADEMIC DELAY OF GRATIFICATION ON SELF-REGULATED LEARNING IN PHYSICS AMONG SECONDARY SCHOOL STUDENTS** has not been submitted by me for the award of any Degree, Diploma, Title or Recognition before.

Farook Training College,

**SINDHU C.M**

**Dr. Bindhu C. M.**
Professor
Department of Education
University of Calicut

# CERTIFICATE

      I, Dr. Bindhu C. M., do here by certify that this thesis **INFLUENCE OF PARENTING STYLE, CLASSROOM CLIMATE AND ACADEMIC DELAY OF GRATIFICATION ON SELF-REGULATED LEARNING IN PHYSICS AMONG SECONDARY SCHOOL STUDENTS** is a record of bonafide study and research carried out by Sindhu. C.M., under my supervision and guidance. The report has not been submitted by her for the award of a Degree, Diploma, Title or Recognition before.

      The thesis is revised as per modification and recommendation reported by the adjudicators and re-submitted.

Farook Training College,                             **Dr. BINDHU C.M**
                                              (Supervising Teacher)

**Dr. Bindhu C. M.**
Professor
Department of Education
University of Calicut

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Farook Training College,                           **Dr. BINDHU C.M**
                                                    (Supervising Teacher)

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Farook Training College,

**Sindhu C M**

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# INTRODUCTION

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A brief introduction to the problem

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Statement of the problem

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Learning occupies a very essential role in our life. Learning is an enrichment of experience. There is an interaction of environment with the organism in learning. It stands for all changes and modifications in the behavior of the individual which he undergoes during his life time. Learning is goal oriented.

Learning by the child depends on the following three factors-the psychological factor, the physiological factor and the environmental factor. The mental makeup of the child plays a dominant role in the learning process of the child. It motivates the child towards new learning. A child with a strong psyche reacts to the environment in his own individual way. A child with a weak psyche is not able to react in a proper way and doesn't get the maximum from the environment. The Physiological factor implies the proper functioning of the physiology of the child. It includes the use of our sensory receptors (visual, auditory, touch, smell etc) in the learning process. The environmental factor refers to the total environment in which the child is placed. That is, the social set up in which the family of the child lives, the social atmosphere of the neighborhood etc.

Learning is the mild stone of all educational programmes. The concept of learning is explained by different theorists and educationists from time to time. According to the behavioral perspective of learning it's a process by which an organism acquires a new mode of behavior as a result of its interaction in a situation, which tends to persist and affect the general behavioral pattern of the organism to some degree. Learning cannot be measured directly. We can make theoretical inferences about learning based on performance. In general, learning refers to the

establishment of tendencies, where as performance refers to translation of these tendencies into behavior. According to Skinner (1938), Learning is the process of progressive behavior adaptations.

Learning can be described as a relatively permanent change in the behavior of an individual based on his/her experiences or discoveries (Wakefield, 1996). Thus, the processes of experience and discovery lead to a new understanding of the world and ourselves, and enable us to apply the acquired knowledge in new situations. Knowledge acquisition then involves processes that transform data from experience in to organized information.

If learners do not have the capability to develop their own direction of learning and acting the world around them, they will be only partially educated and limited in what they can do. Learning is more facilitated when the process is initiated and owned by the learners. The learners have to become more independent, responsible and effective for their own learning. Independent learners have a strong mind of agency over their future. They have strong self-regulation and meta cognitive skills and are deeply reflective about their individual strength and weakness.

For over the last three decades, the psychological basis of learning has been shifted gradually from a teacher-centered approach to student-centered approach. That perspective has placed an escalating responsibility on learners for their own learning. Children should be more independent in their learning throughout their lives. As in a technologically and scientifically fast oriented age, they have enormous facilities to engage in such an undertaking. Autonomous learning/self-directed learning or Self-regulated Learning is autonomous to independent learning. Independent learning is benefitted by many ways-it will improve the academic

performance, will increase the motivation and confidence, greater awareness in students regarding their weaknesses and strengths, also fosters social inclusion by countering alienation etc. Some studies suggested that those who are independent learners work to higher standards, are motivated and have higher self-esteem than other children. These students develop skills that help them further in their own learning by using their own ideas to form opinions, solving problems and using a range of strategies in their learning. (Mayer, 2008). Good learning includes effective meta cognitive characteristics, such as planning, managing and reflecting (Berry & Sahlberg, 1996). This implies that efficient learners have the skills to design and control their learning processes and are also be able to evaluate and reflect on the entire process.

Educational research reveals that beliefs and cognition that enable students to be independent learners are highly associated to academic learning. That viewpoint has led to an increased emphasis on how classroom context and other contextual factors shape and influence student learning and motivation. Hence, educators focus their attention on students' strategic efforts to manage achievement through specific beliefs and processes. Those self-regulatory processes and beliefs have been the focus of systematic research. In the field of educational psychology, efforts have been made to define self-regulation resulted in the description of Self-regulated Learning, which is one sort of independent learning. Researchers unanimously recognize that Self-regulated Learning is one of the most essential skills that the students should possess, particularly in this era (Chen,2002; Henderson,1986; Schraw,1998; Veenman,Beems,Gerrits & Weigh,1999; Wang & Peverly, 1986). Zimmerman & Schunk (1989) defined Self-regulated Learning as students' becoming "masters of their own learning" (Zimmerman, 1990). This idea of Self-regulated Learning however is most probably older than the late 1980s. Perhaps the

first person to introduce the idea of Self-regulated Learning in education was Gardner (1963) who recognized the importance of personal initiative of learning. "The ultimate goal of the educational system was to shift to the individual the burden of pursuing his own eduation"(Gardner, 1963). Later in 1970, Rosenthal and Zimmerman introduced the terms "arrangement of thoughts" and "improvement of memory" in what they called observational learning.(Rosental & Zimmerman, 1978; Zimmerman & Rosenthal, 1974). Since then, the emergence of the term -Self-regulated Learning , which came as a topic of research in education. Self-regulated Learning, in general defined as a process in which an individual plans, organizes, self-instructs, self-monitors and evaluates at various stages of the learning process (VandenHurk, 2006).

Self-regulation research was designed to discover the cognitive, motivational and behavioral sources of personal mastery during learning (Zimmerman,2000). Self-regulation lies at the core of successful learning and life-long learning. Self-regulated learners tend to be active, reflective and productive in their own thinking and learning. (Zimmerman & Kitsantas, 1996). Students' perception about their own learning has a significant role to play in their academic performance. Many research studies have shown Self-regulated Learning found to be positively related to academic achievement across education levels and subject areas (Lidner & Harris, 1993; Van Den Hurk, 2006). Therefore, Self-regulated Learning is a good target of student intervention since students are able to learn to become self-regulated learners. Self-regulated Learning is the main area of the present study. The investigator selected three psychological variables that influence Self-regulated Learning from different areas.

One of the variables is Parenting Style, which have always been seen as a crucial factor in influencing all aspects of child development especially in learning activities. Parenting Style is the extent to which parent responds to needs and demands of a child (Baumrind, 1991).Research studies revealed that Parenting Style moderated the effect of academic self-concept on students' academic achievement (Ishak, Low, & Lau 2012). It is a much stronger predictor of academic success than parent education, ethnicity or family structure. (Dornbusch, S.M., Ritter, P.L., Leiderman, P.H., Roberts, D.F. & Fraleigh, M.J., 1987).

Classroom environment also have the potential to promote positive learning climate that fosters students' motivation and engagement. Classroom Climate is the tone, ambience, culture or atmosphere of a classroom or school. It involves the relationships between students, between teacher and students and the types of activities, actions and interactions that are rewarded, encouraged and emphasized in the classroom. (Logan, Crump & Rennie, 2006). Numerous studies have clearly demonstrated that the perceived learning environment is significantly related to student academic achievement (Fraser, 1994; Mc Robbie, & Fraser, 1993a). Classroom environment is a predictor of academic achievement in students (Gouri, Mitashree & Meeta, 2015). Hence, for the study perception of students views on Classroom Climate is taken as another variable.

As today's children are overwhelmed with technological advancements and over-stimulated with intense bombardment of music, advertisements, fun and entertainments, pleasure seeking and time taking games, their academic concern may gradually comes down. So, in order to identify their motivational capacity and interest in academic matters, another psychological construct- Academic Delay of Gratification is taken as the third variable. It refers to students' postponement of

immediately available opportunities to satisfy impulses in favour of pursuing important academic rewards or goals that are temporally remote but ostensibly more valuable (Bembenutty & Karabenik, 1998). It is found to be an important aspect of Self-regulated Learning and key contributor to academic achievement, is taken as the another variable for the present study.

## Need and Significance

Optimum development of human resources is possible only through education. It is a unique investment in human capital for the present and the future. The crucial factor for the progress and development of the country lies in the hands of educants. Twenty first century promises optimal benefits of education for all. Hence, many attempts are going in the field of education to develop the full potentiality in students. Today education is centered on students. As independent learning is given much importance in the present scenario, this is taken in to account in the present study. It aims to develop learner autonomy and learner independence in students. The most common descriptor of independent learning is Self-regulated Learning (Meyer, Haywood, Sachdev & Faraday, 2008). Research studies had shown that increase in self-regulation result in higher student learning and academic achievement. Self-regulated Learning is an important aspect of student learning and academic achievement. There are many factors which affect self-regulatory learning skills of students in school. Every type of learning depends on quite a lot of facilitating and debilitating factors such as pupil's attitude and aptitude, socio-familial background, parental encouragement, instructional methods, cognitive styles, classroom environment, pupil's style and approach to learning and a many more factors. Research studies reported that certain Parenting Styles help children to develop Self-regulated Learning and encourage them to exert control over their own

learning. Out of these, learner factor, classroom factor and parental factor which are the three prominent factors that influences learning are considered in this study. Many studies reported that psychological perceptions of Classroom Climate and Parenting Style have importance on student learning. Hence, Classroom Climate is taken as a classroom factor and Parenting Style is taken as a parental factor and these two variables are taken as independent variables for the present study. The most important factor apart from these two is learner factor, as a Chinese proverb says that the teacher can only open the door, the learner must enter himself. In the present study, learners' willingness to academic endeavors and academic matters is also being assessed. Also, their self-control need to be considered. The psychological construct Academic Delay of Gratification is taken as the learner factor which is the third independent variable in the present study. Success in independent learning requires motivation and a strong commitment from the part of students, especially for high school students from their parents or care takers. It is widely accepted that Self-regulated Learning has a very crucial role in school achievement. So participants in the present study are from ninth standard, their perception on Parenting Style and Classroom Climate, their Academic Delay of Gratification –its influence on Self-regulated Learning is described in this study. Compared to other subjects, Physics requires high intellectual thinking and problem solving skills. To enable students to think critically they must be self-regulated. Moreover, the investigator being a disciplinarian from Physics background, Self-regulated Learning in *Physics* is taken as the dependent variable for the present study. Though a lot of work has been done in Self-regulated Learning abroad, a few studies have been conducted in India in this area. Also, in a knowledge multiplying era, the researchers found this area is quite challenging and hence the investigator have chosen the present study.

## Statement of the Problem

The present study entitled as INFLUENCE OF PARENTING STYLE, CLASSROOM CLIMATE AND ACADEMIC DELAY OF GRATIFICATION ON SELF- REGULATED LEARNING IN PHYSICS AMONG SECONDARY SCHOOL STUDENTS.

## Definition of Key Terms

The important terms used in the statement of the problem are defined in the following sections

**Parenting Style**

Parenting Style is the extent to which parent responds to needs and demands of a child. (Baumrind, 1991)

In the present study, Parenting Style means how the children perceive their parent's Parenting Style based on three types of Parenting Styles such as Authoritative, Authoritarian and Permissive and it is measured through Perceived Parenting Style Scale.

Authoritative Parenting Style- Includes open communication between parent and child, providing clear guidelines, encouragement and expectation upon the adolescents, providing lots of nurturing and love, spending time together and providing right direction and encouraging in taking decisions.

Authoritarian Parenting Style-Includes high standards, discipline, comparison between friends, criticizing while doing things, and providing punishment when rules are not obeyed, little comfort and affection, restriction and not providing solution to problems.

Permissive Parenting Style-Few limits imposed, little or no expectation for their children, view children as friends, spend less time with children, no rule or guidelines for children, inconsistent and undemanding, allow the child to regulate his or her own activities .

**Classroom Climate**

It is the tone, ambience, culture or atmosphere of a classroom or school. It involves from the relationships between students and between teachers and students and the type of activities, actions and interactions that are rewarded, encouraged and emphasized in the classroom.(Logan, Crump & Rennie,2006)

For the present study the same definition is taken in to consideration and it is measured through Perceived Classroom Climate Scale. Classroom Climate means how the students perceive the Classroom Climate they occupy.

**Academic Delay of Gratification**

It refers to students' postponement of immediately available opportunities to satisfy impulses in favour of pursuing important academic rewards or goals that are temporally remote but ostensibly more valuable (Bembenutty & Karabenick, 1998).

In the present study, it is operationally defined as the postponement of fun or pleasure seeking activities in order to excel in academic endeavors and it is measured through Academic Delay of Gratification Scale.

**Self- regulated Learning**

Self-regulation of learning is a process that required students to get involved in their personal, behavioral, motivation and cognitive learning tasks in order to accomplish important valuable academic goals (Zimmerman, 1998). It is defined as

the degree to which students meta cognitively, motivationally and behaviorally participate in their learning process. (Zimmerman, 1986, 1989).

Self-regulated Learning is "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, motivation and behavior guided and constrained by their goals and the contextual features in the environment" (Pintrich, 2004; Schunk, 2005.)

For the present study, Self-regulated Learning is define as the ability of the students to self-plan, self-observe, self-analyze, self-judge and self-evaluate the learning and learning related activities and it is measured through the Self-regulated Learning scale. Being a disciplinarian of Physics background, the investigator prepared the tool Self-regulated Learning scale in Physics.

**Secondary School Students**

Secondary School Students refer to pupils studying in high school classes (VIII, IX and X) in any school recognized by the Govt. of Kerala state.

For the present study, it is operationally defined as the pupils studying in standard IX in any School recognized by the Govt. of Kerala state.

## Variables selected for the study

The independent and dependent variables selected for the study are the following.

**Independent Variables**

1.     Parenting Style

2.     Classroom Climate

3.     Academic Delay of Gratification

**Dependent Variable**

Self-regulated Learning in Physics.

## Objectives

1.   To find the extent of various Parenting Styles, Classroom Climate, Academic Delay of Gratification and Self- regulated Learning in Physics among Secondary School Students for the total sample and relevant subgroups.

2.   To study whether there exist any significant difference in Parenting Style, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning in Physics of Secondary school students for the relevant subgroups viz. gender, locale of the school and type of management of school

3.   To study the main effects of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups viz. gender, locale of the school and type of management of school.

4.   To find out the first order interaction effect of Parenting Style and Classroom Climate on Self- regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

5.   To find out the first order interaction effect of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

6.   To find out the first order interaction effect of Parenting Style and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

7.    To study the second order interaction effects of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

8.    To develop a regression equation to predict Self-regulated Learning in Physics from the Parenting Style, Classroom Climate and Academic Delay of Gratification.

## Hypotheses

1.    There exists significant difference in the mean scores of various Parenting Styles of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school.

2.    There exists significant difference in the mean scores of Classroom Climate of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school.

3.    There exists significant difference in the mean scores of Academic Delay of Gratification of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school

4.    There exists significant difference in the mean scores of Self- regulated Learning in Physics of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school

5.    The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for the total sample.

6.    The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the male subgroups.

7.    The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the female subgroups.

8.    The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for rural subgroups.

9.    The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for urban subgroups.

10    The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for government subgroups.

11.    The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for aided subgroups

12.    The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for unaided subgroups

13.    The first order interaction effect of Parenting Style and Classroom Climate on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups

14. The first order interaction effect of Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups.

15. The first order interaction effect of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups.

16. The second order interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups.

17. There is significant individual and combined contribution of three Parenting Styles, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for total sample.

## Methodology

The methodology of the study has given as follows:

**Design of the study**

The investigator used survey method to study the influence of independent variables –Parenting Style, Classroom Climate and Academic Delay of Gratification on dependent variable, Self-regulated Learning in Physics. The survey method comes under the purview of descriptive study.

**Sample**

The population of the study is Secondary School Students of Kerala and the sample for the present study is collected from this population. The basal sample for

the present study constituted 1027 IXth standard students of Kerala, which is the best representation of Secondary School Students. Final sample include 1004 students. Due weightages were given to the relevant subgroups of the population such as gender, type of management and locale of the institution. Stratified sampling technique is used for the present study.

**Tools employed in the present study**

All the variables were measured using standardized tools with acceptable reliability and validity. Academic Delay of Gratification scale and Self-regulated Learning scale were developed by the investigator with the help of supervising teacher. The investigator used available standardized tools to measure Parenting Style and Classroom Climate The tools used are the following

1)      Self-regulated Learning Scale in Physics (Bindhu & Sindhu, 2014)

2)      Academic Delay of Gratification Scale (Bindhu & Sindhu, 2014)

3)      Perceived Parenting Style Scale (Manikandan & Divya ,2013)

4)      Perceived Classroom Climate Scale (Bindhu & Nincy, 2012)

**Statistical Techniques used**

The main statistical techniques employed for the present investigation are given below:

The present study is quantitative in nature and the investigators used both descriptive and inferential statistics for the analysis. The statistical techniques used for the present study are summarized as follows.

**Basic Descriptive Statistics**

Basic descriptive statistics such as mean, median, mode, SD, skewness and kurtosis of each of the independent variables and dependent variable were

calculated. Descriptive statistics were calculated for the total sample and sub groups based on the gender, locality of the schools and type of management of schools. Descriptive statistics were done to identify the nature of distribution of independent variables and dependent variables.

**Mean Difference Analysis**

Difference based on gender, locality and type of management was calculated for independent and dependent variables. Test of significance of difference between two means of large independent sample were used to compare the mean scores.

**3 Way ANOVA**

The main effect and interaction effect of three independent variables on dependent variable were estimated using three way analysis of variance. Three fixed factors were identified for each of the independent variable. Each independent variable was divided in to three levels. Hence 3 Way ANOVA with 3x3x3 factorial design in which three independent variables at three different levels, were used to analyze the data. Data were analyzed for total sample and subgroups based on locality, gender and type of management of schools. The significant F values were subjected to Sheffe's test of Post hoc comparison.

**Multiple Regression Analysis**

To predict the individual and joint contribution of independent variables on dependent variable, multiple regression was done using enter method in which all independent variables were entered simultaneously. A regression equation was also developed to predict the dependent variable from the selected independent variables.

## Organization of the Report

The report of the study is organized in to 5 chapters.

Chapter I     :   Reflects a brief introduction to the problem, need and significance, statement of  the problem, definition of key terms, variables selected for the study, objectives, hypotheses, methodology and organization of the report.

Chapter 11   :   Presents the theoretical frame work of the variables and review of related studies of  the variables.

Chapter III  :   Contains the variables, objectives, hypotheses, methods used, design of the study, tools used for data collection, population of the study, size of the sample, sample selected for the study, sampling technique, data collection procedure, scoring and consolidation of data, statistical techniques used for analysis.

Chapter IV  :   Describes preliminary analysis and major analysis comprising Mean Difference Analysis, Analysis of Variance, Multiple Regression Analysis.

Chapter V :   Presents study in retrospect, major findings of the study, conclusion, scope and delimitation of the study, support / nonsupport of hypotheses, suggestion for improving educational practices, directions for future research.

# REVIEW OF
# RELATED LITERATURE

Theoretical Framework of Variables

Self-regulated Learning | Parenting Style | Classroom Climate | Academic Delay of Gratification

Review of Related Studies

Self-regulated Learning | Parenting Style | Classroom Climate | Academic Delay of Gratification
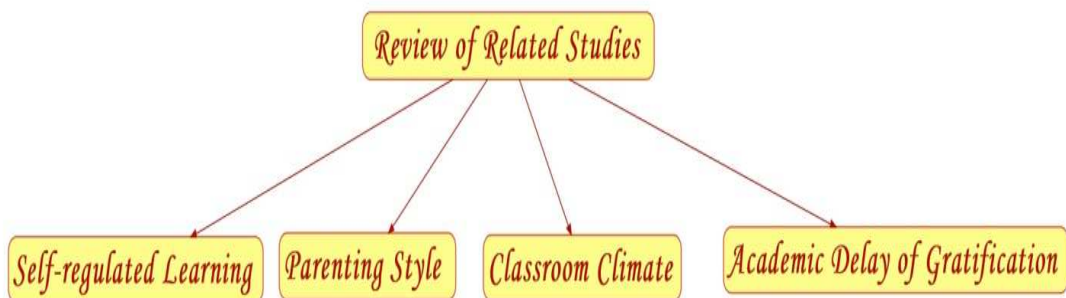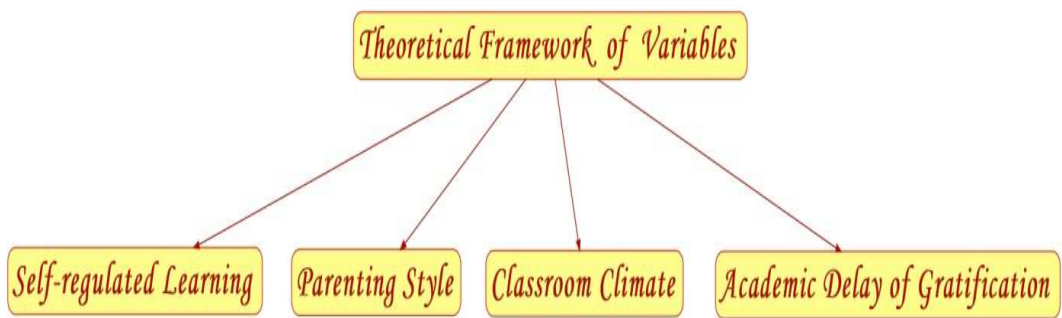
# REVIEW OF RELATED LITERATURE

Review of related literature plays an extensive role in any piece of research work. A proper study of related literature enables the investigator to locate and identifies the appropriate areas by comparison and contrasts of topic under study. Success of any study in any discipline depends on the in-depth analysis of the previous work done in that area. As Best and Khan (2014) pointed out "a summary of writings of recognized authorities and of previous research provides evidence that the researchers is familiar with what is already known and what is still unknown and untested. Because effective research is based on past knowledge, this step helps to eliminate the duplication of what has been done and provides useful hypotheses and helpful suggestions for significant investigation."

Review of related literature in the concerned area helps the investigator in studying the problem accurately, selecting appropriate design of study, tool and design needed for analysis of data. It promotes greater understanding of the problems and its critical aspects. The investigator also referred various journals, books, websites, dissertations and theses in order to get deeper insight in to the theoretical background of the subject of study. It allows the researcher acquaint herself with current knowledge in the area of study. Also to avoid unnecessary duplication and to make the research work more perfect and unique, survey of literature is essential.

In the present study, the investigator has made an attempt to explore the theoretical aspects of the four variables viz. Parenting Style, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning which are involved in the study. Effort has also been made to scrutinize various researches conducted in

the educational setting by using these variables. Hence, the chapter comprised of two sections. The first section deals with theoretical background of the four variables and second section deals with the up to date empirical studies done by other researchers with the variables under consideration. The Organization of the chapter is as follows:

## Theoretical Framework of the Variables

## Review of Related Studies

The theoretical framework of the variables viz. Self-regulated Learning, Parenting Style, Classroom Climate and Academic Delay of Gratification, is presented in this section.

### Theoretical Overview of Self-regulated Learning

### Self-regulated Learning

Self-regulated Learning is one of the most researched areas in the field of psychology in the recent decades. It is a pivotal construct in contemporary accounts of effective academic learning (Winne, 1995). Educators are increasingly emphasizing Self-regulated Learning as a means of raising student's achievement and academic outcomes. In 1980's Self-regulated Learning has become a popular topic in research and in educational psychology and this topic has been translated in to classroom practices (Dinsmore, Alexander & Loughlin, 2008). Research during the past 30 years on students' learning and achievement has progressively included emphasizes on cognitive strategies, meta-cognition, motivation, task engagement and social supports in classrooms. Self-regulated Learning has been emerged as a construct encompassing these aspects of academic learning and provided more

holistic views of the skills, knowledge and motivation that students acquire (Paris & Paris, 2001).

Many definitions are there for Self-regulated Learning. Most definitions require the purposive use of specific processes, strategies or responses by students to improve their academic achievement. They vary on the basis of a researcher's theoretical perspective. There are various views and theories for Self-regulated Learning in which constructivists prefer definitions couched in terms of covert processes while behaviorists in terms of overt responses. Different views on Self-regulated Learning are shown in the Figure 1 below:
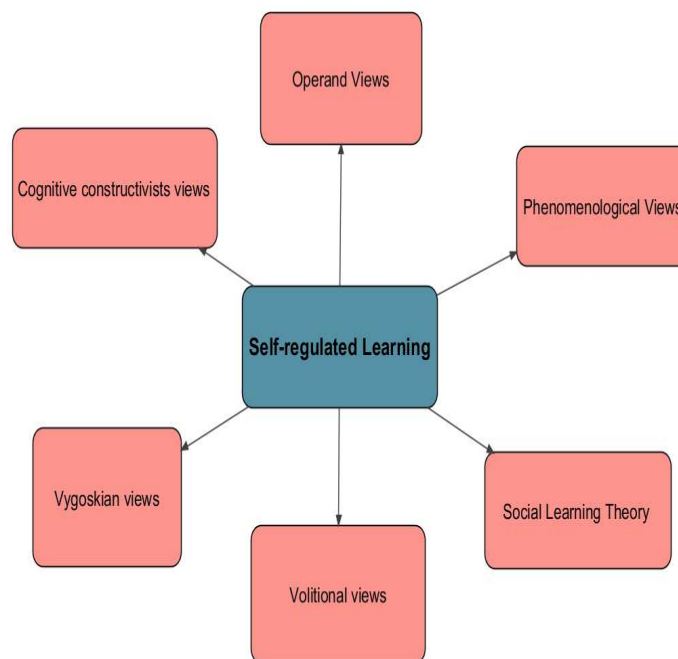


*Figure 1*. Diagrammatic representations of different views of Self-regulated Learning.

In all views there are some common features: Students are assumed to be aware of the potential usefulness of self-regulation processes in enhancing their academic achievement. Most definitions of self-regulation is a self-oriented feed

back loop during learning. (Carver & Scheier, 1981: Zimmerman, 1989b). All definitions of Self-regulated Learning is a description of how and why students choose to use a particular self-regulated process, strategy or response. Theorists greatly differ on this motivational dimension of Self-regulated Learning. Each of the theories focuses attention on different factors for students' failures to self-regulate when learning.

**Concept and definitions of Self-regulated Learning**

Self-regulated Learning has emerged as a powerful new learning theory that is able to promote the transfer of knowledge and skills to real life situations and make students more independent of their teachers in extending and updating their basic knowledge base. Self-regulated Learning is an integrated learning process consisting of the development of set of constructive behaviors that affect one's learning. These processes are planned and adapted to support the pursuit of personal goals in changing learning environment. There are numerous definitions for Self-regulated Learning. Major ones are described below:

Self-regulated Learning is an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, motivation and behavior, guided and constrained by their goals and contextual features of the environment. Pintrich(2000). Or, it is the ability of an individual to control his or her conduct to achieve a set goal (Schunk & Zimmerman, 2008). The key feature of Self-regulated Learning is that the learner steers and directs his or her cognitive and motivation processes to achieve learning goals(Boekaerts & Cascallar, 2006).

Self-regulated Learning (or self-regulation) refers to learning that results from students' self-generated thoughts and behaviors that are oriented systematically

toward the attainment of their goals (Zimmerman,2000). Zimmerman(2001) suggested that Self-regulated Learning is not isolated to a social independent study, but also includes social forms of learning such as modeling, guidance and feedback from peers, coaches and teachers. A Self-regulated Learning perspective shifts the focus of education from student abilities and environments as fixed entities to an emphasis on process, where by students personally initiate strategies to manipulate variables influencing both the learning experience and academic outcomes. Self-regulation should not be confused with a mental ability or an academic performance skill rather it is the self- directive process and setoff behaviors where by learners transform their mental abilities in to academic skills (Zimmerman, 2002).

Self-regulated Learning refers to "self-generated thoughts, feelings and actions that are planned and systematically adapted as needed to affect one's learning and motivation" (Schunk & Ertmer, 2000; Zimmerman, 2000).

Self- regulated learning involves the use of motivational and learning strategies to the degree that students are motivationally, meta-cognitively and behaviorally active participants in their own learning processes (Zimmerman, 2000; Pintrich, 1995).or simply we can say Self-regulated Learning is the one's ability to understand and control one's learning environment. Goal setting, self-monitoring, self-instruction and self-reinforcement are self-regulation abilities.(Harris & Graham, 1999; Schraw, Crippen & Hartley, 2006;Shunk,1996).

Self-regulated Learning refers to learning that is guided by meta-cognition (thinking about one's thinking), strategic action (planning, monitoring, and evaluating personal progress against a standard), and motivation to *learn* (Butler & Winne, 1995; Winne & Perry, 2000; Perry, Phillips, & Hutchinson, 2006; Zimmerman, 1990; Boekaerts & Corno, 2005.)

According to Ormrod and Jeanne Ellis (2009), "Self-regulated Learning" describes as a process of taking control of and evaluating one's own learning and behavior.

Students learn self- regulation through experience and self-reflection (Pintrich, 1995). Therefore, Self- regulated learning is a good target for student intervention since students are able to learn to become self-regulated learners. Lidner and Harris (1993) described Self-regulated Learning as a unified process which involves the integration and utilization of cognitive, meta-cognitive, motivational, perceptual and environmental components in the successful resolution of academic tasks.

The past two decades have established self-regulation in learning as both an important outcome of the schooling process and as a key determinant of students' academic success (Wolters, 2010). Higher achieving students show greater engagement in different components of Self-regulated Learning when compared to lower achieving students (Vanderstoep, Pintrich & Fagerlin, 1996; Zimmerman & Martinez-Pons, 1990).

**Cyclic phases of Self-regulated Learning (SRL)**

Self-regulation phases have been clearly picturised by Zimmerman (1989,2000). Zimmerman's SRL model makes use of an ongoing series of feedback cycles that consist of three phases- ***Forethought phase, Performance phase, Self-reflection phase*** is shown in Figure 2

Forethought, Performance and Self-reflection phases are planning, practice and evaluation respectively. Within each phase, there are multiple opportunities for students to gather and effectively use feedback to improve their performance. The

forethought phase refers to processes and beliefs that occur before efforts to learn; the performance phase refers to processes that occur during behavioral implementation and self-reflection refers to processes that occur after each learning effort.
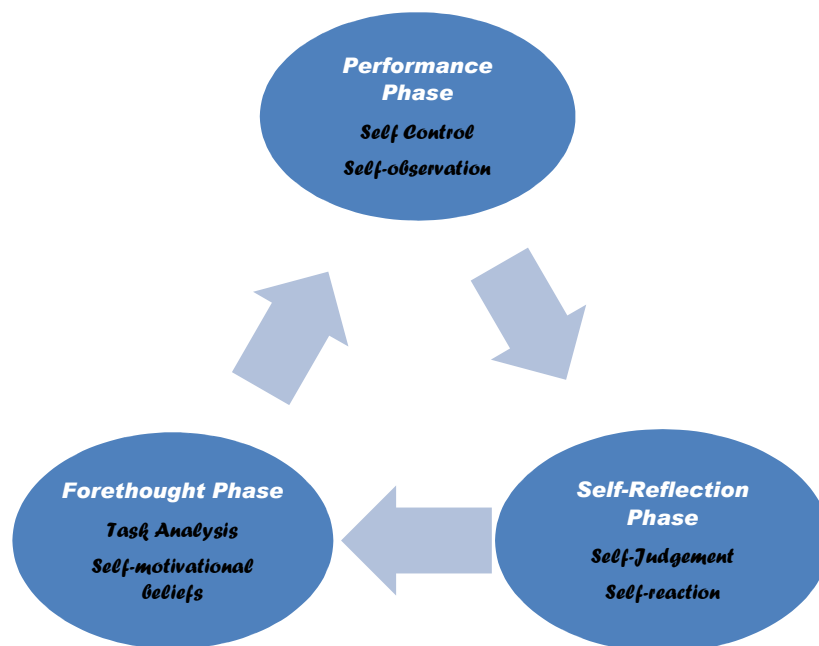


*Figure 2*. Diagrammatic representation of cyclic phases of Self-regulated Learning

**Forethought Phase**

There are two major classes of forethought phase processes: task analysis and self-motivation. Task analysis involves goal setting and strategic planning. There is considerable evidence of increased academic success by learners who set specific proximal goals for themselves such as memorizing a word list for a spelling test and by learners who plan to use spelling strategies such as segmenting words in to syllables.

Self motivation stems from students' beliefs about learning such as self-efficacy beliefs about having the personal capability to learn and outcome expectations about personal consequences of learning (Bandura, 1997).

## *Performance Phase*

Performance phase processes fall in to two major classes: self control and self-observation. Self-control refers to the deployment of specific methods or strategies that were selected during the forethought phase. Among the key types of self control methods that have been studied to date are the use of imagery, self-instruction, attention focusing and task strategies. Self-observation refers to self-recording personal events or self-experimentation to find out the cause of these events.

## Self-reflection Phase

There are two major classes of self-reflection phase processes: self-judgement and self-reaction. One form of self-judgement, self-evaluation refers to comparisons of self-observed performance against some standard, such as one's prior performance, another person's performance or an absolute standard of performance. Another form of self-judgment involves causal attribution, which refers to beliefs about the cause of one's errors or success. Self-reaction involves feelings of self-satisfaction and positive affect regarding one's performance. Increases in self-satisfaction enhance motivation, whereas decreases in self-satisfaction undermine further efforts to learn (Schunk, 2001). Self-reactions also take the form of adaptive/defensive responses. Defensive reactions refer to protect one's self-image by withdrawing or avoiding opportunities to learn and perform, such as dropping a course or being absent for a test. In contrast adaptive reactions

refer to adjustments designed to increase the effectiveness of one's method of learning such as discarding or modifying an in effective learning strategy.

This view of self-regulation is cyclical in that self-reflections from prior efforts to learn affect subsequent forethought processes (self-satisfaction will lead to lower levels of self efficacy and diminished effort during subsequent learning) (Zimmerman & Bandura, 1994).In support to this cyclical view of self-regulation, high correlations were found among learners' use of forethought, performance and self-reflection phase processes (Zimmerman & Kitsantas, 1999).

This loop refers to a cyclic process in which students monitor the effectiveness of their learning methods or strategies and respond to this feedback in a variety of ways ranging from covert changes in self-perception to overt changes in behavior such as replacing one learning strategy with another.

**Factors influencing Self-regulated Learning (SRL)**

According to social cognitive view of Self-regulated Learning, there are three major factors that influence Self-regulated Learning. They are,

a)      Personal influences

b)      Behavioral influences

c)      Environment influences.

According to Zimmerman, they are interdependent to each other.

*Personal Influences* :

Different types of personal influences are self efficacy, students knowledge, metacognitive process, goals, affective (Zimmerman,1989)

*Self-efficacy* : It is considered as the key personal influence. It depends in each of the above other personal influences. It involves the individual's confidence in himself or herself to achieve a specific goal. So when students have high self- efficiency they use effective learning strategies and more monitoring strategies to their learning outcomes. Students having better self- efficacy shows better performance because they are better in self regulatory activities.

*Students Knowledge* : It can be declarative or promotional and self regulative knowledge. Declarative knowledge refers to the extent that they know about themselves about the given learning tasks and learning strategies and content related to the learning tasks (Heo, 2003). Self regulative knowledge also have the qualities of conditional (refers to knowledge of when and why strategies) and procedural knowledge (refers to knowledge of how to use strategies effectively).

*Metacognitive process* : In order to utilize Self-regulated Learning strategies, students not only need knowledge of strategies, but also meta cognitive decision making process and performance outcomes. Meta cognition refers thinking and thinking (Anderson, 2002). If students are meta cognitively aware, they will have strategies that could help them to identify what they need to do.

*Goals***:** It can also influence Self-regulated Learning. Most anticipated outcomes are too general to guide specific actions in immediate situations that present many uncertainties and complexities. So, proximal goal setting is important. By increasing self-motivation, distinct goals can also create higher motivation and better self-regulation than distant goals. Schunk (2001) stated proximal goals create higher motivation and better than distant goals.

**Behavioral Influences**

According to Zimmerman (1989), self-observation, self-judgement and self-reaction are assumed to be behavioral influences on Self-regulated Learning**.**

*Self-observation*: It is defined as the deliberate attention to specific aspects of one's own behavior. Self-observation involves providing information about how well students are progressing by monitoring their performance. This information can motivate students to improve their studying(Shih, 2003).There are two method of observation (a) Verbal or written reporting (b) Quantitative recording of one's actions and reactions (Zimmerman, 1998).

*Self judgement*: Self judgement refers to comparing present performance level with one's goal. It also involves gathering information about student's performance by comparing their performance with a standard or goal. However if the desired goal is not clear in mind, self-judgement cannot be executed (Shih, 2003).Self evaluation can be influenced by personal process such as self-efficacy, goal setting and knowledge of standards as well as self-observed responses. Self-evaluation can be performed by two common methods that are checking procedures (such as reexamining their answers to mathematical problems) and rating their answers in relation to those another person or an answer sheet. (Zimmerman, 1989).

*Self-reaction* : It is defined as making evaluative responses to judgement of one's own performance. It also refers to individuals' feeling of satisfaction or dissatisfaction .Self-reaction to the learners goal progress motivates behavior (Shih, 2003).It also involves such personal processes as goal settings, self-efficacy perceptions and meta cognitive planning as well as behavioral outcomes (Zimmerman,1989).

**Environment Influences**

These types of influences have two major classes: Physical Context and Social Experience. Social experience can be described in the form of modeling and verbal persuasion. Learning from observing one's own behavior and from enactive outcomes is the most influential method for changing learners' perceptions of efficacy and improving retention of information (Bandura cited in Zimmerman, 1989).

According to Barry .J. Zimmerman (1989), Self-regulated Learning involves the regulation of three aspects of academic learning.

Self regulation of behavior involves the active control of various resources students have available to them, such as their time, their study environment (for eg. place in which they study) and their use of others such as peers and faculty members to help them (Garcia & Pintrich, 1994; Pintrich, Smith, Garcia & Mckeachie. 1993).

Self-regulation of motivation and affect involves controlling and changing motivational beliefs such as self-efficacy and goal orientation, so that students can adapt to the demands of a course. In addition students can learn how to control their emotions and affect (such as anxiety) in that improve their learning.

Self-regulation of cognition involves the control of various cognitive strategies for learning such as the use of deep processing strategies that result in better learning and performance than students showed previously. (Garcia & Pintrich, 1994; Pintrich, Smith, Garcia& Mckeachie,1993). In Zimmerman studies successful students report that the use of Self-regulated Learning strategies accounted for most of their success in school.

Schunk (1998) suggests that to promote students' Self-regulated Learning, teachers should provide students with opportunities for self-reflective practice that improves students' skills to monitor, evaluate and adjust their performance during the learning process. Self-regulation of cognition and behavior is an important aspect of student learning and academic performance in the classroom context (Corno & Mandinach, 1983; Corno & Rohrkemper,1985).

A key aspect of Self-regulated Learning is the experience of the self as an agent or origin in the learning. Self-regulated Learning subsumes components such as goal setting, learning strategies, self-monitoring, self-motivation, time management, help seeking, self-efficacy, value of learning and also delay of gratification (Pintrich & De Groot, 1990).

**Characteristics of Self-regulated Learners**

Self-regulated Learning creates opportunities for students to manage their own resources and to perform better in all learning processes. Paris and Newman (1990) describe that students who construct their own cognitive and motivational tools for making their learning effective are known as "learners who have thirst for learning". These learners

- set realistic goals and utilize a battery of resources
- approach academic tasks with confidence and purpose.
- seek challenges and overcome obstacles sometimes with persistence and sometimes with inventive problem solving.
- take the responsibility for their own learning processes, adopt their learning strategies to meet the demands.

- use various cognitive and meta cognitive strategies(repetition, elaboration and organization) to control and regulate their own learning.

- These are the students who can ask questions, take notes and allocate their time and their resources in ways that help them to be in charge of their own learning (Paris & Paris, 2001).

- know how to plan, control and direct their mental processes towards the achievement of personal goals (meta cognition)

- show a set of motivational beliefs and adaptive emotions such as high sense of self-efficacy, the adoption of learning goals, the development of the emotions (joy, satisfaction, enthusiasm)  towards  tasks as well as the capacity to control and modify these, adjusting them to the requirements of the task and of the special learning situations

- They show greater efforts to participate in the control and regulation of academic tasks, classroom climate and structure.(eg. How one will be evaluated, task requirements, the design of class assignments. Organization of work terms)

- They are able to put in to play a series of volitional strategies aimed at avoiding external and internal distractions, in order to maintain their concentrations effort and motivation while performing academic tasks.

- They also know how to establish good working environment.

Self-regulated Learning strategies help to prepare learners for life-long learning and the important capacity to transfer skills, knowledge and abilities from one domain or setting to another. These learners also monitor progress as they work through the task, managing intrusive emotions and waning motivation as well as adjusting strategies processed to foster success.

Self-regulated learners have a combination of academic learning skills and self-control that makes learning easier, so they are motivated; in other words they have the skill and the will to learn(McCombs & Marzano, 1990; Murphy & Alexander, 2000).The combinations of positive expectations, motivation and diverse strategies for problem solving are virtues of Self-regulated Learners (Paris & Byrnes, 1989).

Students' personal attributes, their academic time management, practice, mastery of learning methods, their goal-orientation and sense of self-efficacy have been identified as hall marks of academic self-regulation.

**Theoretical Overview of Parenting Style**

*Parenting Style*

Parenting is a privileged responsibility of helping the child to reach the potentialities there by and to contributing effectively to the society. Parenthood is the partnership involved between mother and father (Ambika & Khadi, 2003). It is the process of promoting and supporting the physical, emotional, social and intellectual development of a child from infancy to adulthood. Parents should prepare their children for potentially stressful situations, they should provide them support and reassurance, provide an environment for open communication also should provide proper nutrition to help their children reframe stressful situations and also to develop good problem solving skills.

Parenting Style is the extent to which parent responds to needs and demands of a child. (Baumrind, 1991). It has been found to predict children well being in the domain of social competence, academic performance, psychosocial development, and problem behavior (Darling, 1999).

Good parenting is very important for children to become a socially responsible citizen. The relationship between parents and children is a universal truth and it can be seen in the universe as long as mankind exists. Developmental psychologists have been interested in how parents influence the development of children's social and instrumental competence since at least the 1920s. One of the most robust approaches to this area is the study of what has been called "Parenting Style". The part played by the parents in the growth and development of a child can be understood through their Parenting Styles. Parenting Style is a psychological construct representing standard strategies that parents use in their child rearing.  It is used to capture normal variations in parents' attempts to control and socialize their children (Baumrind, 1991).Parenting Style is affected by both the parents' and children's temperaments and is largely based on the influence of one's own parents and culture. Most parents learn parenting practices from their own parents–some they accept, some they discard.

The theoretical perspectives related to Parenting Style propose two approaches; one is the dimensional approach and the other the typological approach. Typological approach is a joint analysis of parenting dimensions such as demandingness and responsiveness and by the blending of these dimensions different Parenting Styles can be assessed. The theorists who come under typological approaches are Maccoby, Martin and Baumrind. Baumrind is a developmental psychologist who had undertaken extensive research on Parenting Style.

Parenting Style captures two important elements of parenting: parental responsiveness and parental demandingness (Maccoby & Martin, 1983). Parental responsiveness (also referred to as parental warmth or supportiveness)refers to " the

extent to which parents intentionally foster individuality, self-regulation and self-assertion by being attuned, supportive and acquiscient to children's special needs and demands"(Baumrind,1991,pp.61). Parental demandingness (also referred to as behavioral control) refers to " the claim parents make on children to become integrated in to the family whole, by their maturity demands, supervision, disciplinary efforts and willingness to comfort the child who disobeys" (Baumrind.1991,pp.61-62).

Diana Baumrind(1966) proposed that parents fall in to three categories – *Authoritarian Parenting Style, Authoritative Parenting Style and Permissive Parenting Style.*

**Authoritarian Parenting Style** (telling children exactly what to do-here the parent is highly demanding, but not responsive). These parents provide rules and orders to their children and are expected them to respect them without questioning even though the rules are not clearly explained(Baumrind cited in Darling,1999)These Parents will expect much from their child. They are less responsive to their child's needs. They have a standard of conduct and they attempt to shape, control and evaluate child behaviors and their attitudes. Children are expected to follow the strict rules established by the parents. Failure to follow such rules usually results in punishment. Children resulting from this type of parenting may have less social competence because the parent generally tells the child what to do instead of allowing the child to choose by him or herself. These children are generally socially with drawn, distrustful, anxious and discontented. (Baumrind, 1973).Low warmth and nurturing, high maturity demands, high in control of child's behavior and low communication between parent and child are the main characteristics of Authoritarian Parenting Styles. Also known by the name strict parenting. More over,

they tend to have lower levels of self-reliance, independence, responsibility and achievement motivation(Baumrind, 1971).

**Authoritative Parenting Style** (providing rules and guidance without being over bearing-here the parent is highly demanding and responsive). These parents are warm, receptive to the child and rational (Baumrind, 1971).The Parents can understand how their children are feeling and teach them how to regulate feelings. They often help their children to find appropriate outlets to solve problems. They encourage children to be independent but still place controls and limits on their children's needs and concerns and will forgive and teach instead of punishing. This Parenting Style is much more democratic. Their children tend to be independent, assertive, co. operative with adults, friendly with peers, successful, and motivated toward achievement. High warmth and nurturing, high maturity demands, high in control of child's behavior, high communication between parent and child. This kind of parenting is called as balanced parenting. Children of authoritative parents have better self-esteem, self-reliance, self-control, more explorative and content. (Holmbeck, 1996)

**Permissive or Indulgent Parenting Style** (allowing children to do whatever they wish-here the parent is highly responsive, but not demanding). These parents rarely discipline their children because they have relatively low expectations of maturity and self-control. Parents encourage their children to be independent without demanding a mature behavior (Baumrind,1989). Permissive parents are generally nurturing and communicative with their children, often taking on the status of a friend more than that of a parent. They do not require children to regulate themselves or behave appropriately. Children of permissive parents may tend to be more impulsive and they may engage in misconduct and in drug use. Children never

learn to control their own behavior and always expect to get their way. They are less self-reliant, less explorative, and less self-controlled. While these children tend to have positive moods, their behavior is less mature due to their low impulse control and self-reliance(Hetherington & Parke, 2002).But, they are emotionally secure, independent and are willing to learn and accept defeat.

According to Maccoby and Martin(1983), in addition to these three one more Parenting Style is there- *Neglectful or hands off or passive or uninvolved* Parenting Style-here the parent is neither demanding nor responsive. Parents are emotionally unsupportive to their children, but providing money for their basic needs. They are low in warmth and control and do not set limits.

The four Parenting Styles involving combinations of acceptance and responsiveness on one hand and demand and control on other hand is shown below:

| **Maccoby and Martins's four Parenting Styles** **Baumrind's three Parenting Styles** | | |
|---|---|---|
| | *Demanding* | *Undemanding* |
| *Responsive* | Authoritative (balanced parenting) | Permissive (Indulgent) |
| *Unresponsive* | Authoritarian (strict parenting) | Neglectful (Hands off) |

Parenting Style has been found to predict children well being in the domain of social competence, academic performance, psychosocial development, and problem behavior (Darling, 1999). Authoritative parenting makes the children well equipped to meet the challenges of school, whereas authoritarian and permissive parenting make children not to have self-direction, self-monitoring and self-regulating abilities in their academic performance (Baumrind cited in Strage, 1998).

**Theoretical Overview of Classroom Climate**

A classroom is a unique face to face marked by interpersonal relationship among its members. The general atmosphere within which the academic activities take place is influenced by these relationships. It occupies a pivotal role in moulding the lives of school children. Classroom Climate is seen as a major determiner of classroom behavior and learning. It plays a major role in shaping the quality of school life and learning. It also influences the student achievement, their self-esteem and participation in the lesson. It has the potential to promote a positive learning climate that fosters students' motivation and engagement. Classroom climate is the climate or atmosphere in the class in which the child is supposed to learn to respect the right of others to accept responsibility to do his share of work and to act unselfishly and to cooperatively as a member of social group.

Different definitions exist for Classroom Climate. Relevant ones are mentioned below:

The editor Good in Dictionary of Education says " The learning environment in a classroom includes not only physical environment, but also emotional tone. All environmental conditions or qualities that tend to produce a given type of feeling or emotional response, especially the teacher pupil and pupil-pupil relationships as environmental influences during the teaching learning process.  Good defined educational environment as the sum of all physical, social, emotional and mental factors that constitute to the total teaching –learning situation.

Thelen (1981) has described Classroom Climate in terms of three components called ALP components-Authenticity, Legitimacy and Productivity

Authenticity (A)-Pupils involvement. That is pupils meaningfulness, understanding, pleasant experiences, lively, exciting and democratic situations in learning activities.

Legitimacy (L) - Pupils satisfaction or purposefulness. That is pupils effort in solving problems concern for learning and preparing themselves for the purpose or aim in life.

Productivity (P) - Pupils goal attainment. That is pupils consciousness, effectiveness, potentials and self-learning in productive learning activities.

Hawes and Hawes (1982) describe Classroom Climate as the general environment in the classroom that may help or hinder the learning process. It includes the attitude of teacher, rules and regulations, social attitude of peers, physical and material resources and general emotional tone.

Classroom environment is a tone, ambience, culture or atmosphere of a classroom or school. It involves from the relationships between students and between teacher and students and the types of activities, actions and interactions that are rewarded, encouraged and emphasized in the classroom.(Logan, Crump & Rennie, 2006). Classroom climate can be defined as the mood or atmosphere created by a teacher in his or her classroom, the way the teacher interacts with students and the way the physical environment is set out. (Creating Conducive Classroom Climate, 2007).

### *Aspects of Classroom Climate*

Learning takes place only in a non-threatening conducive atmosphere. Individual involvement in classroom is according to his readiness to physical, intellectual, social, educational and emotional aspects. Actually a teacher is an instrument to provide the need based academic setting for the learner in the

classroom. Instructors' attentiveness to these aspects creates a Classroom Climate conducive to student engagement with the content and skills of the discipline. Different aspects of Classroom Climate is shown in Figure 3
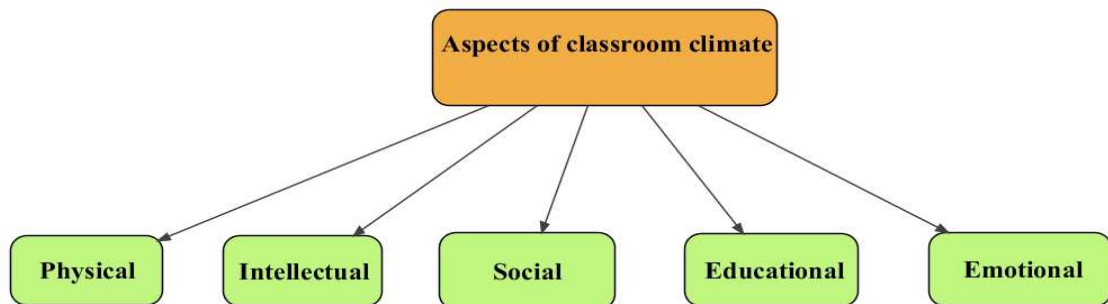


*Figure 3*. Figure showing various aspects of Classroom Climate

### *Physical aspects*

Physical factor indicates the surroundings in which the pupil and teachers are working. This includes furniture, equipments and space in the classroom. Lighting, temperature, ambience, air quality, seating arrangements, acoustic factors to avoid distractions, visual factors (lighter colors are best for learning environment), distribution of materials etc are the sub components of physical factors conducive for learning.

### *Intellectual aspects*

The lesson develops students' disciplinary knowledge, skills and attitudes. Students receive a prompt and specific feedback. Students receive a prompt and specific feedback. Tasks given are challenging important and authentic.

### *Social aspects*

This aspect is provided by the children and teacher who gather within the classroom surroundings for learning purposes. Any combination of students and

teachers provide a social component which is in some respect different from any other component. Social environment may be defined as the level and quality of emotional involvement experienced by the classroom group. It involves through dynamic process of classroom interactions involving interpersonal relationships at several levels: teacher-class, teacher- student, student-student.

### *Educational aspects*

Educational environment is defined at the emotional, physical and intellectual climate that is set up by the teacher and students to contribute to a whole some learning situations. The content of the school curriculum and the decisions which teachers take as to what information and skills children need to be taught at particular age and stage in their learning contribute to educational factor. The task on which children are engaged, the organization and presentation of these and the patterning of activities across the school day are the key features of educational component (Bull & Solity, 1987).

The type of educational task, its relevance, difficulty and length, teacher's presentation, written instruction and examples, pattern of activities across the lesson, organization of the concurrent activities, keeping the children busy, non-verbal communication etc are the sub components of educational factors.

### *Emotional aspects*

Instructors create an encouraging atmosphere where students feel safe taking risks, receive support when events intrude on learning and believe they can succeed if they put forth effort.

Positive classroom climate can be promoted by enhancing the quality of life in the classroom for students and staff. This can be done by pursuing a curriculum

not only academic , but also social and emotional learning, by fostering intrinsic motivation of students, advocating a welcoming, caring and hopeful atmosphere, providing a social support mechanisms for students and staff, providing attractive and healthy physical environment that is conducive to learning and teaching, increase home involvement with schools, establish clear expectations of teacher with the students, should recognize individual differences,  strength of the students should be searched and find out and build it.

Numerous studies have clearly demonstrated that the perceived learning environment is significantly related to student achievement.(Fraser,1994; McRobbie & Fraser, 1993)

**Theoretical Overview of Academic Delay of Gratification**

Delay of gratification was first studied by Mischel (1958) and (Mischel & Moore, 1973) and is defined as a strategy or process in which the individual postpone an immediate reward for more valuable future rewards. Delay of gratification is most relevant to the monitoring and control phases in which it is necessary to put off immediately gratifying activities like watching television or playing video games for a larger long term reward like being successful in class. Pressley, Reynolds, Stark & Gettinger (1983) noted the important implications of delay of gratification for education and academic performance. Delay of gratification could facilitate learning and information processing among learners. Consistent with Pressley and in an attempt to fill the gap created by diminished empirical attention that has been given to the specific role that delay may play in facilitating learners' academic success and their learning processes. Researchers have begun to examine students' preference for delay of gratification in academic setting. Bembenutty  has done the  most extensive work in the last fifteen years in

the area of Academic Delay of Gratification (Bembenutty, 1997,1999,2007,2009a, 2009b,2009c ; Bembenutty & Karabenick, 1998; Karabenick & Bembenutty, 1998a, 1998b, 2004).   Delay of Gratification is an important aspect of Self-regulated Learning, as learners must often choose to focus their efforts on a learning activity in contrast to other more attractive options (Pintrich, 1999).

**Concept and definition of Academic Delay of Gratification**

Academic delay of gratification refers to students' postponement of immediately available opportunities to satisfy impulses in favour of pursuing important academic rewards or goals that are temporally remote but ostensibly more valuable (Bembenutty & Karabenick, 1998). Delay of gratification is important for self-regulation of learning for example, alternatives to academic goals are attractive in part because they offer immediate gratification in contrast to rewards for academic goals (eg. Grades, degrees) that are temporally remote (Bembenutty, 1997).

For each situation, the students first rated their performance for an option that offered immediate gratification, such as "going to a favorite concert, play or sporting event, even though it may mean getting a lower grade on an exam in this class to be taken the next day", or a delayed gratification option such as, "staying home and studying to increase your chances of getting a higher grade."

Academic Delay of Gratification (ADOG) plays a very important role in every aspects of learning. Academic Delay of Gratification has an impact on the learning experience and academic success of students. Students who are able to engage in Academic Delay of Gratification are more likely to have better educational outcomes. It has been identified as a key component of Self-regulated Learning and has been associated with successful learning and other positive

educational outcomes. It helps to develop and perceive their competence to complete tasks that are valuable to them. Academic Delay of Gratification develops as individuals become more concerned with longer term future goals. Students with greater delay of gratification also reported that they were more academically motivated, more highly self-efficacious and more intrinsically interested in learning. Students with greater delay preference reported greater use of cognitive strategies such as critical thinking, rehearsal and elaboration as well as metacognition. Students with high delay of gratification also successfully used resource management strategies such as effort regulation, control of time and study environment.

Students having a well delay of gratification have more positive beliefs about their future and are likely to complete academic tasks. Also, it is found that students more likely to delay gratification would have higher levels of persistence when tasks are less interesting or more difficult (Bembenutty,1999).Students who delay gratification may exercise more control over their study time and environment than impulsive students.

Students with greater delay of gratification reported that they were more academically motivated, more highly self-efficacious and more intrinsically interested in learning (Bembenutty, 1999).

Delay of gratification should be related to motivation for learning. Research reports shown that there are important implications of delay of gratification for education and academic performance.

Delay of gratification could facilitate learning and information processing among learners. It was also reported that students with greater delay of gratification are more highly self-efficacious and more intrinsically interested in learning.

Academic Delay of Gratification plays a vital role in every aspects of learning. It strengthens student's ability to approach in learning. Students' amount of time dedicated to study and the effective structuring of their study environment are expected to directly relate to Academic Delay of Gratification.

An important function of delay of gratification is to orchestrate the enactment of goals and intensions. Intensional self-imposed delay of gratification facilities negotiation between immediately available but less valuable goals and highly valuable long term academic goals. Self-regulated learners are problem solving agents who know how to negotiate demands from their present environment and their long term goals. For example, when faced with academic difficulties that could affect academic goals, a self-regulated learner seeks help from teachers, peers and parents (Karabenick cited in Bembnetty, 1999). Students likely to delay more, likely to use Self-regulated Learning strategies. Students having Academic Delay of Gratification have more positive beliefs about their future and are more likely to complete the academic tasks. They have high level of persistence.

## Review of Related Studies

The investigator thoroughly analyzed the previous studies related to the four variables-massive collection of related studies were identified and only the recent and most appropriate ones are mentioned in the following section:

### Studies related to Parenting Style

A study was conducted on parents' Parenting Styles and academic achievement of underachievers and high achievers at middle school level by Inam, Nomaan, and Abiodullah (2016) in a sample of 210 participants(70 students and their both parents). The parents of the selected students were interviewed to find out

their Parenting Style. Parenting Styles were compared to students' academic achievement. Findings showed that students whose parents were fully authoritative, fully permissive or those who were using a mix of authoritative and permissive Parenting Style showed significantly better result than the students whose parents were permissive in their actions only.

Pinquart (2016) conducted a meta-analytic study on associations of Parenting Styles and dimensions with academic achievement in children and adolescents. The study integrates the results of 308 empirical studies on associations of general parenting dimensions and styles with academic achievement of children and adolescents assessed via grade point average or academic achievement tests. Parental responsiveness (warmth), behavioral control, autonomy granting, and an authoritative Parenting Style were associated with better academic performance both concurrently and in longitudinal studies, although these associations were small in a statistical sense. Parental harsh control, and psychological control, as well as neglectful, authoritarian, and permissive Parenting Styles were related to lower achievement with small to very small effect sizes. It is concluded that associations of academic achievement with general parenting dimensions/styles tend to be smaller than associations of school-specific parental involvement which have been addressed in previous meta- analyses.

Tavassolie, Dudding, Madigan, Thorvardarson and Winsler (2016) investigated a study on differences in perceived Parenting Style between mothers and fathers: implications for child outcomes and marital conflict. The current study focused on relations between maternal and paternal perceived Parenting Style, marital conflict, and child behavior outcomes among parents of 152 Child participants of age group 3 to 9 years old. Reports from both parents on perceived

Parenting Style, marital conflict, and child behavior problems were collected. Results indicated that (a) Parenting Styles of mothers and fathers were related, (b) mothers' and fathers' authoritarianism and permissiveness were associated with increased child internalizing and externalizing behavior problems, (c) marital conflict was significantly related to child behavior problems, (d) when mother and father reported Parenting Styles differed, increased marital conflict was reported, (e) increased differences between mothers and fathers in self- and spouse-perceived permissiveness were related to increased child externalizing behavior problems, and (f) the direction of the differences between parents (i.e. whether a particular parent reported being more permissive than the other) was linked with marital conflict and child behavior problems.

Cenk and Demir (2016) conducted a study on the relationship between Parenting Style, gender and academic achievement with optimism among Turkish adolescents of age group 14-18.Data were collected from 1353 students(708 male & 645 female)  using Life Orientation Test and Parental Attitude Scale. The findings revealed that the adolescents who perceived their parents as authoritative had relatively higher levels of optimism than those who perceived their parents as authoritarian and neglectful. Also, indicated that the adolescents who characterize their parents as permissive had a relatively higher level of optimism than those who characterize their parents as neglectful and authoritarian.

A study entitled the relationship between perceived Parenting Style, resilience and emotional intelligence among adolescents was investigated by Mathibe (2015). 426 grade 10 learners in North West province secondary school were taken as sample by means of purposive sampling. Parental authority questionnaire (by Buri), Resilience scale and Emotional Intelligence Scale were the

tools administered among them. Findings show that there is a positive relationship between Parenting Style on emotional intelligence among adolescence. Also, found a significant difference between male and female learners perception on Parenting Style.

A study entitled Academic achievement in relation to Parenting Style and personality: a study amongst school students was carried out by Asha and Shyam, R. (2015).100 adolescents (50 male & 50 female) of 16+ age groups studying in 11[th]standard were taken as sample for the present study. Parenting Style inventory and 16 P F questionnaires were the tools adopted and academic achievement of Xth class were taken for the particular study. Findings show that there was significant relationship of academic achievement with Parenting Style and personality.

A study entitled Role of Parenting Style, area of residence and sex on self-concept, achievement motivation and academic achievement of the adolescents was investigated by Ashtaputre and Nath (2013). Parents of adolescents of age category 13-17years were taken for the present study. Initially, 800 parents were given the parenting test (400 parents from urban area and 400 parents from rural area) and finally 200 parents from urban and 200 from rural were selected. Out of the 200 parents from urban, 100 were authoritative and 100 were authoritarian and similarly from rural case also. Both gender of equal number were included in the study under authoritative and authoritarian. Three tools-Parent Child relationship scale, Self-concept scale, Deo-Mohan Achievement Motivation Scale were adopted for data collection. 2x2x2 factorial design was used for analysis. The study findings revealed authoritative Parenting Style would develop better self-concept than authoritarian Parenting Style in adolescents. Also found authoritative Parenting Style would

develop better academic achievement than authoritarian Parenting Style in adolescents.

Sisode and Nath (2013) conducted a study of Parenting Style and adjustment among parents personality and marital adjustment. A sample of 400 parents (200 fathers & 200 mothers) of age group 35-50 years were taken. All the parents were graduates. Four tools were administered among them- The Parent-child relationship scale, The Neymann-Kohistedt diagnostic test for introversion-extroversion, Marital adjustment questionnaire and Global adjustment scale. The findings revealed parents' personality and marital adjustment have significant effects on Parenting Styles they being adopted.

Ishak , Low, and Lau (2012) investigated a study on Parenting Style as a moderator for students' academic achievement. The purpose of the study was to test the structural equation model of academic achievement among the students using Parenting Style as moderator. The sample comprised 493 students from eight schools. Parenting Styles are determined using parental Authority questionnaire. Academic achievement is measured based on the students' performance in the lower secondary assessment. Data were analyzed using structural equation modeling. Results demonstrated that model of authoritative and model of authoritarian fit the data of this study well. Parenting Styles have been found to be a moderator of this study. The results revealed that Parenting Styles moderated the effect of academic self-concept on academic achievement.

A study titled gender differences in Parenting Style and effects on the parent child relationship was conducted by Stephen (2009). The purpose of the study was to determine if there were any gender differences in Parenting Style and if so how they affect the parent child relationship. Parental bonding inventory was

administered among 302 (95 males & 207 females) children of 18-25 age group. The findings revealed that there were significant gender differences in the ways that parents interacted with their children. Mothers on average spent more time with their children in general than fathers, spent more time in taking care of their children, were seen as more over- protective and more caring and spent the most quality time with their children. Also, found if one parent was considered over protective the other parent was also more likely to be seen as over protective.

Kausar and Shafique (2008) conducted a study on gender differences in perceived Parenting Style and socio emotional adjustments of adolescents. 60 adolescents (equal number of boys and girls) were taken as sample by means of purposive sampling technique. Only children living with their biological parents were taken. Data collected using parental authority questionnaire and socio emotional adjustment scale. Both parents were given questionnaires. The findings of the study revealed that a gender difference is noticed in perceived Parenting Style and socio emotional adjustment. It was found that girls perceived their fathers as more permissive and authoritative compared to boys and boys perceived their mothers more authoritative. But, no gender differences in perception of authoritarian Parenting Style.

Uma and Maria (2008) examined a study on Perception of Parenting Style, self-esteem and academic achievement in visually and hearing impaired adolescents. A total sample of 182 visually impaired and 132 hearing impaired children were taken as sample for the present study. 128 visually impaired and 96 hearing impaired children were selected by cluster sampling method and 54 visually impaired and 36 hearing impaired children were selected by means of purposive sampling method. Socio demographic variables, Perception of Parenting Style scale have been assessed

among these adolescents group. The findings revealed both visually impaired and hearing impaired adolescents perceived different types of Parenting Styles in varying degrees and varying frequencies.

A study titled the role of Parenting Styles in children's problem behavior was carried out by Aunola and Nurmi (2005). The study investigated the contribution of mothers' and fathers' Parenting Styles(affection, behavioral control, and psychological control) that would be most influential in predicting their children's internal and external problem behaviors. 196 children of age category 5-6 were followed up six times from kindergarten to second grade to measure their problem behaviors. Mothers and fathers filled the questionnaires measuring their Parenting Style once every year. The results showed that a high level of psychological control exercised by mothers combined with high affection predicted increases in the levels of both internal and external problem behaviors among children. Behavioral control exercised by mothers decreased children's external problem behavior but only when combined with a low level of psychological control.

Abraham and Suriakanthi (2001) carried out a study on social competencies of children and Parenting Style of employed and unemployed mothers. The sample for the study comprises 451 mothers of 451 children with 13-15 age category, out of which 23 were teachers selected by means of convenience sampling technique. Parenting Style inventory and Social Competency rating scale were the tools administered among them. The pattern of assessment of Parenting Style by mothers and children was more or less similar. It was found that commonly prevalent Parenting Style was authoritative and permissive. Mothers following authoritarian Parenting Style were very few only 3%. The findings revealed there was significant association between social competence and Parenting Style. High social competence

was related to permissive Parenting Style. Low social competence was more associated with authoritarian Parenting Style than others. Also found there was no much difference in Parenting Styles adopted by employed and unemployed mothers.

The aforementioned studies related to Parenting Style are given in table below:

| Sl. No. | Year | Author(s) | Major Findings |
|---------|------|-----------|----------------|
| 1 | 2016 | Inam, A., Nomaan, S. & Abiodullah, M. | Findings showed that students whose parents were fully authoritative, fully permissive or those who were using a mix of authoritative and permissive Parenting Style showed significantly better result than the students whose parents were permissive in their actions only. |
| 2 | 2016 | Pinquart, M | It is concluded that associations of academic achievement with general parenting dimensions/styles tend to be smaller than associations of school-specific parental involvement which have been addressed in previous meta analyses. |
| 3 | 2016 | Tavassolie, T., Dudding, S., Madigan, A., Thorvardarson, E. & Winsler, A. | Results indicated that Parenting Styles of mothers and fathers were related, mothers' and fathers' authoritarianism and permissiveness were associated with increased child internalizing and externalizing behavior problems. |
| 4 | 2016 | Cenk, D.S. & Demir, A | The findings revealed that the adolescents who perceived their parents as authoritative had relatively higher levels of optimism than those |

| Sl. No. | Year | Author(s) | Major Findings |
|---|---|---|---|
| | | | who perceived their parents as authoritarian and neglectful. |
| 5 | 2015 | Mathibe, G. I. | Findings show that there is a positive relationship between Parenting Style on emotional intelligence among adolescence. Also, found a significant difference between male and female learners perception on Parenting Style. |
| 6 | 2015 | Asha & Shyam, R | Findings show that there was significant relationship of academic achievement with Parenting Style and personality. |
| 7 | 2013 | Ashtaputre, A. & Nath, I.D. | The study findings revealed authoritative Parenting Style would develop better self-concept than authoritarian parenting style in adolescents. Also found authoritative Parenting Style would develop better academic achievement than authoritarian Parenting Style in adolescents. |
| 8 | 2013 | Sisode, S. N. & Nath, I. D. | The findings revealed parents' personality and marital adjustment have significant effects on Parenting Styles they being adopted. |
| 9 | 2012 | Ishak, Z., Low, S. F., & Lau, P.L. | The results revealed that Parenting Styles moderated the effect of academic self-concept on academic achievement |
| 10 | 2009 | Stephen, M. A. | The findings revealed that there were significant gender differences in the ways that parents interacted with their children |

| Sl. No. | Year | Author(s) | Major Findings |
|---------|------|-----------|----------------|
| 11 | 2008 | Uma, K. & Maria, K. | The findings revealed both visually impaired and hearing impaired adolescents perceived different types of Parenting Styles in varying degrees and varying frequencies. |
| 12 | 2008 | Kausar, R. & Shafique, N. | Gender differences is there in perceived Parenting Style and socio emotional adjustment. It was found that girls perceived their fathers as more permissive and authoritative compared to boys and boys perceived their mothers more authoritative. But, no gender differences in perception of authoritarian parenting style. |
| 14 | 2005 | Aunola, K. & Nurmi, J.E. | The results showed that a high level of psychological control exercised by mothers combined with high affection predicted increases in the levels of both internal and external problem behaviors among children. Behavioral control exercised by mothers decreased children's external problem behavior but only when combined with a low level of psychological control. |
| 15 | 2001 | Abraham, S.P. & Suriakanthi, A | The pattern of assessment of Parenting Style by mothers and children was more or less similar. It was found that commonly prevalent Parenting Style was authoritative and permissive. |

**Studies related to Classroom Climate**

A study was carried out by Gouri, Mitashree and Meetha (2015) on classroom environment as a predictor of academic achievement among 558 students studying in different government schools of Chattisgad state. To measure the academic achievement of the students, the overall marks obtained by the students in different subjects (Hindi, English, Maths, Science, Environmental Science, Social Science) of class 10th annual examination was used. Academic achievement was taken as the dependent variable and different dimensions of classroom environment were taken as independent variables. The results showed that classroom environment played a significant role to determine academic achievement of the student.

A study entitled classroom climate, parental educational involvement and student school functioning in early adolescence: a longitudinal study was conducted by Toren and Seginer (2015). They examined the effects of perceived classroom climate and two aspects of parental educational involvement (home-based and school-based) on junior high school students' self-evaluation and academic achievement. Data were collected in Israel from 198 students (97 girls) who were seventh graders. Analyses using structural equation modeling (SEM; AMOS 19) showed a satisfactory fit of a modified model to the data across the 2 years. The links between classroom climate and parental educational involvement were significant only for home-based involvement. The discussion addresses three issues: (1) the importance of distinguishing between parental home-based and school-based educational involvement, and the relevance of parental home-based educational involvement for junior high school students. (2) The effect of perceived students' classroom climate on perceived parental educational involvement; and (3) the

longitudinal effect of home-based parental educational involvement on the self-evaluation and via it on the academic achievement of junior high school students.

Cheema and Kitsantas (2014) investigated a study on influences of disciplinary classroom climate on high school student self-efficacy and mathematics achievement: a look at gender and racial-ethnic differences. The present study investigated the role of disciplinary climate in the classroom and student math self-efficacy on math achievement. The student part of the Program for International Student Assessment (PISA) 2003 survey containing 4,199 U.S. observations was employed in a weighted least squares nested multiple regression framework to predict math achievement from disciplinary climate and self-efficacy in addition to several control variables. The results showed that improvement in disciplinary climate was associated with a reduction in the achievement gap whereas improvement in self-efficacy was associated with an expansion in that gap. These effects varied across race and gender. A significant interaction effect was found between the disciplinary climate and self-efficacy.

Peters (2013) conducted a study on examining the relationships among classroom climate, self-efficacy and achievement in undergraduate mathematics: a multi level analysis in a sample of 326 algebra students and 15 algebra instructors from 10 various states across the nation. The Principles of Adult Learning Scale was administered among instructors at the beginning of the semester to assess classroom climate and Mathematics Self-efficacy scale was administered among students. The results of the multi-level analysis indicated: (a) students having higher mathematics self-efficacy also had higher mathematics achievement, (b) teacher-centered classroom climates had greater mathematics self-efficacy levels, (c) classroom climate was not a significant predictor of mathematics achievement, (c) classroom

climate did not moderate the relationship between mathematics self-efficacy and achievement, and (d) although boys reported higher mathematics self-efficacy than girls, gender differences were not found to exist in regard to mathematics achievement.

Nincy & Bindhu (2012) carried out a study on relationship between perceived classroom climate and learning strategies of 546 secondary school students.  Survey method was adopted. Scale of Perceived Classroom Climate and Learning Strategy Scale was administered among students. Findings revealed that there exist a low positive significant relationship between perceived classroom climate and learning strategies of secondary school students.

Wei and Elias (2011) investigated a study on relationship between students' perceptions of classroom environment and their motivation in learning English language. This study attempts to examine the relationship between students' perceptions of classroom environment and their motivation in learning English language. The sample of study was 140 form four students in a secondary school in Malacca. The data were collected using questionnaires. The findings indicated that majority of the students perceived their classroom as having affiliation and they were extrinsically motivated. The findings also revealed that students' affiliation and task orientation in the classrooms were positive and significantly correlated with their motivation whereas students' involvement was negatively correlated with their motivation.

Sameena and Faziludhin (2008) conducted a study on interaction effect of classroom climate and learning strategies on mathematical problem solving ability of secondary school students using stratified sampling technique . The tools used for the study were scale of classroom climate developed by the investigators. Learning

strategy scale (Kumar et.al) and mathematics problem solving ability test (Sumangala & Vijayakumari).The study results revealed that the independent variable classroom climate has not significant main effect on the dependent variable mathematical problem solving   ability of secondary school.

Pandey (2006) investigated a study on effect of classroom climate and parental awareness on achievement of secondary students. Class X students were taken as the sample for the study. The researcher developed a scale to measure the classroom climate and parental awareness. Two important intervening variables i.e. intelligence and socioeconomic status of students were also measured. The socio-economic status of students was measured through a scale. The pattern of results shows that academic achievement is highly influenced by classroom climate. It has been found that schools with enriched classroom climate shows better performance in the form of academic achievement and achievement in Science.

A study on scholastic motivation of secondary school pupils in relation to intelligence self concept classroom climate and parental involvement was carried out by Ramakrishnan and Usha (2005). 970 secondary school students were taken as the sample. Standard Progressive Matrices Test, Scale of Self-Concept, Scale of Classroom Climate, Parental Involvement Inventory and Scale of Scholastic Motivation were the tools administered among them. Significant mean difference at 0.01 level were noticed between Government and Private school pupils for independent variables Classroom Climate and Parental Involvement and for the dependent variable Scholastic Motivation. Boys and Girls differ significantly for the independent variables Intelligence, Classroom Climate and Socio Economic Status and for the dependent variable Scholastic Motivation at 0.01 level.

Kumar and Das (2002) investigated a study on interaction effect of learning style approaches to studying and classroom climate on achievement in social sciences of secondary school pupils. Learning style inventory approaches to studying inventory, scale of classroom climate, were administered among 917 secondary school students and achievement test in social sciences also conducted among them. It has been found that girls obtained high mean scores indicating better classroom perceptions than boys.

The above said studies related to Classroom Climate are mentioned below:

| Sl. No. | Year | Author(s) | Major Findings |
|---|---|---|---|
| 1 | 2015 | Gouri, S., Mitashree, M & Meetha, J. | The results showed that classroom environment played a significant role to determine academic achievement of the students |
| 2 | 2015 | Toren, K. N. & Seginer, R | The links between classroom climate and parental educational involvement were significant only for home-based involvement |
| 3 | 2014 | Cheema, J. & Kitsantas, A | A significant interaction effect was found between the disciplinary climate and self-efficacy. |
| 4 | 2013 | Peters, M. | Students having higher mathematics self-efficacy also had higher mathematics achievement, classroom climate was not a significant predictor of mathematics |

| Sl. No. | Year | Author(s) | Major Findings |
|---|---|---|---|
| | | | achievement, gender differences were not found to exist in regard to mathematics achievement. |
| 5 | 2012 | Nincy, P.R. & C.M. Bindhu | Findings revealed that there exist a low positive significant relationship between perceived classroom climate and learning strategies of secondary school students. |
| 6 | 2011 | Wei, L.S. & Elias, H. | The findings also revealed that students' affiliation and task orientation in the classrooms were positive and significantly correlated with their motivation whereas students' involvement was negatively correlated with their motivation. |
| 7 | 2008 | Sameena M.A. & Faziludhin, P. | The study results revealed that the independent variable classroom climate has not significant main effect on the independent variable mathematical problem solving ability of secondary school. |
| 8 | 2006 | Pandey, R. | Schools with enriched classroom climate shows better performance in the form of academic achievement and achievement in Science. |
| 9 | 2005 | Ramakrishnan. K. & Usha, P. | Boys and girls differ significantly for the independent variables intelligence, classroom climate and socio economic |

| Sl. No. | Year | Author(s) | Major Findings |
|---------|------|-----------|----------------|
| | | | status and for the dependent variable Scholastic Motivation at 0.01 level. |
| 10 | 2002 | Kumar, P.K. S & Das, K.K. S. | Classroom perceptions of girls are better than boys. |

**Studies related to Academic Delay of Gratification**

Chakraborty (2017) conducted a study titled validation of Academic Delay of Gratification Scale among Indian professional courses students. In the study, the investigator made an attempt to conduct factor analysis of Academic Delay of Gratification Scale, ADOGS (Bembenutty & Karabenick, 1998). 461 students (256 boys and 205 girls) from engineering, pharmacy, law and education professional courses were conducted the study. Out of which, 336 students (190 boys and 146 girls) were part of exploratory factor analysis and data of 125 students (66 boys and 59 girls) was used for confirmatory factor analysis for within network construct validity study. Results revealed that there were sufficient evidences to establish that this instrument in its present form can be administered on Indian students for the measurement of Academic Delay of Gratification.

Cayubit, Cadacio and Chua (2016) carried a study on academic delay of gratification, academic achievement, and need for affiliation of selected high school students. The study looked into the ability of academic delay of gratification (e. g. intentionally miss out a social event such as parties and hanging out in order to be able to focus on their studies) and need for affiliation (e. g. establishing and managing close interpersonal relationships with others) to predict the academic

achievement (e. g. average grade of all subjects during the first grading period of the academic year) of high school students. A sample of 1,021 Filipino fourth year high schools students from selected private and public high schools in Metro Manila participated in this study. Results showed that academic achievement was positively predicted by academic delay of gratification but negatively predicted by need for affiliation an indication of the ability of high school students to prioritize goals.

Nakanishi, Nakaya and Nakanishi (2015) conducted a study on development of Japanese version of the academic delay of gratification scale for undergraduate students. In this study the investigators developed a Japanese version of the Academic Delay of Gratification (ADOG) Scale, based on the original language scale created by Zhang, Maruno, Karabenick, and Lauermann (2011). The scale was adopted among 394 Japanese undergraduates. The students' ADOG score correlated positively with effortful academic behavior, use of metacognitive strategies, planned studying and the average of weekly study time, and negatively correlated with less sustained studying. The internal consistency, test- retest reliability, and construct validity of the scale were confirmed.

Brock, Kaufmann and Wanless (2014) carried out a study on Delay of gratification in first grade: The role of instructional context. The study was conducted among 176 first graders, which investigates the combined contribution of children's ability to delay gratification and amount of exposure to three common instructional contexts across the school year in predicting children's academic achievement and learning-related classroom behavior. First, more time spent in non-instruction led to less fall-to-spring improvement in math and poorer ratings of learning-related behavior the lower a child's ability to delay gratification. Second, more time spent in teacher-managed instruction attenuated the association between

low delay of gratification and poor school outcomes (i.e., math achievement, learning-related behaviors). Findings are discussed in terms of the varying amount of self-regulatory burden placed on children dependent upon instructional context.

Parental Contributions to the Delay of Gratification in Preschool-aged Children- a study conducted by Russell, Londhe and Britner (2013) in a sample of 50 two- and three-year-old children and their primary caregivers. This study explored parent behavior during a laboratory paradigm as possible associates of delay ability. Additionally, parents completed a child temperament (EASI-III) questionnaire. Based on the award-oriented behavior in the gift delay task, children were classified into three groups: delay (20%), touch and go (i.e., approached the gift, but demonstrated some delay ability; 46 %), and non delay (34 %). Parents were classified into three groups: non-directive (parents did not initiate any interactions, but may have participated in child-led activity), active (parents initiated interaction with the child no more than 3 times), and very active (parents initiated 4 or more interactions with the child). Significant differences in emotionality and impulsivity were found between the 3 groups of children; additionally, significant differences in delay ability were found based on parent classifications suggesting that there is an optimal level of involvement on part of the parent that helps the child to wait, but beyond this point, involvement may be detrimental to a successful delay outcome.

Abd-El-Fattab and Al-Nabhani (2012) conducted a study entitled from self-theories of intelligence to academic delay of gratification: the mediating role of achievement goals in a sample of 195 Omani high school students .This study examined the relationships among implicit self-theories, achievement goals, and academic delay of gratification. A path analysis showed that entity beliefs positively

predicted performance-approach and performance-avoidance goals. Incremental beliefs positively predicted a mastery-approach goal. Incremental beliefs and entity beliefs positively and negatively, respectively, predicted academic delay of gratification. A mastery-approach positively predicted academic delay of gratification. Mastery-avoidance, performance-approach, and performance-avoidance negatively predicted academic delay of gratification.

Bembenutty (2009 ) carried out a study on test anxiety and academic delay of gratification. The present study examined the relationship between college students' willingness to delay gratification, motivation, self-regulation of learning, and their level of test anxiety (N = 364). The results indicated that there is not a statistically significant correlation between academic delay of gratification and test anxiety. Self-regulation of learning emerged as a negative predictor of test anxiety. The results also indicated that self-efficacy was the highest negative predictors of test anxiety. Extrinsic motivation was the highest positive predictor of test anxiety.

Bembenutty  (2008) examined a study on Academic delay of gratification and expectancy –value. The present study examined delay of gratification from motivational perspectives. This study (N=196) examined whether preferences to delay gratification in typical academic situations would be associated with motivational determinants of the alternatives in those settings. The results provide support for conceptualizing ADOG as a motivationally determined choice between delay and non delay alternatives.

Mauro and Harris (2000) examined a study on the influence of maternal child-rearing attitudes and teaching behaviors on preschoolers' delay of gratification. Data were drawn from 30 mothers from a rural university community, using an externally imposed delay of gratification strategy that helped their children

to refrain from touching a brightly wrapped present when the mothers left the room. Findings indicate that mothers of children who did not delay gratification exhibited teaching behaviors and child-rearing attitudes consistent with a permissive Parenting Style, but mothers who did delay gratification exhibited teaching behaviors and child-rearing attitudes consistent with authoritative Parenting Style. It is suggested that the results of this study are significant for the development of children's self-control and self-regulatory abilities.

Bembenutty (1999) investigated a study entitled sustaining motivation and academic goals: the role of academic delay of gratification.102 participants comprising both male (40) and female (62) students were the sample chosen for the study. Academic Delay of Gratification and students' use of motivation regulation strategies were examined among them. The results supported the notion that academic delay of gratification and its motivational determinants differed as a function of goal orientation.

Bembenutty and Karabenick (1998) investigated a study on individual differences in academic delay of gratification. This study examined the relationship between college students' preference for an immediately available option (e.g., go to a favorite concert the day before a test) or a delayed alternative (e.g., stay at home to study for the test). Analysis focused on how much a student would like to engage in a specific activity, the importance of the activity to him/her, and the student's academic expectations given a choice for each activity. Undergraduate college students (n=113) completed the academic delay of gratification (ADOG) scale, in which students choose between an attractive, immediately available option versus a delayed alternative likely to produce better academic achievement. Students also completed the motivated strategies for learning questionnaire, which assesses

students' motivational tendencies, cognitive strategies, and self-regulatory learning strategies. Analysis found that delay of gratification was a direct function of the differences between liking for, value of, and expectancy of academic success given the option of an immediate pleasurable activity. Motivation for learning and use of learning strategies were also functions of these differences. Results support the view that academic delay of gratification is an important volitional and self-regulatory strategy employed by learners to obtain academic achievement.

The aforesaid studies of Academic Delay of Gratification are given at a glance below:

| Sl No. | Year | Author(s) | Major Findings |
|---|---|---|---|
| 1 | 2017 | Chakraborty, R | Results revealed that there were sufficient evidences to establish that this instrument in its present form can be administered on Indian students for the measurement of Academic Delay of Gratification. |
| 2 | 2016 | Cayubit, R.F.O., Cadacio, C.A.D. & Chua, M. P. T | Academic achievement was positively predicted by academic delay of gratification but negatively predicted by need for affiliation an indication of the ability of high school students to prioritize goals. |
| 3 | 2015 | Nakanishi, M., Nakaya, M. & Nakanishi, Y | The students' ADOG score correlated positively with effortful academic behavior, use of meta-cognitive strategies, planned studying and the average of weekly study time, and negatively correlated with less |

| Sl No. | Year | Author(s) | Major Findings |
|---|---|---|---|
| | | | sustained studying. |
| 4 | 2014 | Brock, L.L., Kaufmann, R. S.E., & Wanless, S.B | Findings are discussed in terms of the varying amount of self-regulatory burden placed on children dependent upon instructional context. |
| 5 | 2013 | Russell, B., Londhe, R. & Britner, P | Significant differences in delay ability were found based on parent classifications suggesting that there is an optimal level of involvement on part of the parent that helps the child to wait, but beyond this point, involvement may be detrimental to a successful delay outcome. |
| 6 | 2012 | Abd-El-Fattab, S. M. & Al-Nabhani, H. Z | Incremental beliefs and entity beliefs positively and negatively respectively, predicted academic delay of gratification. A mastery-approach positively predicted academic delay of gratification. Mastery-avoidance, performance-approach, and performance-avoidance negatively predicted academic delay of gratification. |
| 7 | 2009 | Bembenutty, H. | There is not a statistically significant correlation between academic delay of gratification and test anxiety. Self-regulation of learning emerged as a negative predictor of test anxiety. |
| 8 | 2008 | Bembenutty, H. | The results provide support for conceptualizing ADOG as a motivationally |

| Sl No. | Year | Author(s) | Major Findings |
|---|---|---|---|
| | | | determined choice between delay and non delay alternatives. |
| 9 | 2000 | Mauro, C, F. & Harris, Y. R | Findings indicate that mothers of children who did not delay gratification exhibited teaching behaviors and child-rearing attitudes consistent with a permissive Parenting Style, but mothers who did delay gratification exhibited teaching behaviors and child-rearing attitudes consistent with authoritative Parenting Style. It is suggested that the results of this study are significant for the development of children's self- control and self-regulatory abilities. |
| 10 | 1999 | Bembenutty, H. | The results supported the notion that academic delay of gratification and its motivational determinants differed as a function of goal orientation. |
| 11 | 1998 | Bembenutty, H & Karabenick, S. A | Results support the view that academic delay of gratification is an important volitional and self-regulatory strategy employed by learners to obtain academic achievement. |

**Studies related to Self-regulated Learning and Classroom Climate**

A study Self-regulated Learning, classroom climate context and assessment-a dual method investigation was carried out by Nelson (2014) among 1073 world history course students by means of stratified random sampling method. Classroom

environment perception scale of 71 item instrument and Motivated Strategies of Learning Questionnaire of 81 item scale were the tools used for collecting data. Both survey and micro analysis method were used for the study. The study results revealed that students who perceived their classrooms as more demanding, more autonomous, providing better feedback and more cooperative reported more self-regulatory strategy use than students who perceived their classrooms as lower on these characteristics. Perceived demand- one of the components of the classroom environment had the strongest relationship with self-regulation. The results of the study provided strong evidence of a relationship between perceived demands in the classroom and Self-regulated Learning strategy use.

Zumbrunn, Tadlock and Roberts (2011) investigated a study on encouraging Self-regulated Learning in the Classroom: a review of the literature. The investigators meta-analyzed various Self-regulated Learning studies conducted by different researchers in this field and it was concluded that self-regulated learners are able to set short and long term goals for their learning, plan ahead to accomplish their goals, self-motivate themselves and focus their attention on their goals and progress. They also able to employ multiple learning strategies and adjust those strategies as needed, self-monitor their progress based upon their learning outcomes. To promote Self-regulated Learning in classrooms, teachers must teach students with self-regulatory processes that facilitate learning. These processes include goal setting, planning, self-motivation, attention control, flexible use of learning strategies, self-monitoring, appropriate kelp seeking and self-evaluation. Teachers at the primary and secondary levels can use aforementioned strategies to promote self-regulation in their classrooms. It was concluded that by teaching students to be more self-regulative, teachers may experience greater success in promoting academic achievement, motivation and life-long learning.

Pintrich and De Groot (1990) conducted a study on motivational and Self-regulated Learning Components of classroom academic performance. It is a correlational study examined relationships between motivational orientation, Self-regulated Learning and classroom academic performance for 173 seventh graders from eight science and seventh English classes. A self report measure of student self-efficacy, intrinsic value, test anxiety, self-regulation and use of learning strategies was administered and performance data were obtained from work on classroom assignments. Self-efficacy and intrinsic value were positively related to cognitive engagement and performance. Regression analyses revealed that self-regulation, self-efficacy, and test anxiety emerged as the best predictors of performance. It was also found that intrinsic value didn't have a direct influence on performance but was strongly related to self-regulation and cognitive strategy use, regardless of prior achievement level.

The above mentioned studies related to Self-regulated Learning and Classroom Climate are given in table below:

| Sl No. | Year | Author(s) | Major Findings |
|---|---|---|---|
| 1 | 2014 | Nelson, J. A .G. | The study provided strong evidence of a relationship between perceived demands in the classroom and Self-regulated Learning strategy use. |
| 2 | 2011 | Zumbrunn,S., Tadlock, J. & Roberts, E. D | Findings revealed that by teaching students to be more self-regulative, teachers may experience greater success in promoting academic achievement, motivation and life-long learning. |
| 3 | 1990 | Pintrich, P , R. & | Self-efficacy and intrinsic value were positively |

| De Groot, E. V | related to cognitive engagement and performance. It was also found that intrinsic value didn't have a direct influence on performance but was strongly related to self-regulation and cognitive strategy use, regardless of prior achievement level. |
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## Studies related to Self-regulated Learning and Parenting Style

Jittaseno and Varma (2016) carried out a study on influence of Parenting Styles on Self-regulated Learning behavior mediated by self-efficacy and intrinsic value. The main purpose of the study was to investigate the direct and indirect influences of Parenting Styles on Self-regulated Learning behavior. 206 male and female high school students were the participants of the study. The parental authority questionnaire and motivated strategies for learning questionnaire were used to collect the data. The results revealed authoritative Parenting Style had a significant direct influence on Self-regulated Learning behavior. Permissive and authoritarian Parenting Styles didn't have a significant direct influence on Self-regulated Learning behavior.

Madahi, Liaghat and Madah (2013) examined a study of the effects of Parenting Styles and self-regulation on academic achievement.261 male students were the sample selected by multi stage cluster method from 2,6 and 14 areas of education centres. Data were obtained by Parenting Styles and self-regulation approaches questionnaires and also school transcript. Student's final average of junior high school students was considered as academic achievement. The findings revealed that there was a significant relationship between parent's Parenting Styles and self-regulation approaches and student's academic achievement. The strongest

factor to predict student's academic achievement was assertive Parenting Style and self-regulation approaches are at a later stage of assertive Parenting Styles. Parent's Parenting Style and student's self-regulation approaches is very important in their academic achievement.

Markazi, Rahim, Badgargari, Shahram and Vehedi (2011) examined a study on the role of parenting self-efficacy and parenting styles on self-regulation learning in adolescent girls of Tabriz. The purpose of this study was to examine the relationship between parenting self-efficacy and Parenting Style's and self-regulation learning in adolescent girls of Tabriz. 400 girls were selected as sample by using multi-stage cluster sampling from Tabriz high school students. Parenting self-efficacy and Parenting Style's questionnaires and self-regulation learning scale were used. Results showed that parenting self-efficacy and adolescent girls self-regulation (motivational beliefs, self-regulation learning strategies) are related. Also, found Parenting Styles and parenting self-efficacy are an important predictors for adolescent girls self-regulation

A study on the relationship between Parenting Style and Self-regulated Learning: the case of six selected primary schools in Laelay Machew Woreda was investigated by Tigist (2008) in a sample of 270 seventh grade students. This study examines the relationship between Self-regulated Learning and Parenting Style and investigates whether or not this relationship is affected by students' age, sex or parental characteristics. Questionnaires on Self-regulated Learning and Parenting Style were administered. The questionnaire on Self-regulated Learning consists of twelve items pertaining to the use of cognitive and nine items on meta-cognitive and effort management strategies. Parenting Style on the other hand consists of two different parts. The first part covers items involving bio-data (such as age, sex,

family structure, and parental education) and the second part has to do with items to measure the two dimensions of parenting that are acceptance (9 items) and control (10 items). So students were made to rate their parents along the two dimensions and to assign them in terms of groups (authoritative, authoritarian, indulgent and neglectful). The study in the final analysis revealed that Parenting Style was found to be predictive of Self-regulated Learning. Students who perceived their parents as authoritative were likely to use Self-regulated Learning strategies than those who perceived their parents as authoritarian, indulgent and neglectful.

Erden and Uredi (2008) conducted a study on the effect of perceived Parenting Styles on Self-regulated Learning strategies and motivational beliefs among 350 eight grade students in primary schools. Parenting Style Scale (Lamborn, Mounts, Steinberg and Dornbusch (1991) and Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich and De Groot (1990) were the tools used. The results revealed that those dimensions of Self-regulated Learning related to the intrinsic value of study, self-efficacy, cognitive and meta-cognitive Self-regulated Learning strategies were influenced by Parenting Styles. Students with authoritative parents were found to use more Self-regulated Learning strategies than with other three Parenting Styles (authoritarian, permissive & indulgent).

Huang and Prochner (2003) investigated a study on Chinese parenting styles and children's Self-regulated Learning. The purpose of this study was to examine the relationship between Chinese Parenting Style and children's involvement in Self-regulated Learning. Self-report measures of Parenting Style and children's Self-regulated Learning were administrated to a sample of 177 grade 4 students and their parents. Pearson product-moment correlation and regression analysis revealed that authoritative Parenting Style was significantly and positively

related to students' Self-regulated Learning, whereas authoritarian Parenting Style was significantly and negatively related to students' Self-regulated Learning. The results of this study also indicate that a permissive Parenting Style may display a slight, but not significant, negative impact upon students' Self-regulated Learning; and a training Parenting Style may display a slight, but not significant, positive impact upon students' Self-regulated Learning.

The aforesaid studies related to Self-regulated Learning and Parenting Style are given in table below:

| Sl No. | Year | Author(s) | Major Findings |
|---|---|---|---|
| 1 | 2016 | Jittaseno, P. & Varma, P. S. | Authoritative Parenting Style had a significant direct influence on Self-regulated Learning behavior. Permissive and authoritarian Parenting Styles didn't have a significant direct influence on Self-regulated Learning behavior. |
| 2 | 2013 | Madahi, M. E., Liaghat, R. & Madah, l. | Findings revealed that there was a significant relationship between parents' Parenting Style and students' academic achievement. |
| 3 | 2011 | Markazi, L. Rahim, Badgargari, Shahram,Vehedi | Results showed that parenting self-efficacy and adolescent girls self-regulation (motivational beliefs, self-regulation learning strategies) are related. Also found Parenting Style's and parenting self-efficacy are an important predictors for adolescent girls self-regulation. |
| 4 | 2008 | Tigist, M. | Parenting Style was found to be predictive of Self-regulated Learning. Students who perceived their parents as authoritative were likely to use Self-regulated Learning strategies than those who |

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|---|---|---|---|
| | | | perceived their parents as authoritarian, indulgent and neglectful. |
| 5 | 2008 | Erden, M. & Uredi, I | The results revealed that those dimensions of Self-regulated Learning related to the intrinsic value of study, self-efficacy, cognitive and meta-cognitive Self-regulated Learning strategies were influenced by Parenting Styles. Students with authoritative parents were found to use more Self-regulated Learning strategies than with other three Parenting Styles. |
| 6 | 2003 | Huang, J. & Prochner, L | Authoritative Parenting Style was significantly and positively related to students' Self-regulated Learning, whereas authoritarian Parenting Style was significantly and negatively related to students' Self-regulated Learning |

**Studies related to Self-regulated Learning and Academic Delay of Gratification**

Avci (2013) carried out a study on relations between self regulation, future time perspective and the delay of gratification in University students. The present study was conducted among 508 (331 female, 144 male) first grade university students in order to investigate the relations between self regulation, the future time perspectives, and the delay of gratification in the academic field. A future time perspective scale, an academic delay of gratification scale and motivational strategies for learning questionnaire were used for collecting data. The study results revealed that the students setting distant goals for themselves, and who connected those goals with their current actions, valuing actions that allowed them to reach their goals, overcome the problems caused by environmental distractors that

prevented them from reaching those goals more easily, and they could also set sub-goals more easily. It can be said that these students apply self regulation strategies that allow them to be successful in also conducting their academic activity. Finally, delay of gratification can be accepted as a self regulation strategy.

Pychyl (2009) investigated a study on academic delay of gratification, motivation and Self-regulated Learning strategies among 250 college students. ADOG (academic delay of gratification) scale of Bembenutty was administered among them. Results show that gender made a difference in academic delay of gratification. Females are more likely to delay gratification than male students. Also found that delay of gratification is related with two key Self-regulated Learning skills.-self-efficacy enhancement and value based incentives.

Bembenutty (2009) carried out a study on academic delay of gratification, self-regulation of learning, gender differences, and expectancy-value. The associations between 250 college students' use of self-regulatory strategies, expectancy-value, and delay of gratification were examined after controlling for gender. Perception of effort and the perceived importance of the delay alternatives (in comparison to the non-delay alternatives) exhibited main effects on students' reported willingness to delay gratification. An interaction effect was found between gender and stress-reducing strategies on delay of gratification.

Bembenutty (2007) examined a study on self-regulation of learning and academic delay of gratification among Korean college students. The goal of this study was to examine the relationship between self-regulation strategies and academic delay of gratification. ADOG scale (Bembenutty & Karabenick, 1998) and MSLQ (Pintrich, Smith, Garcia & McKeachie, 1993) tools were used for collecting data from 135 under graduate students (61 males and 74 females) of Korean

University. The findings suggest that academic delay of gratification has an association with students' use of volitional strategies, expected grade, self-efficacy beliefs and academic performance. These findings serve to establish academic delay of gratification as an important self-regulatory strategy useful to protect intensions from distracting tendencies.

Bembenutty and Karabenick (2004) conducted a study on inherent association between academic delay of gratification, future time perspective, and Self-regulated Learning.The investigators reviewed the association between delay of gratification and future time perspective (FTP), which can be incorporated within the theoretical perspective of self-regulation of learning and also propose that delay of gratification in academic contexts, along with facilitative beliefs about the future, increases the likelihood of completing academic tasks.FTP refers to an individual's beliefs or orientation toward the future concerning temporarily distant goals. Discussed are (a) classic and current theoretical views of delay of gratification, (b) FTP and its association with delay of gratification, (c) evidence for the association between delay of gratification and FTP that enhances our understanding of academic success from a Self-regulated Learning approach, and (d) implications for instruction, and considerations of FTP for understanding achievement-related delay.

Bembenutty (2001) examined a study on self-regulation of learning in the 21st century: understanding the role of academic delay of gratification. This study examined college students' motivational tendencies as predictors of academic outcomes and tested how students' goal orientations and academic delay of gratification mediated these associations. The study used data, previously analyzed in 1999, on academic delay of gratification, personal achievement goal orientations, self-efficacy, test anxiety, demographics, time dedicated to studying, and college

grade point average. The results show that students' task goal orientation and academic delay of gratification mediate the relationship between self-efficacy and the time students dedicate to study. These results are considered under the umbrella of Zimmerman's cyclical model of self-regulation, which posits that learners engage in sustaining cognition, behavior, and emotions to pursue academic goals and intentions. The findings are also consistent with Mischel's self-regulatory approach, which assumes that effective delay of gratification is a function of motivation and voluntary postponement of immediate gratification in order to pursue later outcomes. The results demonstrate that students who have high self-efficacy are engaging in academic tasks for the sake of learning and mastering work, delay gratification and persist longer in goal directed study time.

The above mentioned studies related to Self-regulated Learning and Academic Delay of Gratification are given in table below:

| Sl No. | Year | Author(s) | Major Findings |
|---|---|---|---|
| 1 | 2013 | Avci, S. | Students apply self regulation strategies that allow them to be successful in also conducting their academic activity. Finally, delay of gratification is accepted as a self regulation strategy. |
| 2 | 2009 | Pychyl, T. A. | Gender made a difference in academic delay of gratification. Delay of gratification is related with two key Self-regulated Learning skills.-self-efficacy enhancement and value based incentives. |
| 3 | 2009 | Bembenutty, H. | An interaction effect was found between gender and stress-reducing strategies on delay of gratification. |

| Sl No. | Year | Author(s) | Major Findings |
|---|---|---|---|
| 4 | 2007 | Bembenutty, H. | These findings serve to establish academic delay of gratification as an important self-regulatory strategy useful to protect intensions from distracting tendencies. |
| 5 | 2004 | Bembenutty, H & Karabenick, S. A. | Evidence for the association between delay of gratification and FTP(future time perspective) that enhances our understanding of academic success from a Self-regulated Learning approach, |
| 6 | 2001 | Bembenutty, H. | The results demonstrate that students who have high self-efficacy are engaging in academic tasks for the sake of learning and mastering work, delay gratification and persist longer in goal directed study time. |

**Studies related to Self-regulated Learning.**

Broadbent (2017) carried out a study on comparing online and blended learner's Self-regulated Learning strategies and academic performance. One hundred and forty online students and 466 blended learning students completed the Motivated Strategies for Learning Questionnaire. The results show that online students utilized SRL strategies more often than blended learning students, with the exception of peer learning and help seeking. Findings highlight the relative importance of using time management and elaboration strategies, while avoiding rehearsal strategies, in relation to academic subject grade for both study modes.

A study entitled teaching Self-regulated Learning strategies to low-achieving fourth-grade students to enhance their perseverance in mathematical problem

solving was investigated by Wilburne and Dause (2017). This study's purpose was to determine the effect of instruction in Self-regulated Learning (SRL) strategies on low-achieving fourth-grade students' perseverance in solving mathematics problems. This study was conducted with fourth-grade students who had been ability-grouped based on prior low achievement and testing data in math. Students were instructed in self-monitoring and goal setting. Students' progress in perseverance was evaluated based on their self-reporting of goals, concentration, and confidence on an Experience Sampling Form (ESF). Student work samples were examined for attempts to understand the problem, strategy choice, and solution accuracy. It was concluded that perseverance can be supported and learned by teaching students goal-setting and self-monitoring skills.

Cho, Kim and Choi (2017) examined a study on the effect of Self-regulated Learning on college students' perceptions of community of inquiry and affective outcomes in online learning. The purpose of this study was to examine the effects of students' Self-regulated Learning (SRL) levels on their perceptions of community of inquiry (CoI) and their affective outcomes (task-specific attitudes and self-efficacy. 180 college students enrolled in a required online course were selected as the sample. Using the cluster analysis method, SRL levels were grouped into four levels (High regulators, Mid regulators lacking efforts, Mid regulators lacking values, and Low regulators). The study revealed that highly self-regulated students demonstrated a stronger sense of Community of inquiry and achieved higher affective outcomes, compared to low self-regulated students. The finding confirms that SRL could play an important role in the framework of community of inquiry.

Joan (2016) carried out an experimental study on Academic Self-Efficacy and Self- Handicapping: Are they influenced by Self-regulated Learning. The study

was conducted among two groups of seventh graders. The treatment group was given with dual component self-regulatory strategies training including motivational and cognitive strategies while the control group was exposed to only traditional classroom teaching. The study revealed there was a significant increase in academic self-efficacy among the treatment group students and found no significant shift in academic self-handicapping strategies used in the treatment group. Also found there was a significant increase in the use of academic self-handicapping strategies by control group students.

Yadav (2015) investigated a study of self regulated learning of high and low creative junior high school girls students. The sample for the study was selected through incidental purposive sampling technique. A total sample of 400 junior high school girl students studying in VIII class of age group 12-16 was drawn from 5 randomly selected schools of Varanasi district. Data collected by administering the tools-Torrance Test of Creative Thinking (Verbal form, Hindi version), Self-regulated Learning Inventory and the academic achievement of every girl students were found with their total marks of class VII. The study results revealed that high creative girl students prefer flexibility, visual, field independent, long-attention span, environmental-oriented self - regulated learning, and they have better academic achievement in comparison to low Creative girl students.

Sharma (2014) examined a study entitled learning outcomes of secondary students in relation to gender, self regulated learning and loneliness. The sampling was done at three stages. In the first stage, six districts viz., Shimla, Solan, Bilaspur, Hamirpur, Kangra and Una were selected randomly out of the twelve districts of Himachal Pradesh. In the second stage six Senior Secondary Schools affiliated to Central Board of Secondary Education, one from each district was selected

randomly. In the third stage 520 students (260males and 260females) in total were randomly selected. Adolescent Loneliness Scale (ALS), Motivated Strategies for Learning Questionnaire (MSLQ) and the students' academic performance in their 10th class exam certified by the Central Board of Secondary Education. Findings indicated that the overall self regulated learning in terms of its sub-factors self efficacy, intrinsic value, test anxiety, cognitive strategy use and self regulation is significantly and positively related with learning outcomes for both male and female secondary students. Higher the self regulated learning among the secondary students, higher the learning outcomes and vice versa.

A study entitled New Perspectives on Integrating Self-regulated Learning at School by Kramarski, Desoete, Bannert, Narciss and Perry (2013)  meta analyzed various studies related to Self-regulated Learning and classified those studies under the following heads : the learner's and teacher's role in integrating Self-regulated Learning at school. The study mainly contribute to enrich the literature on self-regulation in learning for students and teachers in diverse conditions and learning environments.

Cheng (2011) conducted a study on the role of Self-regulated Learning in enhancing learning performance to find the relationship between them among 6524 students from 20 aided secondary school students in Hong Kong. In this study, self-regulation ability is conceptualized by four dimensions: learning motivation, goal setting, action control and learning strategies. Questionnaire was adopted using survey method among these students. Students' learning motivation, goal setting, action control and learning strategies played a significant role in their learning performance.

Ramdass and Zimmerman (2011) conducted a study entitled developing self-regulation skills: the important role of home work. The study evaluates the relationship between home work and self-regulation from the elementary grades to college. It reveals that quality measures of homework such as managing distractions, self-efficacy and perceived responsibility for learning, setting goals, self-refection, managing time, and setting a place for homework completion are more effective than only measuring the amount of time spent on homework. During homework completion, students engage in self-regulation by motivating themselves, inhibiting distractions, using strategies to complete homework, managing time, setting goals, self reflecting on their performance, and delaying gratification. As a result, self-regulation and homework are related and the findings show that from elementary grades to college, skilled learners engaged in the above self-regulatory behaviors during homework activities. Self regulatory behaviors develop gradually over time with repeated practice. Evidence from experimental studies shows that students can be trained to develop self-regulation skills during homework activities.

Motivated Self-regulated Learning and academic performance of student teachers-a study investigated by Brindha, Savadamuth and Mohan (2010).The motivated learning strategy questionnaire (MSLQ) was used to collect data among 500 student teachers. Survey method was adopted. The findings revealed there is no significant difference in the Motivated Self-regulated Learning Strategies of the student teachers between the components of the demographic variables: gender, age, birth place, subject studied in under graduate course and marital status.

A study titled Interaction, internet Self-efficacy, and Self-regulated Learning as predictors of student satisfaction in distance education courses was conducted by Kuo, Yu, C. (2010). The present study examined the influence of various factors on

student satisfaction including three types of interaction, Internet self efficacy and Self-regulated Learning among 180 participants both from graduate and undergraduate level attending exclusively online classes in education. Online survey method was adopted to collect the data. Results of the study indicated that learner-instructor interaction and learner-content interaction are significant predictors of student satisfaction when class level variables are excluded. Of the class-level predictors, only the program from which the course was offered moderates the effect of learner –content interaction on student satisfaction. There is no direct impact of class-level predictors on student satisfaction. Learner-content interaction is the sole significant predictor when class-level predictors are added to the model.

Turan and Demierel (2010) carried out a study on the relationship between Self-regulated Learning skills and achievement: a case from Hacettepe university medical school. Both quantitative and qualitative methods were used in this study. 810 medical students were the sample. Data gathering instruments were Self-regulated Learning skills scale and nine students were interviewed by using interview schedule. The study results revealed that the successful students were observed more Self-regulated Learning skills in all stages of learning in the qualitative study.

Achufusi-Aka and Offiah (2010) conducted a study on the effect of Self-regulated Learning on academic achievement of secondary school physics students. This study ascertained the effect of Self-regulated Learning on students' academic achievement in physics. It is a quasi-experimental design in which two co-educational schools were used and randomly assigned as experimental and control groups . The instrument was a physics achievement test designed by the researcher The study was carried out in Onitsha education zone of Nigeria with a population of

12,104 science students. A sample of 60 students from two co-educational schools were used for the study. The findings revealed that Self-regulated Learning students performed significantly better than the non-self regulated learning counterparts.

Marchis and Balogh (2010) investigated a study entitled secondary school pupils- self regulated learning skills. The aim of the study was to identify the Self-regulated Learning skills such as self-efficacy, self-reaction and their interest for studying mathematics. A scale comprising of 18 items was administered among 258 students of age group 10-15 years.  Out of which, three items regarding demographical questions(age, grade and sex of respondents) and rest 15 items were to inquire the pupils Self-regulated Learning skills-which is measured by an 5 point Likert scale. Findings revealed one third pupils like mathematics, half of students self-efficacy believes are low, more than half of the students have high self-judgement level, also more than half of the students feel high level of anxiety (self-reaction).

Selccedil, G.S. (2010) carried out a study on Pre-service teachers' use of self-regulation strategies in physics problem solving: Effects of gender and academic achievement. The purpose of this study was to determine the extent which pre-service teachers use self-regulation strategies when solving physics problems, to establish the effects that gender and academic achievement have on the use of self-regulation strategies and to examine the factors determining the cases in which pre-service teachers use these strategies qualitatively. The research data were collected by "self-regulation strategies scale" and semi-structured interview methods were used. A total of 482 pre-service teachers who enrolled in the General Physics class in the Buca Education Faculty of Dokuz Eylül University, were involved in this research. In the qualitative analysis, phenomenographic analysis method was used.

The results of the research indicate that there were not significant differences in pre-service teachers' use of strategies according to their gender; however, in the planning aspect some differences occur. There were statistically significant differences between the groups according to the academic achievement variable.

Duckworth , Akerman, MacGregor, Salter, and Vorhaus, (2009) conducted a study on Self-regulated Learning-Literature Review. The investigators meta analyzed various studies conducted among children of 5-16 aged category. This study explores the concept of self-regulation which includes the ability to concentrate, become involved in group activities, restrain disruptive and impulsive behavior and work autonomously- and its impact of learning and attainment. The literature overview shows that self-regulation skills have important benefits for the learning and attainment of children and young people, and that they can be developed and improved with appropriate teaching and support.

Yukselturk and Bulut (2009) conducted a study on gender difference in Self-regulated online learning environment. The findings of the study indicated that there was no statistically significant mean difference among motivational beliefs Self-regulated Learning variables and achievement with respect to gender.

Bird (2009) examined a study on developing Self-regulated Learning skills in young students. The study aimed to explore how teachers introduce and develop particular self-regulating learning strategies and tools in primary classrooms to improve students' skills in self management of learning, how different groups of students develop these learning strategies. Teachers of primary schools were the participants of the study. Action research study was conducted. They were given video class also classes on how to develop Self-regulated Learning strategies. They were given training sessions. After five weeks of trialing the strategies and tools the teachers will be collectively interviewed to ascertain how the implementation of the

SRL tools are progressing, any challenges, and refinements they may have made or would like to make. This would take place at a venue and time convenient to the teachers and the audio was taped. They were asked them to fill open ended questionnaires comprising questions on Self-regulated Learning, how to foster or develop self regulated learning behaviors etc. Finally, the teachers were interviewed independently, for approximately half an hour, in order to compare their knowledge and understandings about SRL with their initial interview comments and their reflections on the process of the study. Altogether ten weeks study. Some teachers remarked that the study had made them question their approach to teaching, they become organized, structured, and consistent teacher. The teacher participants in this research study had the opportunity to develop content knowledge focused on Self-regulated Learning, and undertook an action research cycle of inquiry where they trailed an intervention, tested solutions to problems, and refined their practice.

Kobayashi and Lockee (2008) conducted a study on evidence -based approaches for Self-regulated Learning. The present study provides an overview of research related to the development of Self-regulated Learning skills and abilities with a particular emphasis on successful strategies for the enhancement of such skills in learners. The researcher concluded that the educational research indicates a variety of effective, evidence-based approaches to assist learners in the development of their self-regulatory skills and also mentioned that the challenges for academic professional lies in the selection of strategies appropriate for the given learning context.

Kosnin (2007) investigated a study on Self-regulated Learning and academic achievement in Malaysian under graduates. Motivated strategies learning questionnaire (MSLQ) was administered among 460 second year engineering under

graduates in order to measure the Self-regulated Learning ability and academic achievement was measured by the students' grade point average. The results of the study revealed there are significant relationships between Self-regulated Learning and academic achievement.

Yang (2006) investigated a study entitled Effects of embedded strategies on promoting the use of Self-regulated Learning strategies in an online learning environment. Study reported that various types of Self-regulated Learning cues were embedded into course material in a college level online course. Embedded cues included performance control, elaboration, and self monitoring approaches, such as organizational checklist prompts to review and reflect upon major concepts. He concluded Self-regulated Learning cues help learners to self regulate and self monitor progress.

Sungur and Tekkaya (2006) examined a study on the effects of problem based learning and traditional instruction on Self-regulated Learning among 61 tenth grade students from intact classes. The researcher used motivated strategies for learning questionnaire to investigate the effectiveness of problem based learning and traditional instructional approaches on various facets of students ' self regulated learning including motivation and learning strategies. Participants were randomly assigned class1 as experimental group and the other class as control group. Teachers instructed the control group with teacher-centered, text-book oriented traditional instruction, and taught other group with problem based learning in which students worked with ill structured problems. Findings revealed that experimental group students had high levels of intrinsic goal orientation, task value, use of elaboration learning strategies, critical thinking, meta- cognitive self-regulation, effort regulation and peer learning compared with control group students.

In a study conducted by Marcou and Philippou (2005) on motivational beliefs, Self-regulated Learning and mathematical problem solving, to find the relationship between fifth and sixth graders MB (self-efficacy, task value beliefs and goal orientation) and SRL(use of cognitive, meta cognitive and volitional strategies) and between motivational beliefs and performance in mathematical problem solving. The findings of the study revealed that there was a significant relation between all dimensions of motivational beliefs and Self-regulated Learning and between self-efficacy, intrinsic goal orientation and performance in mathematical problem solving.

Bidjerano (2005) carried out a study on gender differences in Self-regulated Learning among 198 undergraduate students of North Eastern university in U.S. Motivated Strategies Learning questionnaire (MSLQ) was administered among them. The study revealed that significant gender difference is found in reporting the use of some of the Self-regulated Learning strategies. Female students tended to over-report the use of rehearsal, organization, meta-cognition, time management skills elaboration and effort. But, no significant gender difference is found when studying with peers, in help seeking and in critical thinking skills.

Ng Lee Yen (2005) conducted a study to uncover the predictors of Self regulated Learning in Malaysian Smart schools. The sample consisted of 409 students from six randomly chosen smart schools. A quantitative correlational research design was employed and the data were collected through survey method. Six factors were examined in relation to the predictors of Self-regulated Learning. These factors were levels of IT integration, student teacher interactions, motivational beliefs, Self-regulative knowledge, information literacy and attitude towards IT. Multiple regression analysis showed that the levels of IT integration, student teacher

interactions, motivational beliefs and self regulative knowledge significantly predict Self-regulated Learning in Malaysian smart schools. The results revealed that a high level of IT integration, student teacher interactions, motivational beliefs and Self-regulative knowledge predicted.

Gandhi and Varma (2004) discussed that learning approach promotes Self-regulated Learning in Mathematics. They applied methodology through strategic content learning. The result showed that application of specific method help average achievers in Mathematics performers. Self-regulated Learning approach is an empirically Validated Instructional Model (VIM) designed to promote Self-regulated Learning. This article summarizes the inferences drawn from the qualitative and quantitative data from small group situations of class VIII on the basis of multistage purposive sampling. Finally they concluded knowledge and beliefs related to the process of learning. It was found that students gradually developed a positive shift towards their Mathematical knowledge and beliefs. They developed reflective thinking and could deliberately organize their learning activities.

Puustinen and Pulkkinen (2001) examined a study on models of Self-regulated Learning: A review. The aim of this study was to meta analyze the present studies in Self-regulated Learning and to present and compare the latest models of Self-regulated Learning including Boekaerts, Borkowski, Pintrich, Winne and Zimmerman. The models were compared on four criteria-background theories, definitions of Self-regulated Learning, components included in the models and empirical work. The results show that theoretical background is an important differentiating feature. The two models that resembled each other more than any other models is Pintrich and Zimmerman's model which was inspired by the same

back ground theory -socio cognitive theory. On the other hand, the models that differed most from the other models is Borkowski and Winne's model.

Chung (2000) examined study on the development of Self-regulated Learning. The purpose of the study was to examine the tendency for the development of Self-regulated Learning according to grade level. Data collected from 1865 boys and girls, of 5th grade elementary school students (312 boys, 281 girls) 2nd year middle school students (334 boys, 328 girls) and high school students (319 boys , 291 girls) are divided into two samples according to grade by random assignment method. The structural model is verified by the first sample and the second sample is used to analyze the model's cross validation in order to verify the possibility of generalizations. The study yielded many results. Self-efficacy is the first factor of Self-regulated Learning which has the strongest effect on academic achievement according to grade. And as children grows up, the direct effect of self-efficacy on academic achievement decreases. Paris and Newmann (1990) findings also supports this results. Self-regulated Learning model of 2nd year middle school students can explain academic achievement better than any grade's model and the degree of differentiation is high. This study more supports the results with previous studies (Armstrong, 1989; Paris & Newmann, 1990; Zimmerman & Martinez-Pons, 1990) in claiming that the critical period in the development of Self-regulated Learning is that of the middle school.

A study entitled Self-regulated Learning in early adolescence : a qualitative analysis  was conducted by Lablanc (2000)in which the researcher emphasized the Self-regulated Learning to be an integral component of the formative function of learning. It encourages the students to exercise his or her Self-regulated Learning strategies when participating in an activity. It contributes to better overall

functioning and rewarding academic performance. These plans of action are rooted in the phase's processes and sub process of Self-regulated learners. Study results concluded that SRL decreases the anxiety and increases the Self-efficacy, which is directly related to goal attainment and academic achievement.

Vermetten, Lodewijks and Vermunt (1999) conducted a study in which they investigated the consistency and variability of Self-regulated Learning strategies in different university courses. They used the Inventory of Learning Styles (Vermunt, 1998), which includes four different domains of learning, namely cognitive processing, meta cognitive regulation strategies, learning orientations, and mental models of learning. Their results are very similar to the findings of Wolters and Pintrich, (1998), suggesting that the learning context had only minor influence on the use of Self-regulated Learning strategies. Results revealed that students have a personal, habitual component in strategy used across domains.

A study entitled Effectiveness of computer assisted instruction in relation to students' use of self regulated learning strategies was carried out by Kadhiravan (1999). The study has adopted the quasi experimental design. The sample of this study consists of 105 students from three schools of south Tamil Nadu. Three identical groups each of 35 eleventh standard students were formed on the basis of their scores in Self-regulated Learning scale and scholastic achievement in Physics. One of the groups was identified as control group and the other two groups were treated as experimental groups. Conventional Lecture Method was adopted for the control group, while CAI as Individualized Instruction and Computer Assisted Instruction with Peer Interaction were introduced as experimental interventions to the other two groups. The findings revealed that there is significant difference among different instructional strategies viz. Lecture Method (LM), CAI as

Individualized Instructional Strategy (CAI) and Computer Assisted Instruction with Peer Interaction (CAIPI) in enhancing the students' use of SRL strategies. It is also stated that CAI as individualized strategy is more effective than the lecture method in enhancing the students' use of SRL strategies. Hence, it is concluded that the three instructional strategies significantly differ among themselves in enhancing the students' use of self regulated learning strategies.

Bembenutty and Karabenick (1998) conducted a study on Self-regulation of learning among Korean college students. 135 UG college students were selected (61 males and 74 females) for the study. Correlation analysis was used to find out the relation between important variables. The findings serve to establish academic delay of gratification as an important self regulatory strategy useful to protect intentions from tendencies and goals.

Zimmerman and Pons (1986) conducted a study entitled development of a structured Interview for assessing student use of Self-regulated Learning strategies. 40 male and female 10[th]grade students from a high achievement track and 40 from lower achievement tracks of a sub-urban high school were interviewed concerning their use of Self-regulated Learning strategies during class, home work and study. 14 categories of self-regulation strategies were identified from student answers that dealt with six learning contexts, High achieving students displayed significantly greater use of 13categories of Self-regulated Learning. The students' membership in their respective achievement group was predicted with 93% accuracy using their reports of Self-regulated Learning. When compared to students' gender, socioeconomic status indices in regression analyses, Self-regulated Learning measures proved to be the best predictor of standardized achievement test scores.

The above mentioned studies related to Self-regulated Learning are given in table below:

| Sl No | Year | Author(s) | Major Findings |
|---|---|---|---|
| 1 | 2017 | Broadbent, J. | Findings highlight the relative importance of using time management and elaboration strategies, while avoiding rehearsal strategies, in relation to academic subject grade for both study modes. |
| 2 | 2017 | Wilburne, J. M. & Dause, E. | It was concluded that perseverance can be supported and learned by teaching students goal-setting and self-monitoring skills. |
| 3 | 2017 | Cho, M.H., Kim, Y. & Choi,D. | The study revealed that highly self-regulated students demonstrated a stronger sense of Community of inquiry and achieved higher affective outcomes, compared to low self-regulated students. The finding confirms that SRL could play an important role in the framework of community of inquiry. |
| 4 | 2016 | Joan, A. | The study revealed there was a significant increase in academic self-efficacy among the treatment group students and found no significant shift in academic self-handicapping strategies used in the treatment group. Also found there was a significant increase in the use of academic self-handicapping strategies by control group students. |
| 5 | 2015 | Yadav, R. | High creative girl students prefer flexibility, visual, field independent, long-attention span, |

| Sl No | Year | Author(s) | Major Findings |
|-------|------|-----------|----------------|
| | | | environmental-oriented Self-regulated Learning, and they have better academic achievement in comparison to low creative girl students. |
| 6 | 2014 | Sharma, N. | Findings indicated that the overall self regulated learning in terms of its sub-factors self efficacy, intrinsic value, test anxiety, cognitive strategy use and self regulation is significantly and positively related with learning outcomes for both male and female secondary students. Higher the self- regulated learning among the secondary students, higher the learning outcomes and vice versa. |
| 7 | 2013 | Kramarski, B., Desoete, A., Bannert, M., Narciss, S. & Perry, N. | The study mainly contribute to enrich the literature on self-regulation in learning for students and teachers in diverse conditions and learning environments. |
| 8 | 2011 | Cheng,E.C.K | Students' learning motivation, goal setting, action control and learning strategies played a significant role in their learning performance. |
| 9 | 2011 | Ramdass, D. & Zimmerman, B. J. | Evidence from experimental studies shows that students can be trained to develop self-regulation skills during homework activities. |
| 10 | 2010 | Brindha | There is no significant difference in the Motivated Self-regulated Learning Strategies of the student teachers between the |

| Sl No | Year | Author(s) | Major Findings |
|-------|------|-----------|----------------|
| | | | components of the demographic variables: gender, age, birth place, subject studied in under graduate course and marital status. |
| 11 | 2010 | Kuo, Y.U.C. | There is no direct impact of class-level predictors on student satisfaction. Learner-content interaction is the sole significant predictor when class-level predictors are added to the model. |
| 12 | 2010 | Turan, S. & Demierel, O. | The study results revealed that the successful students were observed more Self-regulated Learning skills in all Stages of learning in the qualitative study. |
| 13 | 2010 | Achusfusi-Aka,N.N. & Offiah,F.O | The findings revealed that Self-regulated Learning students performed significantly better than the non-self regulated learning counterparts. |
| 14 | 2010 | Marchis, I. & Balog,T | Findings revealed one third pupils like mathematics, half of students self-efficacy believes are low, more than half of the students have high self-judgement level, also more than half of the students feel high level of anxiety (self- reaction). |
| 15 | 2010 | Puustinen, M. & Pulkkinen, L. | Meta analysis study results-The two models that resembled each other more than any other models is Pintrich & Zimmerman's model which was inspired by the same back ground theory-socio cognitive theory. On the other |

| Sl No | Year | Author(s) | Major Findings |
|---|---|---|---|
| | | | hand, the models that differed most from the other models are Borkowski & Winne's model. |
| 16 | 2010 | Selccedil, G.S. | The results of the research indicate that there were not significant differences in pre-service teachers' use of strategies according to their gender; however, in the planning aspect some differences occur. There were statistically significant differences between the groups according to the academic achievement variable. |
| 17 | 2009 | Duckworth,K., Akerman, R., MacGregor, A., Salter, E., & Vorhaus, J | Self-regulation skills have important benefits for the learning and attainment of children and young people, and that they can be developed and improved with appropriate teaching and support. |
| 18 | 2009 | Bird, L. | The teacher participants in this research study had the opportunity to develop content knowledge focused on Self-regulated Learning, and undertook an action research cycle of inquiry where they trailed an intervention, tested solutions to problems, and refined their practice. |
| 19 | 2009 | Yukselturk, E. & Bulut, S. | The findings of the study indicated that there was no statistically significant mean difference among motivational beliefs Self-regulated Learning variables and achievement with respect to gender. |

| Sl No | Year | Author(s) | Major Findings |
|---|---|---|---|
| 20 | 2008 | Kobayashi, M. & Lockee | The researcher concluded that the educational research indicates a variety of effective, evidence-based approaches to assist learners in the development of their self-regulatory skills and also mentioned that the challenges for academic professional lies in the selection of strategies appropriate for the given learning context. |
| 21 | 2007 | Kosnin, A.M. | The results of the study revealed there are significant relationships between Self-regulated Learning and academic achievement. |
| 22 | 2006 | Yang | Self- regulated learning cues help learners to self regulate and self monitor progress. |
| 23 | 2006 | Sungur, S. & Tekkaya, C. | Findings revealed that experimental group students had high levels of intrinsic goal orientation, task value, use of elaboration learning strategies, critical thinking, meta-cognitive self-regulation, effort regulation and peer learning compared with control group students. |
| 24 | 2005 | Marcou, A. & Philippou, G. | There was a significant relation between all dimensions of motivational beliefs and Self-regulated Learning and between self-efficacy, intrinsic goal orientation and performance in mathematical problem solving. |
| 25 | 2005 | Bidjerano, T. | Significant gender difference is found in reporting the use of some of the Self-regulated |

| Sl No | Year | Author(s) | Major Findings |
|---|---|---|---|
| | | | Learning strategies. No significant gender difference is found when studying with peers, in help seeking and in critical thinking skills. |
| 26 | 2005 | Ng Lee Yen | The results revealed that a high level of IT integration, student teacher interactions, motivational beliefs and Self-regulative knowledge predicted. |
| 27 | 2004 | Gandhi, H. & Varma | Knowledge and beliefs related to the process of learning. |
| 28 | 2000 | Lablanc, R. | SRL decreases the anxiety and increases the Self-efficacy, which is directly related to goal attainment and academic achievement. |
| 29 | 2000 | Chung, M. | Self-efficacy is the first factor of Self-regulated Learning which has the strongest effect on academic achievement according to grade. Self-regulated Learning model of 2nd year middle school students can explain academic achievement better than any grade's model and the degree of differentiation is high. |
| 30 | 1999 | Vermetten, Y.J. Lodewijks, H.G. & Vermunt, J.D. | The learning context had only minor influence on the use of Self-regulated Learning strategies. Study results concluded that students have a personal, habitual component in strategy used across domains. |
| 31 | 1999 | Kadhiravan, S. | There is significant difference among different instructional strategies viz. Lecture Method (LM), CAI as Individualized Instructional |

| Sl No | Year | Author(s) | Major Findings |
|---|---|---|---|
| | | | Strategy (CAI) and Computer Assisted Instruction with Peer Interaction (CAIPI) in enhancing the students' use of SRL strategies. The three instructional strategies significantly differ among themselves in enhancing the students' use of Self-regulated Learning strategies. |
| 32 | 1998 | Bembenutty & Karabenick | The findings serve to establish academic delay of gratification as an important self-regulatory strategy useful to protect intentions from tendencies and goals. |
| 33 | 1986 | Zimmerman, B.J. & Pons, M. M. | High achieving students displayed significantly greater use of 13 categories of Self-regulated Learning. Self-regulated Learning measures proved to be the best predictor of standardized achievement test scores. |

## Research Lacuna

The investigator reviewed the literature in a greater extent. Several studies were found on Self-regulated Learning, Parenting Style, Classroom Climate, Academic Delay of Gratification and in combination of theses psychological variables. It was found that many studies have done in the area of Self-regulated Learning abroad, but a few studies conducted in Indian context. In the case of Academic Delay of Gratification also, majority of studies was conducted in western countries. Very rare studies found in Indian context. As Self-regulated Learning is a

topic of academic interest in educational psychology, there are studies undergoing at present. But, the present study is quite a different from those ones and hence need of such a study is highly evident.

## Conclusion

Today, Self-regulated Learning has been becoming a burning topic in educational psychology. It is a fusion of skill and will. Review results revealed that self-regulated students performed significantly better than the non-Self-regulated Learning counterparts. From literature review, it was found both survey and experimental studies have conducted in this area. Studies on Academic Delay of Gratification indicated it is an important Self-regulatory Learning strategy. Review results also shows, of the three Parenting Styles, Authoritative Parenting Style would develop better academic achievement than Authoritarian Parenting Style in adolescents. Previous research studies reported that no gender difference is found in the perception of Authoritarian Parenting Style. No study has been conducted yet among the combination of variables-Parenting Style, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning. And as Parenting Style, Classroom Climate and Academic Delay of Gratification are related to Self-regulated Learning, it is relevant in this context. Hence, the present study is expected to add to the existing literature.

*Chapter 3*

# METHODOLOGY

Variables

Objectives

Hypotheses

Methods Used

Design of the Study

Tools Employed for Data Collection

Sample selected for the study

Data Collection Procedure, Scoring and Consolidation of Data

Statistical Techniques Used for Analysis
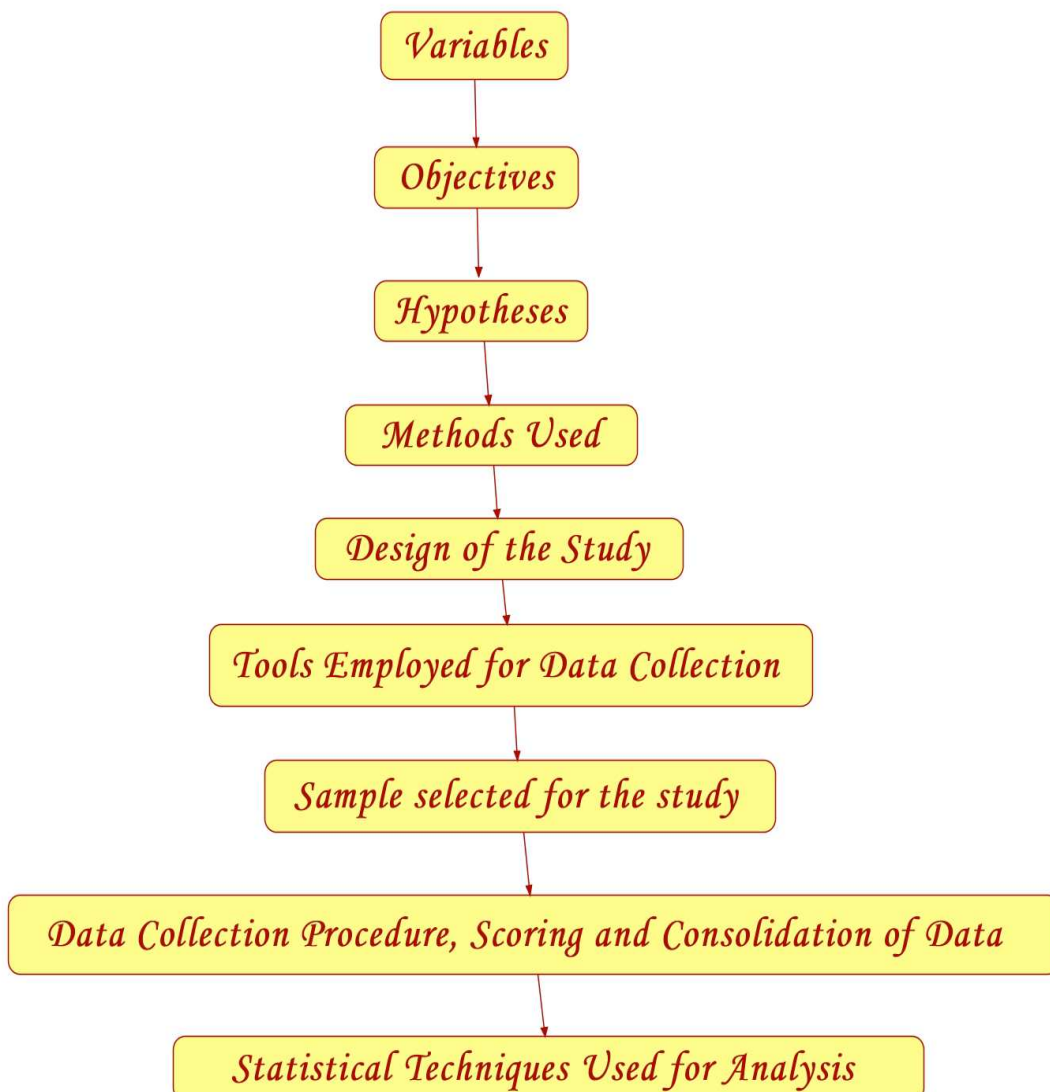
# METHODOLOGY

In research, methodology of research occupies a very vital role. It is the procedure adopted by the researcher to explore the various areas of research. Research methodology discusses the systematic procedures by which the researcher starts from the initial identification of the problem to its final conclusions. It helps the researcher to look at the problem in a meaningful and orderly way. Therefore, selection of suitable methods and its proper implementation is indispensable for the success of any research programme.

The present study entitled Influence of Parenting Style, Classroom Climate and Academic delay of Gratification on Self-regulated Learning in Physics among Secondary School Students mainly attempts to find the main effect and interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics among Secondary School Students.

The methodology in the present study is described under the following headlines.

**Variables**

**Objectives**

**Hypotheses**

**Methods used**

**Design of the study**

**Tools Employed for data Collection**

**Sample selected for the Study**

**Data Collection Procedure, Scoring and Consolidation of Data**

**Statistical Techniques used for Analysis**

The detailed description of each is as follows.

## Variables

Variables are the conditions or characteristics that the researcher manipulates or observes. Kerlinger (2010) defines it as a symbol to which numerals or values are assigned. It is a concept which can take on different quantitative values (Kothari, 2014). Dependent variable is a measure of the subject's behavior that reflects the independent variable's effects.

Independent Variable is the cause and the dependent variable is the effect. The variables of the study have been selected on the basis of the following rationale.

### Rationale for selecting the variables

The independent variables of the study were decided after an initial review of literature in the area of Self-regulated Learning. The literature suggested that learning is associated with number of psychological factors and sociological factors. In the present study, the investigator gave prominence to the psychological factors in which not many studies have been conducted and hence are to be studied in depth. From these factors, variables that are closely related with Self-regulated Learning in Physics of Secondary School Students were selected.

### Criteria used for selection of variables

After identifying the important factors affecting Self-regulated Learning, the investigator made a cautious effort in selecting variables for the present study in discussion with the supervising guide. Self-regulated Learning is the field of attraction in educational field recently. As students' learning is mainly influenced by three factors-parental factor, learner factor and classroom factor, the investigator

decided to take the variables that are closely related to self regulated learning - Parenting Style, Academic Delay of Gratification and Classroom Climate of Secondary School Students considering the parental factor, learner factor, classroom factor respectively. The role played by all these variables on Self-regulated Learning in Physics is significant. Compared to other subjects, Physics requires high intellectual thinking and problem solving skills. To enable students to think critically they must be self-regulated. Taking all the above criteria into consideration, the following variables were selected as dependent variable and independent variables for the present study.

**Dependent Variable**

The dependent variable in the present study is Self-regulated Learning in Physics.

**Self-regulated Learning**

Self-regulation of learning is a process that required students to get involved in their personal, behavioral, motivation and cognitive learning tasks in order to accomplish important valuable academic goals (Zimmerman, 1998)

Self-regulated Learning is "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, motivation and behavior guided and constrained by their goals and the contextual features in the environment" (Pintrich, 2004; Schunk, 2005).

For the present study, Self-regulated Learning is defined as the ability of the students to self-plan, self-observe, self-analyze, self-judge and self-evaluate the learning and learning related activities and it is measured through the Self-regulated

Learning Scale. Being a disciplinarian of physics background, the investigator prepared the tool Self-regulated Learning Scale in Physics.

**Independent Variables**

The Independent Variables for the present study are Parenting Style, Classroom Climate and Academic Delay of Gratification.

**Parenting Style**

Parenting Style is the extent to which parent responds to needs and demands of a child (Baumrind, 1991).

In the present study, Parenting Style means how the children perceive their parent's Parenting Style based on three types of Parenting Styles such as Authoritative, Authoritarian and Permissive and it is measured through Perceived Parenting Style Scale.

Authoritative Style- Includes open communication between parent and child, providing clear guidelines, encouragement and expectation upon the adolescents, providing lots of nurturing and love, spending time together and providing right direction and encouraging in taking decisions.

Authoritarian Style-Includes high standards, discipline, comparison between friends, criticizing while doing things, and providing punishment when rules are not obeyed, little comfort and affection, restriction and  not providing solution to problems.

Permissive Style-Few limits imposed, little or no expectation for their children, view children as friends, spend less time with children, no rule or

guidelines for children, inconsistent and undemanding, allow the child to regulate his or her own activities .

**Classroom Climate**

It is the tone, ambience, culture or atmosphere of a classroom or school. It involves the relationships between students and between teacher and students and the types of activities, actions and interactions that are rewarded, encouraged and emphasized in the classroom (Logan, Crump & Rennie,2006)

For the present study, the same definition is taken in to consideration and it is measured through Perceived Classroom Climate Scale. Classroom Climate means how the students Perceive the Classroom Climate they occupy.

**Academic Delay of Gratification**

It refers to students' postponement of immediately available opportunities to satisfy impulses in favour of pursuing important academic rewards or goals that are temporally remote, but ostensibly more valuable (Bembenutty & Karabenik, 1998).

In the present study, it is operationally defined as the postponement of fun or pleasure seeking activities in order to excel in academic endeavors and it is measured through Academic Delay of Gratification Scale.

**Categorical Variables**

Gender, type of management of school and locale of school are treated as the categorical variables.

Diagrammatic representation of the variables is shown below.
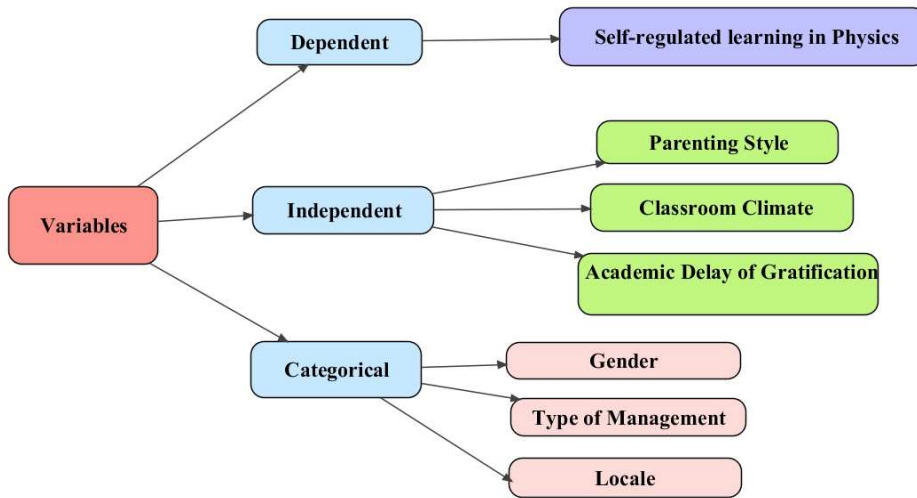
Diagrammatic representation of the variables

## Objectives

1.  To find the extent of various Parenting Styles, Classroom Climate, Academic Delay of Gratification and Self- regulated Learning in Physics among Secondary School Students for the total sample and relevant subgroups.

2.  To study whether there exist any significant difference of Parenting Style, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning in Physics of Secondary school students for the relevant subgroups viz. gender, locale of the school and type of management of school

3.  To study the main effects of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups viz. gender, locale of the school and type of management of school.

4. To find out the first order interaction effect of Parenting Style and Classroom Climate on Self- regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

5. To find out the first order interaction effect of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

6. To find out the first order interaction effect of Parenting Style and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

7. To study the second order interaction effects of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

8. To develop a regression equation to predict Self-regulated Learning in Physics from the Parenting Style, Classroom Climate and Academic Delay of Gratification.

**Hypotheses**

1. There exists significant difference in the mean scores of various Parenting Styles of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school.

2. There exists significant difference in the mean scores of Classroom Climate of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school.

3.      There exists significant difference in the mean scores of Academic Delay of Gratification of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school

4.      There exists significant difference in the mean scores of Self- regulated Learning in Physics of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school

5.      The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for the total sample.

6.      The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the male subgroups.

7.      The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the female subgroups.

8.      The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for rural subgroups.

9.      The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for urban subgroups.

10      The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for Govt. subgroups.

11.     The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for aided subgroups

12.     The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for unaided subgroups

13.     The first order interaction effect of Parenting Style and Classroom Climate on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups

14.     The first order interaction effect of Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups.

15.     The first order interaction effect of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups.

16.     The second order interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups.

17.   There is significant individual and combined contribution of three Parenting Styles, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for total sample.

## Methods Used

The present study is aimed to investigate the Influence of Parenting Style, Classroom Climate and Academic delay of Gratification on Self-regulated Learning in Physics among Secondary School Students. Survey method was used by the investigator to find out the influence of independent variables on dependent variable. Due weightages was given to gender, locale of the school and type of management of schools.

## Design of the Study

A research design is a blue print for conducting a study with maximum control over factors that may interfere with the validity of the findings. It is a plan that describes how, when and where data are to be collected and analyzed. According to Kothari (2012), Decisions regarding what, where, when, how much, by what means, concerning an inquiry or research study constitute research design. The present study comes under the purview of descriptive study and it follows survey method. "A survey is an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables".(Mc Burney, 2001; Gay; 1996).

The research design of the study is specified in Table 1.

Table 1

*Research Design of the Study*

| Nature of the Study | Survey Method |
|---|---|
| Independent Variables | Parenting Style, Classroom Climate, Academic Delay of Gratification |
| Dependent Variable | Self-regulated Learning in Physics |
| Tools used for the study | 1.   Academic Delay of Gratification Scale (Bindhu & Sindhu, 2014) |
| | 2.   Self-regulated Learning Scale in Physics (Bindhu & Sindhu,2014) |
| | 3.   Perceived Parenting Style Scale (Manikandan & Divya, 2013) |
| | 4.   Perceived Classroom Climate Scale (Bindhu& Nincy, 2012 |
| Sample | IX$^{th}$ standard students of Kerala |
| Sample size | 1004 |
| Sampling technique | Stratified sampling technique |

**Tools  employed  for  Data  Collection**

Collection of relevant data is an important aspect of any research work. There are many tools to collect the required data. The selection of suitable tool is of vital importance for successful research. For the present study the investigator used the following tools.

1.   Self-regulated Learning Scale in Physics (Bindhu & Sindhu, 2014)

2.   Academic Delay of Gratification Scale (Bindhu & Sindhu, 2014)

3.   Perceived Parenting Style Scale (Manikandan & Divya, 2013)

4.   Perceived Classroom Climate Scale (Bindhu & Nincy, 2012)

Detailed descriptions of these tools are given below.

**Self- regulated Learning Scale in Physics** (Bindhu & Sindhu, 2014)

The tool Self- regulated Learning Scale was constructed and standardized by the investigator with the help of her supervising teacher. Detailed description of the construction of the scale is given below.

**a)      Planning of the Tool**

The first step in the construction and standardization of any tool is planning of the tool. For the present study, the investigator prepared Self- regulated Learning Scale in Physics to study the Self- regulated Learning ability in 9th standard students of Kerala. Before developing the tool, the investigator went through some of the available standardized tools of Self- regulated Learning Scale in different fields. This gave an idea about the nature of constructs, nature of statements and procedures in developing Self-regulated Learning Scale in Physics. Review of related literature and discussion with supervising guide helped the investigator to identify the different dimensions to be included in the scale. The statements in the tool were prepared on the basis of six dimensions of Self-regulated Learning developed by Lidner and Harris (1993).The dimensions thus identified were

1)      Epistemological Beliefs

2)      Motivation

3)      Metacognition

4)      Learning Strategies

5)      Contextual Sensitivity

6)      Environmental Utilization.

**Epistemological Beliefs**

Students have their own understanding of their system of knowing. If students know this, they will be equipped with the abilities that can make them to be successful in their learning. It also influences confidence. Whenever learners increase their understanding about a particular situation, they will be experiencing success more and more. Pre-test or pre-instruction can heighten this awareness (Lidner & Harris cited in Wilson, 1997).

**Motivation**

If a person is interested in learning, this interest has to come from internal or external motivation. Students will be motivated if they recognize that they are improving. It was also stated that self- regulated learners have a positive desire and intrinsic self-motivation to use the learning strategies as well as to regulate their cognition and effort. (Heo, 2003). Similiarly it was stated that students' knowledge of cognitive and meta cognitive strategies is not enough to enhance their achievement, but they must be motivated to use the strategies as well as regulate their cognition and effort. (Paris cited in  Pintrich & De Groot, 1990)

**Meta Cognition**

This refers to the knowledge of understanding of one's own thinking and learning. This is consistent with the learning strategies. When students know what tools that they have in the tool box and how well they use them, it makes them to be actively involved in learning because they have to examine the situation based on their abilities and use the learning skills that they see as fit ( Lidner & Harris cited in Wilson, 1997)

If students are metacognitively oriented, they know what to do about something when they do not have the knowledge on it. Students thinking will be ignited and they will become better performers when they have meta cognitive strategies. (Anderson, 2002)

## Learning Strategies

Learning strategies can be defined as thoughts and behaviors intended to influence the learner's ability to select, acquire, organize and integrate knowledge.(Weinstein & Mayer, 1986). To make the students to be self-regulated learners, the major step is to provide and help them develop asystem of strategies (Lidner & Harris cited in Wilson, 1997). If learning strategies are used by students, it helps them to be efficient, effective and independent learners.

## Contextual Sensitivity

Recognition of particular situation and the means to point out the problem and solve it is a capability that can be developed by showing the learners the way to identify the problems. If the learners do not know the content of the question, they will never solve it. In order to understand the question, they have to search for clues and information found in the question. This skill can be developed if learners work through examples. Understanding what is being asked means getting part of the solution of that question.(Lidner & Harris cited in Wilson, 1997)

## Environmental Utilization/ Control

This refers to utilization of the external resource to reach a goal. Although the learner's knowledge and experience can increase the ability to get a solution, they have to be educated to develop their attitude of learning to include other resources.(Lidner & Harris cited in Wilson, 1997).

The scale is prepared to measure the extent of Self-regulated Learning ability in Physics among Secondary School Students.

## b)       Preparation of the scale

Based on the above mentioned dimensions, the investigator developed the Self- regulated Learning Scale in Physics after proper review of related studies and in consultation with supervising teacher. While preparing the items expert views were considered and special care was taken to avoid ambiguities and unnecessary duplications. Based on the above dimensions, the investigator decided to develop a tool contains two sections -Section A comprising 50 items and section B comprising 10 items. Section A follows Likert scale type and Section B follows a questionnaire type.

The scale is a 3 point Likert Scale with three responses- Always, Sometimes, Never. In this type, following one statement, three choices are given. Questionnaire consists of two responses Yes(true)/No(false) followed by a statement. The draft scale consists of 60 items out of which 35 items were positive and 25 items were negative. (All the statements in the scale that administered were in Malayalam in favour of students)

Illustrative items from each dimension is given below.

| Sl No | Dimensions | items | Always | Sometimes | Never |
|---|---|---|---|---|---|
| 1 | Epistemological Beliefs | I am not able to shine in learning activities like debate, group discussion etc | | | |
| 2 | Motivation | Thoughts on my future motivate me to learn | | | |
| 3 | Metacognition | I myself assess learned matters. | | | |
| 4 | Learning Strategies | I learn the difficult chapters by visualizing or by making it in the form of a poem. | | | |
| 5 | Contextual Sensitivity | I remember that it is because of *mirage* it seems to see water on straight road during sunny days | | | |
| 6 | Environmental Utilization | I seek the help of school library for doing learning activities. | | | |

The distribution of items under each dimensions and item numbers are presented in the following section.

*Number of items in six dimensions of Self-regulated Learning Scale in Physics*

| Sl. No | Dimensions | No. of questions | Item numbers |
|--------|-----------|------------------|--------------|
| 1 | Epistemological Beliefs | 10 | 1,6,11,16,21,26,31,36,41,46 |
| 2 | Motivation | 10 | 2,7,12,17,22,27,32,37,42,47 |
| 3 | Meta cognition | 10 | 3,8,13,18,23,28,33,38,43,48 |
| 4 | Learning strategies | 10 | 4,9,14,19,24,29,34,39,44,49 |
| 5 | Contextual sensitivity | 10 | Section B (1,2,3,4,5,6,7,8,9,10) |
| 6 | Environment Utilization | 10 | 5,10,15,20,25,30,35,40,45,50 |
| | Total | 60 | |

## *Scoring Procedure*

As section A in the present scale is 3 point Likert Scale -responses given as Always, Sometimes, Never. For the positive statements the respective scores of the three responses are 3, 2, and 1. For the negative statements the scoring is done in the reverse order. In the Section B part of the tool, 10 statements were given which comes under the dimension of Self-regulated Learning - Contextual Sensitivity. 2 responses in this section- Yes (True) / No (False). Positive statements are scored 1 and negative statements are scored as 0. The scores on all the items are added to get the total scores of Self- regulated Learning in Physics.

## c) Try out of The Preliminary Scale (Item Analysis)

The purpose of the tryout of the scale is to select the items for the final by empirically testing the item. The general procedure of the item analysis is described below.

The preliminary scale was administered to a sample of 370 Secondary School Students selected by stratified sampling techniques giving due representation to gender of the students, locale of the school, type of management of schools. The 370 response sheets obtained were scored and the total score for each sheet was calculated. Then these were arranged in descending order of the total score and the lowest and highest 27 percentage of the 370 sheets (100 Sheets each) were separated. The mean and Standard deviation obtained for each items for the lower and higher group were calculated separately.

In the present study, the investigator administered preliminary scale to a sample of 300 secondary school students and calculated 27 percentage of the 300 sheets (81 sheets each).The critical ratio for each items were calculated using SPSS statistical package.

The critical ratio obtained for each item together with means and standard deviation of the scores of the two groups are given as Table 2.

Table 2

*Data and results of item analysis of Self-regulated Learning Scale in Physics*

| Sl. No. | Upper Group | | Lower Group | | t -Value | Status |
|---|---|---|---|---|---|---|
| | Mean | S D | Mean | S D | | |
| 1. | 2.31 | .68 | 2.4 | .50 | 1.44 | Rejected |
| 2. | 2.80 | .49 | 2.42 | .61 | 4.42 | Accepted |
| 3. | 2.05 | .44 | 1.98 | .61 | .88 | Rejected |
| 4. | 2.42 | .65 | 1.88 | .76 | 4.79 | Accepted |
| 5. | 2.05 | .61 | 1.31 | .56 | 8.03 | Accepted |
| 6. | 2.80 | .56 | 2.54 | .55 | 2.38 | Rejected |
| 7. | 1.79 | .65 | 1.62 | .56 | 1.82 | Rejected |
| 8. | 2.86 | .36 | 2.23 | .68 | 7.26 | Accepted |

| Sl. No. | Upper Group | | Lower Group | | t -Value | Status |
|---|---|---|---|---|---|---|
| | Mean | S D | Mean | S D | | |
| 9. | 2.70 | .53 | 2.08 | .79 | 5.81 | Accepted |
| 10. | 2.22 | .67 | 1.52 | .59 | 7.07 | Accepted |
| 11. | 2.53 | .57 | 1.90 | .62 | 6.69 | Accepted |
| 12. | 2.81 | .45 | 2.65 | .55 | 2.03 | Rejected |
| 13. | 2.77 | .45 | 2.32 | .58 | 5.38 | Accepted |
| 14. | 2.49 | .57 | 1.98 | .52 | 6.01 | Accepted |
| 15. | 2.51 | .59 | 1.91 | .82 | 5.23 | Accepted |
| 16. | 2.25 | .68 | 2.22 | .61 | .24 | Rejected |
| 17. | 2.83 | .38 | 1.93 | .74 | 9.77 | Accepted |
| 18. | 2.62 | .49 | 2.16 | .49 | 5.96 | Accepted |
| 19. | 2.55 | .57 | 1.95 | .82 | 5.45 | Accepted |
| 20. | 1.86 | .74 | 1.32 | .61 | 5.11 | Accepted |
| 21. | 2.49 | .69 | 2.11 | .79 | 3.28 | Accepted |
| 22. | 2.41 | .63 | 1.69 | .74 | 6.66 | Accepted |
| 23. | 2.32 | .57 | 1.81 | .57 | 5.66 | Accepted |
| 24. | 2.44 | .67 | 2.09 | .80 | 2.38 | Rejected |
| 25. | 2.39 | .63 | 1.58 | .65 | 8.13 | Accepted |
| 26. | 2.64 | .68 | 2.27 | .77 | 3.24 | Accepted |
| 27. | 2.75 | .49 | 2.52 | .57 | 2.31 | Rejected |
| 28. | 2.85 | .42 | 2.11 | .57 | 9.40 | Accepted |
| 29. | 2.22 | .74 | 2.01 | .75 | 1.79 | Rejected |
| 30. | 2.30 | .60 | 1.59 | .61 | 7.41 | Accepted |
| 31. | 1.47 | .67 | 1.81 | .61 | 3.42 | Accepted |
| 32. | 2.75 | .51 | 2.41 | .69 | 3.64 | Accepted |
| 33. | 2.64 | .48 | 1.93 | .59 | 8.48 | Accepted |
| 34. | 2.69 | .49 | 2.02 | .72 | 6.86 | Accepted |
| 35. | 2.31 | .68 | 1.77 | .71 | 4.96 | Accepted |

| Sl. No. | Upper Group | | Lower Group | | t -Value | Status |
|---|---|---|---|---|---|---|
| | Mean | S D | Mean | S D | | |
| 36. | 2.80 | .49 | 2.16 | .68 | 6.92 | Accepted |
| 37. | 2.22 | .77 | 1.56 | .77 | 5.48 | Accepted |
| 38. | 2.59 | .49 | 1.95 | .61 | 7.36 | Accepted |
| 39. | 2.77 | .45 | 1.89 | .71 | 9.38 | Accepted |
| 40. | 1.48 | .67 | 1.12 | .39 | 4.12 | Accepted |
| 41. | 2.91 | .39 | 2.29 | .71 | 6.81 | Accepted |
| 42. | 1.52 | .59 | 1.65 | .59 | 1.45 | Rejected |
| 43. | 2.44 | .55 | 1.88 | .53 | 6.69 | Accepted |
| 44. | 2.05 | .77 | 1.19 | .45 | 8.70 | Accepted |
| 45. | 2.85 | .39 | 2.11 | .61 | 9.18 | Accepted |
| 46. | 2.93 | .31 | 2.70 | .58 | 4.05 | Accepted |
| 47. | 2.70 | .49 | 2.06 | .57 | 7.66 | Accepted |
| 48. | 2.69 | .52 | 2.15 | .59 | 6.22 | Accepted |
| 49. | 2.56 | .55 | 1.89 | .77 | 6.33 | Accepted |
| 50. | 2.52 | .57 | 1.64 | .73 | 8.50 | Accepted |
| 51. | .53 | .50 | .23 | .43 | 4.05 | Accepted |
| 52. | .99 | .11 | .95 | .22 | 1.36 | Rejected |
| 53. | .49 | .50 | .41 | .49 | 1.10 | Rejected |
| 54. | .98 | .16 | .88 | .33 | 2.43 | Accepted |
| 55. | .62 | .49 | .47 | .50 | 1.99 | Accepted |
| 56. | .79 | .41 | .46 | .50 | 4.63 | Accepted |
| 57. | .90 | .30 | .72 | .45 | 3.06 | Accepted |
| 58. | .94 | .24 | .87 | .33 | 1.36 | Rejected |
| 59. | .91 | .28 | .83 | .38 | 1.98 | Accepted |
| 60. | .88 | .33 | .64 | .48 | 3.61 | Accepted |

**d) Finalization of the scale**

The items with  critical ratio, t> 2.58, the tabled value of ' t' required for significance level  at .01 (for items in section A) and items with critical ratio, t> 1.96, the tabled value of 't' required for significance at .05 level (for the items in section B) were selected and other items were not selected. Based on this, 47 items were retained and 13 statements were rejected. Out of which 28 are positive and 19 are negative. A copy of draft and final form of Self-regulated Learning Scale in Physics. (Malayalam and English version) are appended as appendices 1, II, 111 and IV respectively. The distribution of items under each dimension after item analysis is given in Table 3.

Table 3

*Number of items in six dimensions of Self-regulated Learning Scale in Physics (after item analysis)*

| Sl. No. | Dimensions | No. of questions | Item numbers |
|---|---|---|---|
| 1 | Epistemological  Beliefs | 7 | 7,15,19.,22,27,32,36 |
| 2 | Motivation | 6 | 1,11,16,23,28,37, |
| 3 | Meta cognition | 9 | 4,8,12,17,20,24,29,33,38 |
| 4 | Learning strategies | 8 | 2,5,9,13,25,30,34,39 |
| 5 | Contextual sensitivity | 7 | Section B (1,2,3,4,5,6,7,) |
| 6 | Environment Utilization | 10 | 3.6,10,14,18,21,26,31,35,40 |
| | Total | 47 | |

**Reliability of the tool**

Reliability of the test is its ability to yield consistent result from one set of measures to another. According to Best and Kahn (2014), Reliability is the degree of consistency that the instrument or procedure demonstrates whatever it is measuring it does so consistently. In the present study, the investigator found out the reliability co-efficient of Self-regulated Learning Scale using Chronbach Alpha (for testing the internal consistency of the tool), which is the most common measure of reliability and is found to be .85, which suggests that the scale is highly reliable. Test retest method was used to establish the consistency of the test over time. Reliability co-efficient of Self-regulated Learning Scale also found out by test-retest method and it was found to be .67, which suggests that the scale is moderately reliable.

**Validity of the tool**

According to Best and Kahn (2014), Validity is that quality of data gathering instrument or procedure that enables it to measure what it is supposed to measure. The validity of the present scale was ensured through face validity. A test is said to have face validity when it appears to measures whatever the author had in mind, namely what he thought he was measuring (Garret, 1981). The items in the present scale were phrased in the least ambiguous way and the meaning of all the terms were clearly defined so that the subject responded to the items without difficulty and misunderstanding. Hence, the tool possess face validity. Content validity refers to the extent to which a measure represents all facets of a given construct. Hence, the tool also possesses content validity. The investigator also found the criterion related validity of the tool by correlating the scores obtained with an external independent criteria Motivated Strategies for Learning Questionnaire (MSLQ) by Pintrich, P.R.

& DeGroot, E.V. (1990) in a representative group of 40 secondary school students. The validity coefficient obtained is .41

**Academic Delay of Gratification Scale (Bindhu & Sindhu, 2014)**

The tool Academic Delay of Gratification Scale was reconstructed and standardized by the investigator with the help of her supervising teacher. Detailed description of the construction of the scale is given below.

**a)  Planning and Preparation of the Tool**

The first step in the construction and standardization of any tool is planning of the tool. For the present study, the investigator prepared Academic Delay of Gratification Scale to study the Academic Delay of Gratification in 9th standard students of Kerala. Before developing the tool, the investigator went through the available literature related to Academic Delay of Gratification. Being not obtained the adequate theoretical overview of Academic Delay of Gratification, the investigator tried to find some of the available standardized tools of Academic Delay of Gratification in different fields. It is found that most of the researchers used Academic Delay of Gratification Scale (Bembenutty & Karabenick, 1998) and the tool is of western origin. The investigator goes through this scale and the same tool is modified to Kerala cultural context and more items were added to that tool in consultation with the supervising teacher. All the statements in the scale were in Malayalam in favour of students.

The draft scale consists of 20 items each item consists of two sub divisions a and b either positive or negative and its counter parts. Copies of the final version of Academic Delay of Gratification Scale (Malayalam and English version) are given as appendices V and VI respectively.

**Scoring Procedure**

Academic Delay of Gratification Scale is a 4 point scale with responses definitely choose A, probably choose A, probably choose B, definitely choose B. For items 1,2,4,5,6,8,9,10,11,14, 15,16,17,19 & 20 takes score definitely choose A=1, probably choose A=2, probably choose B=3, definitely choose B=4 and for items 3, 7, 12, 13 and 18, scores had to be reversed.

**b).Try out of the preliminary Scale (Item analysis)**

The purpose of the tryout of the scale is to select the items for the final by empirically testing the item. The procedure of the item analysis is described below. The preliminary scale was administered to a sample of 370 secondary school students selected by stratified random sampling techniques giving due representation to gender of the students, locale of the school, type of management of Schools. The 370 response sheets obtained were scored and the total score for each sheet was calculated. Then these were arranged in descending order of the total score and the lowest and highest 27 percentage of the 370 sheets (100 sheets each) were separated. The mean and Standard deviation obtained for each items for the lower and higher group were calculated separately. The critical ratio for each item was calculated using SPSS statistical package.

The critical ratio obtained for each item together with means and standard deviation of the scores of the two groups are given in Table 4

Table 4

*Data and results of Item analysis of Academic Delay of Gratification Scale*

| Sl No | Upper Group | | Lower Group | | t-value | Status |
|---|---|---|---|---|---|---|
| | Mean | S.D | Mean | S.D | | |
| 1 | 3.13 | .928 | 2.11 | 1.05 | 7.26 | Accepted |
| 2 | 3.69 | .65 | 2.17 | .99 | 12.89 | Accepted |
| 3 | 3.82 | .56 | 2.80 | 1.04 | 8.68 | Accepted |
| 4 | 3.37 | .76 | 1.98 | .92 | 11.64 | Accepted |
| 5 | 3.39 | .74 | 1.93 | .84 | 13.03 | Accepted |
| 6 | 3.96 | .18 | 2.82 | .99 | 11.19 | Accepted |
| 7 | 3.50 | .72 | 2.57 | 1.05 | 7.34 | Accepted |
| 8 | 3.84 | .53 | 2.63 | 1.08 | 10.08 | Accepted |
| 9 | 3.49 | .66 | 2.47 | .66 | 12.14 | Accepted |
| 10 | 3.41 | .88 | 2.02 | 1.01 | 10.42 | Accepted |
| 11 | 3.73 | .66 | 2.61 | 1.17 | 8.32 | Accepted |
| 12 | 3.43 | .83 | 2.45 | 1.01 | 7.49 | Accepted |
| 13 | 3.65 | .63 | 2.89 | .89 | 6.95 | Accepted |
| 14 | 3.88 | .54 | 2.98 | 1.31 | 6.37 | Accepted |
| 15 | 3.92 | .34 | 2.73 | 1.09 | 10.42 | Accepted |
| 16 | 3.82 | .56 | 2.24 | 1.16 | 12.31 | Accepted |
| 17 | 3.48 | .77 | 2.49 | 1.06 | 7.57 | Accepted |
| 18 | 3.63 | .81 | 2.15 | 1.19 | 10.26 | Accepted |
| 19 | 3.73 | .60 | 1.92 | 1.00 | 16.49 | Accepted |
| 20 | 3.51 | .79 | 2.62 | 1.11 | 6.55 | Accepted |

**c).Finalization of the scale**

Items with critical ratio greater than 2.58, the value of 't' required for significance level at .01 were selected for the final scale. All the items were found with critical ratio greater than 2.58, and so all the items were selected. No items were rejected. Hence, all the 20 items were retained.

**Reliability of the tool**

Reliability of the test is its ability to yield consistent result from one set of measures to another. According to Best and Kahn (2014), Reliability is the degree of consistency that the instrument or procedure demonstrates whatever it is measuring it does so consistently. In the present study, the investigator checked the reliability co-efficient of Academic Delay of Gratification scale using Cron-bach Alpha (for testing the internal consistency of the tool) and was found to be .90 which suggests that the scale is highly reliable. Also found the reliability co-efficient by test-retest method and it is .69, which suggests that the tool is moderately reliable.

**Validity of the tool**

According to Best and Kahn (2014), Validity is that quality of data gathering instrument or procedure that enables it to measure what it is supposed to measure. A test is valid when the performance which it measures corresponds to the same performance as otherwise independently measured or objectively defined (Garrett, 2014). The validity of the present scale was ensured through face validity. A test is said to have face validity when it appears to measures whatever the author had in mind, namely what he thought he was measuring (Garret, 1981). The items in the present scale were phrased in the least ambiguous way and the meaning of all the terms were clearly defined so that the subject responded to the items without

difficulty and misunderstanding .Hence the tool possess face validity. Content validity refers to the extent to which a measure represents all facets of a given construct. Hence, the tool also possesses content validity.

**3) Perceived Parenting Style Scale (Manikandan & Divya, 2013)**

In the present study, the Perceived Parenting Style Scale prepared by Manikandan & Divya (2013), Department of Psychology, University of Calicut was adopted and administered among students to measure the Parenting Style perceived by the students. The scale was prepared on the basis of the theory proposed by Baumrind. The tool consists of 30 items –Authoritative, Authoritarian and Permissive Parenting Styles each comprising 10 items each. Tool consists of 10 positive items and 20 negative items.

**Scoring Procedure**

The Parenting Style Scale is a five point Likert Scale with responses-Never, Rarely, Sometimes, Often, Always. For the positive statements the respective scores of the five responses are 1,2, 3, 4, and 5. For the negative statements the scoring is done in the reverse order. The item numbers 1, 4, 7, 10, 13, 16, 19, 25, 22, 28 are positively scored and the item numbers 2, 3,5, 6, 8, 9, 11, 12, 14, 15, 17, 18, 20, 21, 23, 24, 26, 27, 29, 30 are negatively scored. The items in the Authoritative type are 1, 4, 7, 10, 13, 16, 19, 22, 25, 28. Authoritarian type are 2, 5, 8, 11, 14, 17, 20, 23, 26, 29 and Permissive type are 3, 6, 9, 12, 15, 18, 21, 24, 27, 30.

**Establishment of reliability and validity of the tool**

To find out the reliability of the scale Chronbach Alpha coefficient was computed for each type and it was found that the Authoritative type is having an alpha coefficient of .79, Authoritarian .81 and Permissive .86. All the types of the Parenting Styles have an acceptable level of reliability.

The items in the scale were prepared as per the theoretical explanation given by Baumrind (1966).Moreover, the final version of the scale was distributed among professors, associate professors, assistant professors, senior research scholars and psychological counselors for comments and appropriateness and they commented that this scale measured perceived Parenting Styles of the adolescents. This indicates that scale has face validity.

**4) Perceived Classroom Climate Scale (Bindhu & Nincy, 2012)**

In the present study the investigator assessed the Perceived Classroom Climate of Secondary School Students using the revised version (2014) of the tool, the scale of Perceived classroom climate, prepared and standardized by Bindhu & Nincy in 2012. The revised version of Perceived Classroom Climate Scale consists of 50 items including 29 positive items and 21 negative items. The scale has developed by giving due weightages to three factors – Physical, Social and educational factors.

**Scoring procedure**

The Perceived Classroom Climate Scale is three point Likert scale with responses-Agree, Neutral and Disagree. For the positive statements the respective scores of the three responses are 3, 2, and 1. For the negative statements the scoring is done in the reverse order.

**Establishment of reliability and validity of the tool**

Reliability of the Perceived Classroom Climate Scale was re-established by test-retest method and reliability co-efficient was found to be .74, which suggests that the tool is reliable. Validity of the Perceived Classroom Climate Scale was ensured through face and content validity.

**Sample selected for the Study**

The important aspects of the sample selection for the present study are given below.

**Population of the study**

Secondary School Students of Kerala are the target population for the present investigation.

**Size of the Sample**

Regarding the size of the sample Krech & Crutch Field (1968), pointed out that a sample of 500 would yield reasonably good results which would keep the error less than five percent. In order to get sufficient number of cases for the sub groups for the different types of analysis, the sample size was fixed as 1000.

**Sample for the present study**

Selection of the sample is an important aspect of any research. A sample is a small proportion of a population selected for observation. By observing the characteristics of the sample, one can make certain inferences about the population which it is drawn (Best & Kahn, 2002).The sample for the study is collected from the population. The basal sample for the present study constituted 1027 IXth standard students of Kerala, which is the best representation of Secondary School Students.

**Sampling Technique**

Stratified sampling which has been widely recommended by Indian social science researchers was used for the selection of sample for the present study. This technique is applicable when the population comprises subgroups or strata of various sizes so that a representative sample must contain individuals drawn from each

category or stratum in accordance with the size of the group. Stratification helps to avoid bias and ensures greater representation.

**Rationale for selecting the subgroups**

The samples were selected under stratified sampling technique by giving due representation to the factors like gender, locale of school and type of school management. The approximate ratio of 1:1 for gender (male & female), 2:2:1 for type of management (government, aided & unaided) and 1:1 for locale (rural & urban) were considered while selecting the sample.

In order to get valid data from students, the investigator selected the schools in a special manner by avoiding those schools that the student teachers and student teacher educators commonly chosen for data collection. 95 percentage of the samples are from this kind of schools. Details of the schools selected for data collection is given in Table 5 below:

Table 5

*List of schools selected for data collection*

| Sl. No. | Name of the School | Number of students | Male | Female | Type of manage-ment | Locale of the school | District |
|---|---|---|---|---|---|---|---|
| 1 | Govt. Fisheries Vocational H.S.S, Cheruvathur | 39 | 19 | 20 | Govt. | Rural | Kasargod |
| 2 | St.Therases Anglo Indian H.S.S | 36 | - | 36 | Aided | Urban | Kannur |
| 3 | G.V.H.S.S. | 30 | - | 30 | Govt. | Urban | Kannur |
| 4 | RCHSS, Chundale | 38 | 21 | 17 | Aided | Rural | Waynad |
| 5 | Venerini. E.M.H.S.S Karinkallai | 83 | 13 | 70 | Unaided | Rural | Kozhikode |
| 6 | N.S.S. English Medium HSS, Meenchanda | 63 | 42 | 21 | Unaided | Urban | Kozhikode |
| 7 | Govt. Model H.S.S, Mananchira | 34 | 34 | - | Govt. | Urban | Kozhikode |

| Sl. No. | Name of the School | Number of students | Male | Female | Type of management | Locale of the school | District |
|---|---|---|---|---|---|---|---|
| 8 | G.H.S.S, Mankada | 95 | 50 | 45 | Govt. | Rural | Malappuram |
| 9 | N.S.S. English Medium HSS, Manjeri | 35 | 13 | 22 | Unaided | Urban | Malappuram |
| 10 | D.V.H.S.S, Thootha | 27 | 11 | 16 | Aided | Rural | Malappuram |
| 11 | G.H.S.S. Anamanagad | 48 | 26 | 22 | Govt. | Rural | Malappuram |
| 12 | G.V.H.S.S.,Cheruplassery | 39 | 16 | 23 | Govt. | Rural | Palakkad |
| 13 | G.H.S.S, Marayamangalam | 38 | 24 | 14 | Govt. | Rural | Palakkad |
| 14 | Little Flower H.S.S., Koratty | 49 | 28 | 21 | Aided | Urban | Thrissur |
| 15 | Rajagiri English Medium H.S.S., Kalamassery | 39 | 28 | 11 | Unaided | Urban | Ernakulam |
| 16 | St. Anns H.S.S , Kurianad | 48 | 34 | 14 | Aided | Rural | Kottayam |
| 17 | Amrutha Sanskrit H.S.S. | 54 | 37 | 17 | Aided | Urban | Kollam |
| 18 | Vaduthala Jamaath H.S.S, Aroor | 47 | 25 | 22 | Aided | Rural | Alapuzha |
| 19 | St. Joseph Higher Secondary School | 80 | 80 | - | Aided | Urban | Thiruvananthapuram |
| 20 | G.V.H.S.S., Vattiyoorkavu | 32 | 16 | 16 | Govt. | Rural | Thiruvananthapuram |
| 21 | G.V. Raja Sports school | 50 | 27 | 23 | Govt. | Rural | Thiruvananthapuram |

## Data Collection Procedure

After having an idea of the sample, the investigator contacted the head masters /headmistress of selected schools for getting permission to contact the students. Having got the permission, the investigator reached the particular class of each school and explained the purpose and asked their help and cooperation to make the study as successful as possible. Then the research tools were distributed to the students. Clear instructions were given to them regarding filling of each tool. Four

tools were given one by one to the students in the same order in every school. A uniform procedure was adopted in administering the tools.

**Scoring and consolidation of data**

Before scoring, incomplete response sheets were rejected and this resulted in a final sample size of 1004. All the response sheets which were complete in all aspects were scored. The break up of the final sample is given as Table 6.

Table 6

*The break up of the final sample*

| Total N=1004 | | | | | | |
|---|---|---|---|---|---|---|
| Gender | | Locale | | Type of management | | |
| Male | Female | Rural | Urban | Government | Aided | Unaided |
| 544 | 460 | 584 | 420 | 405 | 379 | 220 |

**Statistical Techniques used for the analysis of data**

For testing the hypotheses formulated, different statistical techniques were used. As the first step of the analysis, the independent variables were classified into various levels.

**Classification Technique**

Three independent variables were selected for the present study. These variables were classified in to three levels each. The classification technique of each independent variable is presented in the following section.

**Classification of Parenting Style**

Parenting Style was classified into three categories-Authoritative, Authoritarian, Permissive. The total sample (N=1004) was classified in to three groups based on the scores of each of the independent variable-Parenting Style as Authoritative, Authoritarian, Permissive on the basis of the dominance they preferred.

**Classification of Classroom Climate**

The total sample (N=1004) was divided into three groups based on the scores of each of the independent variable Classroom Climate as high perceived classroom climate, moderate perceived classroom climate and low perceived classroom climate**.** For this, the mean and standard deviation of the scores obtained in perceived classroom climate were calculated. IX$^{th}$ standard students who scored above the mean+1SD were considered possess high perceived classroom climate, IX$^{th}$ standard students who scored below mean-1SD possess low perceived classroom climate and those IX$^{th}$ standard students who come in between mean+1SD and mean-1SD possess moderate perceived classroom climate.

**Classification of Academic Delay of Gratification**

The total sample (N=1004) was divided into three groups based on the scores of each of the independent variable Academic Delay of Gratification as high Academic Delay of Gratification group, average Academic Delay of Gratification group and low Academic Delay of Gratification group. Mean and SD of the scores obtained in the Academic Delay of Gratification scale were calculated. IX$^{th}$ standard students who fall above the mean+1SD were considered to possess high Academic Delay of Gratification, IX$^{th}$ standard students who fall below the mean-1SD were

considered to possess low Academic Delay of Gratification and those IXth standard students who fall in between mean+1SD and mean-1SD possess average Academic Delay of Gratification

## Statistical Techniques used

The present study is quantitative in nature and the investigators used both descriptive and inferential statistics for the analysis. The statistical techniques used for the present study are summarized as follows.

## Basic Descriptive Statistics

Basic Descriptive Statistics such as mean, median, mode, SD, skewness and kurtosis of each of the independent variables and dependent variable were calculated. Descriptive statistics were calculated for the total sample and sub groups based on the gender, locality of the schools and type of management of schools. Descriptive statistics were done to identify the nature of distribution of independent variables and dependent variables.

## Mean Difference Analysis

Difference based on gender, locality and type of management was calculated for independent and dependent variables. Test of significance of difference between two means of large independent sample were used to compare the mean scores.

## 3 Way ANOVA

The main effect and interaction effect of three independent variables on dependent variable were estimated using three way analysis of variance. Three fixed factors were identified for each of the independent variable. Each independent variable was divided in to three levels. Hence 3x3 x3 ANOVA in which three independent variables at three different levels, were used to analyze the data. Data

were analyzed for total sample and subgroups based on locality, gender and type of management of schools. The significance F values were subjected to Sheffe's test of post hoc comparison.

**Multiple Regression Analysis**

To predict the individual and joint contribution of independent variables on dependent variable, multiple regression was done using enter method in which all independent variables were entered simultaneously. A regression equation was also developed to predict the dependent variable from the selected independent variables.

Diagrammatic representation of methodology at a glance is shown in Figure 4 below.

*Figure 4*. Diagrammatic representation of methodology at a glance.

*Chapter 4*

# ANALYSIS AND INTERPRETATION

Preliminary Analysis

Major Analysis

Mean Difference Analysis

Analysis of Variance

Multiple Regression Analysis
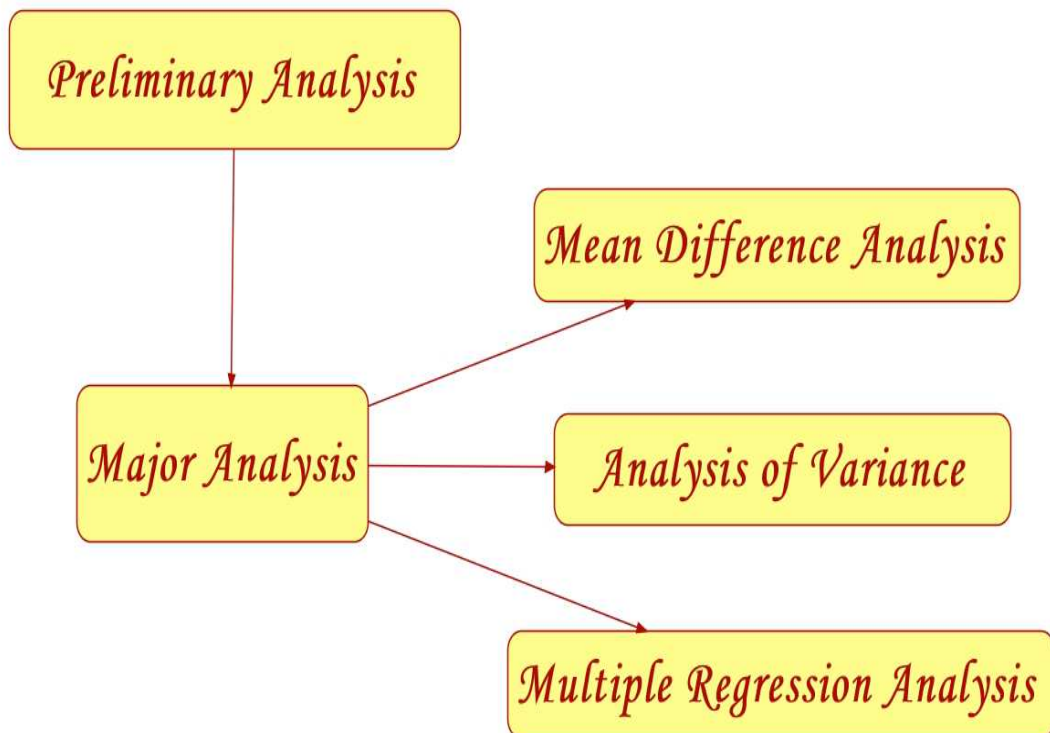
# ANALYSIS AND INTERPRETATION

The present study is envisioned to find out the Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics among Secondary School Students. For the analysis of present data, relevant statistical techniques such as basic descriptive statistics, test of significance of difference between two means, 3way ANOVA and multiple regression analysis were used. The statistical analysis was done based on the objectives formulated for the study. On the basis of the results of the statistical processing, the investigator tested the hypotheses formulated.

The whole analysis done for the present study is described under the following heads

- Preliminary Analysis
- Mean Difference Analysis
- Analysis of Variance
- Multiple Regression Analysis

**Preliminary Analysis**

Preliminary analysis of the scores of independent variables and dependent variable of the present study was done to know the basic properties of the variables for the total sample and sub groups based on gender, type of management of school and locale of the school. The analysis was taken up with a view that the findings will help to make more valid interpretation of statistical indices of the study.

The score distribution of the independent variables viz. Parenting Style, Classroom Climate and Academic Delay of Gratification and dependent variable Self-regulated Learning in Physics of IXth standard students were studied for their normality. For this, important statistical constants were calculated separately for total sample and subgroups based on gender, type of management of the school and locale of the school. The important statistical indices namely mean, median, mode, standard deviation, skewness, kurtosis of the score distribution for total sample and subgroups based on gender, locale and type of management for various Parenting Style, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning were calculated and presented in the following tables.

The first objective is to find the extent of various Parenting Styles, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning among Secondary School Students for the total sample and relevant subgroups. The data were analyzed and the results are given in following tables.

Table 7

*Data and result of extent of Parenting Style, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning among Secondary School Students based on total sample.*

| | Variables | N | Mean | Median | Mode | S.D | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|
| Parenting Style | Authoritative | | 42.10 | 43.00 | 46 | 5.27 | -.92 | 1.22 |
| | Authoritarian | | 33.88 | 34.00 | 34 | 6.81 | -.30 | -.07 |
| | Permissive | | 43.35 | 45 | 50 | 6.94 | -1.27 | 1.43 |
| Classroom Climate | | 1004 | 120.17 | 121.00 | 126 | 13.73 | -.48 | .31 |
| Academic Delay of Gratification | | | 59.63 | 61.00 | 62 | 10.72 | -.46 | -.13 |
| Self-regulated Learning in Physics | | | 91.16 | 91.00 | 89 | 11.09 | -.42 | .59 |

From Table 7, it was found that mean, median and mode are approximately equal for all the three types of Parenting Style, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning based on the total sample. The distribution of all variables was found to be negatively skewed in nature. Also, it was found that the scores obtained for Authoritarian Parenting Style and Academic Delay of Gratification are found to be leptokurtic (<.263) and rest all other variables are platykurtic (>.263) in nature.

The mean value obtained for Authoritative, Authoritarian and Permissive Parenting Styles were 42.10, 33.88 and 43.35 respectively, which was above the neutral score 30. The mean value obtained for Classroom Climate was 120.17, which was above the neutral score 100. The mean value obtained for Academic Delay of Gratification was 59.63, which was above the neutral score 50 and the mean value obtained for Self-regulated Learning was 91.16, which was above the neutral score 83.5. All these values indicated that all variables are highly situated in the sample.

Table 8

*Data and result of extent of Authoritative Parenting Style among Secondary School Students based on gender, type of Management and locale of the School*

| Variable | Category | | N | Mean | Median | Mode | S.D | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|---|
| | Gender | M | 544 | 41.57 | 42 | 42 | 5.42 | -.83 | .89 |
| | | F | 460 | 42.73 | 44 | 46 | 5.01 | -1.04 | 1.77 |
| | | G | 405 | 42.19 | 43 | 42 | 4.96 | -.79 | .85 |
| | | A | 379 | 42.21 | 43 | 46 | 5.58 | -1.11 | 1.76 |
| Authoritative Parenting Style | Type of management | G | 405 | 42.19 | 43 | 42 | 4.96 | -.79 | .85 |
| | | UN | 220 | 41.74 | 43 | 44 | 5.27 | -.77 | .56 |
| | | A | 379 | 42.21 | 43 | 46 | 5.58 | -1.11 | 1.76 |
| | | UN | 220 | 41.74 | 43 | 44 | 5.27 | -.77 | .56 |
| | Locale | R | 584 | 42.03 | 43 | 46 | 5.25 | -.90 | 1.16 |
| | | U | 420 | 42.19 | 43 | 46 | 5.29 | -.96 | 1.32 |

From Table 8, it was found that the mean, median and mode of Authoritative Parenting Style based on gender, type of management and locale of the school are approximately equal. The distribution of Authoritative Parenting Style based on these subgroups is found to be negatively skewed and platykurtic in nature as the values are above .263.

The mean values of Authoritative Parenting Style based on gender, type of management and locale of the school are above the neutral score 30. All these values indicated that all variables are highly placed in the sample.

Table 9

*Data and result of extent of Authoritarian Parenting Style among Secondary School Students based on gender, type of management and locale of the school*

| Variable | Category | | N | Mean | Median | Mode | S.D | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|---|
| | Gender | M | 544 | 32.82 | 33 | 34 | 6.61 | -.28 | .08 |
| | | F | 460 | 35.13 | 35 | 39 | 6.84 | -.38 | -.13 |
| | | G | 405 | 35.08 | 35 | 38 | 6.32 | -.08 | -.18 |
| | | A | 379 | 33.48 | 34 | 34 | 6.99 | .41 | -.04 |
| Authoritarian Parenting Style | Type of management | G | 405 | 35.08 | 35 | 38 | 6.32 | -.08 | -.18 |
| | | UN | 220 | 32.36 | 33 | 32 | 6.99 | -.29 | -.38 |
| | | A | 379 | 33.48 | 34 | 34 | 6.99 | -.41 | -.04 |
| | | UN | 220 | 32.36 | 33 | 32 | 6.99 | -.29 | -.38 |
| | | R | 584 | 33.87 | 34 | 32 | 6.75 | -.18 | -.26 |
| | Locale | U | 420 | 33.90 | 34 | 34 | 6.90 | -.46 | -.19 |

From Table 9, it was found that the mean, median and mode of Authoritarian Parenting Style based on gender, type of management and locale of the school are approximately equal. Also, found that the distribution of Authoritarian Parenting Style based on these subgroups are negatively skewed and leptokurtic in nature (<.263).

The mean values of Authoritarian Parenting Style based on gender, type of management and locale of the school are above the neutral score 30. All these values indicated that all variables are highly located in the sample.

Table 10

*Data and result of extent of Permissive Parenting Style among Secondary School Students based on gender, type of management and locale of the school*

| Variable | Category | | N | Mean | Median | Mode | S.D | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|---|
| | Gender | M | 544 | 42.44 | 44 | 50 | 7.08 | -1.09 | .97 |
| | | F | 460 | 44.41 | 47 | 50 | 6.64 | -1.55 | 2.41 |
| | | G | 405 | 42.28 | 44 | 50 | 7.61 | -1.05 | .53 |
| | | A | 379 | 43.32 | 45 | 50 | 7.01 | -1.27 | 1.64 |
| Permissive Parenting Style | Type of management | G | 405 | 42.28 | 44 | 50 | 7.61 | -1.05 | .53 |
| | | UN | 220 | 45.35 | 47 | 50 | 4.79 | -1.21 | 1.15 |
| | | A | 379 | 43.32 | 45 | 50 | 7.01 | -1.27 | 1.64 |
| | | UN | 220 | 45.35 | 47 | 50 | 4.79 | -1.21 | 1.15 |
| | Locale | R | 584 | 42.96 | 45 | 50 | 7.19 | -1.16 | .91 |
| | | U | 420 | 43.89 | 46 | 50 | 6.545 | -1.43 | 2.39 |

From Table 10, it was found that the mean, median and mode of permissive Parenting Style based on gender, type of management and locale of the school are approximately equal. Also, it was found that the distribution of Permissive Parenting Style based on these sub groups are negatively skewed and found to be platykurtic in nature (>.263)

The mean values of Permissive Parenting Style based on gender, type of management and locale of the school are above the neutral score 30. All these values indicated that all variables were highly placed in the sample.

Table 11

*Data and result of extent of Classroom Climate among Secondary School Students*
*based on gender, type of management and locale of the school*

| Variable | Category | | N | Mean | Median | Mode | S.D | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|---|
| | Gender | M | 544 | 117.05 | 118 | 125 | 14.24 | -.73 | 2.33 |
| | | F | 460 | 123.85 | 125 | 126 | 13.24 | -.27 | 2.16 |
| | | G | 405 | 120.04 | 120 | 126 | 13.54 | -.05 | 2.82 |
| | | A | 379 | 118.35 | 120 | 132 | 15.36 | -.82 | 2.36 |
| Classroom Climate | Type of management | G | 405 | 120.04 | 120 | 126 | 13.54 | -.05 | 2.82 |
| | | UN | 220 | 123.52 | 124 | 121 | 12.64 | -.50 | -.25 |
| | | A | 379 | 118.35 | 120 | 132 | 15.36 | -.82 | 2.36 |
| | | UN | 220 | 123.52 | 124 | 121 | 12.64 | -.50 | -.25 |
| | Locale | R | 584 | 120.62 | 121 | 126 | 13.65 | -.11 | 1.38 |
| | | U | 420 | 119.54 | 121 | 123 | 14.91 | -.98 | 3.01 |

From table 11, it was revealed that mean, median and mode of Classroom Climate based on gender, type of management and locale of the school are approximately equal. On the basis of these subgroups, the distribution of Classroom Climate are found to be negatively skewed and also platykurtic (>.263) in nature except for unaided category of students (leptokurtic since <.263)

The mean value obtained for Classroom Climate of male and female students are 117.05 and 123.85 respectively. The mean value obtained for Classroom Climate of subgroups government, aided; government, unaided and aided, unaided students are 120.04, 118.35; 120.04, 123.52 and 118.35, 123.52 respectively. The mean value obtained for Classroom Climate of rural and urban school students were 120.62 and 119.54 respectively. On the basis of gender, type of management and locale of the

school, all the mean values obtained for Classroom Climate are above the neutral score 100. It means Classroom Climate is highly situated in the sample.

Table 12

*Data and result of extent of Academic Delay of Gratification among Secondary School Students based on gender, type of management and locale of the school*

| Variable | Category | | N | Mean | Median | Mode | S.D | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|---|
| | Gender | M | 544 | 55.83 | 56 | 57 | 10.68 | -.26 | -.12 |
| | | F | 460 | 64.12 | 65 | 68 | 9.01 | -.60 | -.03 |
| | | G | 405 | 60.05 | 61 | 57 | 10.62 | -.46 | -.16 |
| | | A | 379 | 59.04 | 60 | 59 | 10.25 | -.33 | -.24 |
| Academic Delay of Gratification | Type of management | G | 405 | 60.05 | 61 | 57 | 10.62 | -.46 | -.16 |
| | | UN | 220 | 59.84 | 61 | 62 | 11.88 | -.62 | -.03 |
| | | A | 379 | 59.04 | 60 | 59 | 10.25 | -.33 | -.24 |
| | | UN | 220 | 59.84 | 61 | 62 | 11.88 | -.62 | -.03 |
| | Locale | R | 584 | 60.87 | 62 | 57 | 10.48 | -.44 | -.28 |
| | | U | 420 | 57.90 | 59 | 62 | 10.95 | -.47 | -.02 |

From Table 12, it was revealed that mean, median and mode of Academic Delay of Gratification based on gender, type of management and locale of the school are approximately equal. On the basis of these subgroups, the distribution of Academic Delay of Gratification are found to be negatively skewed and also leptokurtic in nature (<.263).

The mean value obtained for Academic Delay of Gratification of male and female students are 55.83 and 64.12 respectively. That means, female students have greater academic delay of gratification compared to male students. The mean value obtained for Academic Delay of Gratification of subgroups government, aided; government, unaided and aided, unaided students are 60.05, 59.04; 60.05, 59.84 and

59.04, 59.84 respectively. The mean value obtained for Academic Delay of Gratification of rural and urban school students are 60.87 and 57.90 respectively. On the basis of gender, type of management and locale of the school, all the mean values obtained for Academic Delay of Gratification are above the neutral score 50. It means Academic Delay of Gratification is highly placed in the sample.

Table 13

*Data and result of extent of Self-regulated Learning in Physics among Secondary School Students based on gender, type of management and locale of the school*

| Variable | Category | | N | Mean | Median | Mode | S.D | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|---|
| | Gender | M | 544 | 90.41 | 91 | 90 | 11.41 | -.48 | .69 |
| | | F | 460 | 92.04 | 92 | 89 | 10.66 | -.30 | .34 |
| | | G | 405 | 89.18 | 90 | 90 | 13.06 | -.24 | .10 |
| Self-regulated Learning in Physics | Type of management | A | 379 | 93.28 | 94 | 97 | 9.32 | -.43 | .74 |
| | | G | 405 | 89.18 | 90 | 90 | 13.06 | -.24 | .10 |
| | | UN | 220 | 91.15 | 90 | 89 | 9.19 | -.14 | -.05 |
| | | A | 379 | 93.28 | 94 | 97 | 9.32 | -.43 | .74 |
| | | UN | 220 | 91.15 | 90 | 89 | 9.19 | -.14 | -.05 |
| | Locale | R | 584 | 91.34 | 92 | 89 | 11.60 | -.45 | .69 |
| | | U | 420 | 90.91 | 91 | 90 | 10.36 | .38 | .29 |

From Table 13, it was revealed that mean, median and mode of the variable Self-regulated Learning in Physics based on gender, type of management and locale of the school are approximately equal. On the basis of these sub groups, the distributions of Self-regulated Learning in Physics are found to be negatively skewed except for urban category of students. Also, it was found that the distributions are platykurtic (>.263) in nature for male, female, aided, rural and

urban school students, and leptokurtic in nature (<.263) for government and unaided school students.

The mean value obtained for the variable Self-regulated Learning for male and female students were 90.41 and 92.04 respectively. That means, female students have scored higher value in Self-regulated Learning in Physics when compared to male students. The mean value obtained for Self-regulated Learning in Physics for subgroups government, aided; government, unaided and aided, unaided students were 89.18, 93.28; 89.18, 91.15 and 93.28, 91.15 respectively. The mean value obtained for Self-regulated Learning in Physics of rural and urban school students were 91.34 and 90.91 respectively. On the basis of gender, type of management and locale of the school, all the mean values obtained for Self-regulated Learning in Physics are above the neutral score 83.5 which mean Self-regulated Learning in Physics is highly placed in the sample.

The distribution of scores of the selected independent variables and dependent variable are analyzed in this section and are found to be nearly normal and is not badly skewed for the total sample and sub groups based on gender, type of management of school and locale of the school.

The frequency curve with histogram for the variables Authoritative, Authoritarian and Permissive Parenting Styles, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning in Physics for the total sample are plotted.
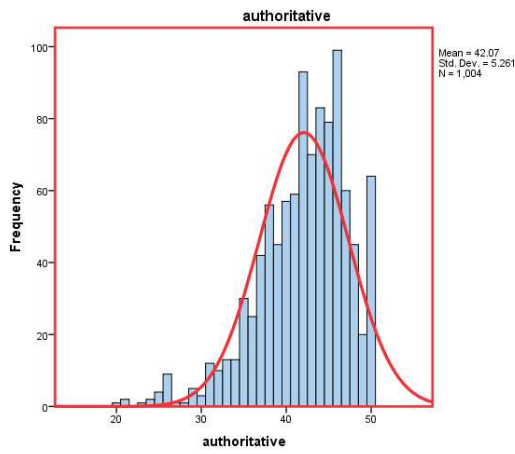
Figure 5
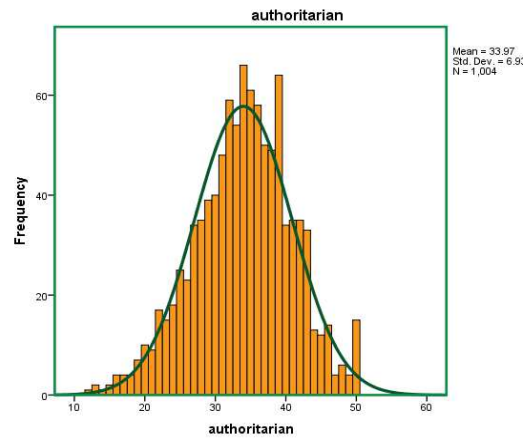


Figure 6
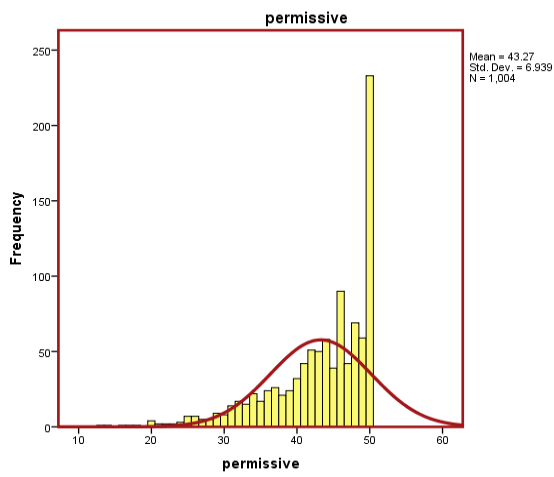


Figure 7
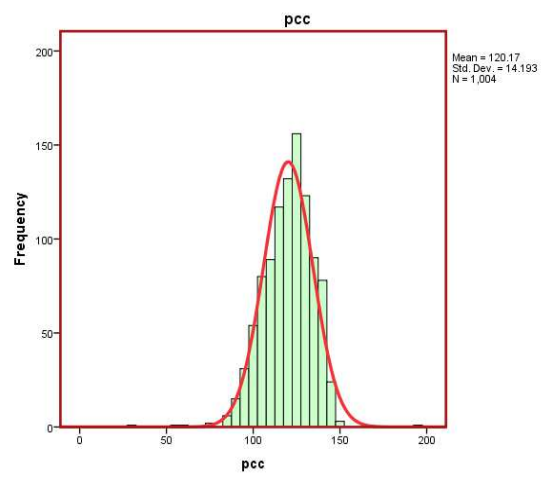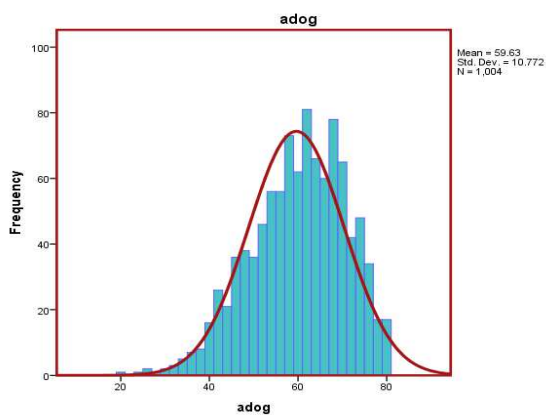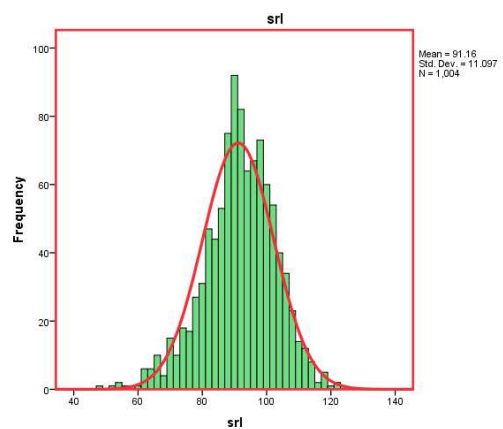


Figure 8



Figure 9



Figure 10

The frequency curves of the variables Authoritative, Authoritarian and Permissive Parenting Styles, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning in Physics (shown in Figure 5, Figure 6, Figure 7, Figure 8, Figure 9, and Figure 10)

The distribution was further examined by using P-P plot (Probability-Probability plot). This graph plots the cumulative probability of a variable against the cumulative probability of normal distribution. If values fall in the diagonal of the plot, then the variable is normally distributed and deviations from the diagonal show deviations from normality. The P-P plot of various Parenting Styles (Authoritative, Authoritarian & Permissive), Classroom Climate, Academic Delay of Gratification and Self-regulated Learning in Physics for total sample are presented in figures- 11, 12,13,14,15, 16 respectively.
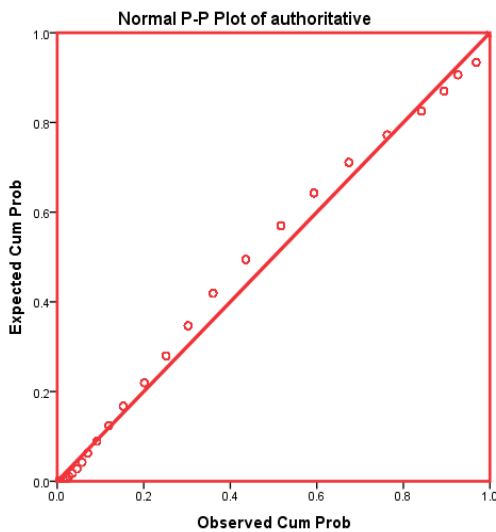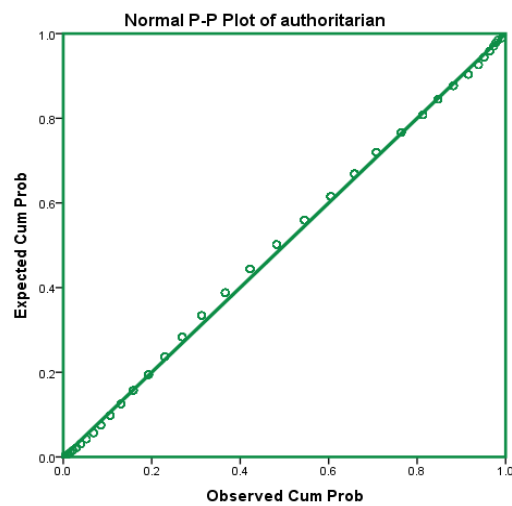


Figure 11                                    Figure 12
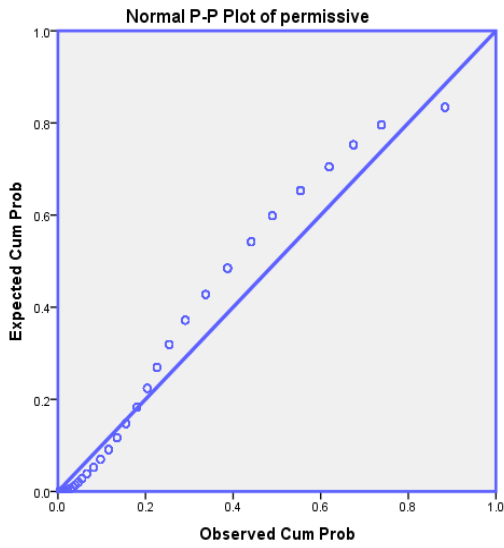
Figure 13
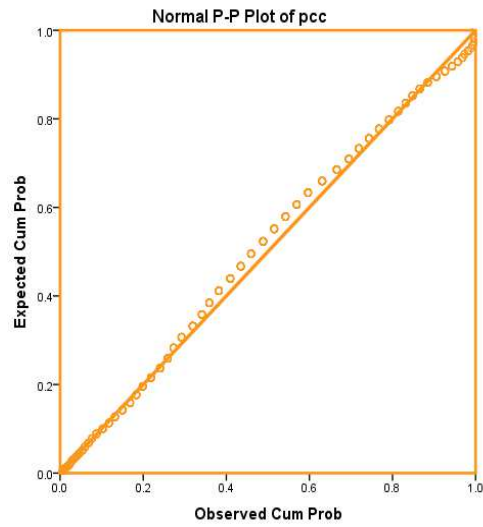


Figure 14
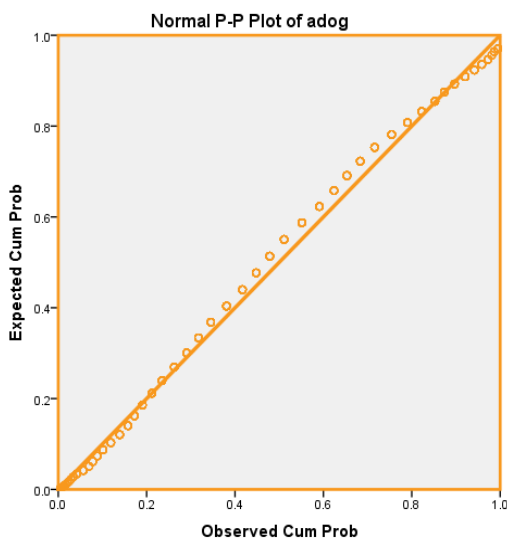


Figure 15
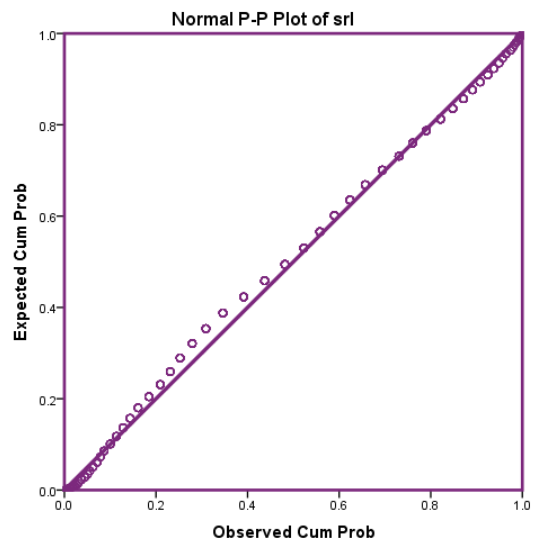


Figure 16

Normal Probability –Probability plots of various Parenting Styles, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning in Physics (shown in figures 11, 12,13,14,15 & 16 )

The P-P plots revealed that there were only slight deviations of observed cumulative probability from the diagonals. It was shown that all distributions follow appropriate normality and it suggests that the sample selected for the study was fairly representative of the population.

**Mean difference Analysis**

Group Difference analysis was done to test whether significant difference exist in the mean scores of various Parenting Styles, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning in Physics based on gender, locale of the school and type of management of schools. For this, mean and S.D of the distribution of independent variables and dependent variable were calculated for the subgroups, gender, locale and type of management-male, female, rural, urban, Govt., aided, unaided. Two tailed test of significance of difference between means was used for the comparison. Mean scores of the distribution of independent variables and dependent variable were calculated separately.

The second objective is to find whether there exists any significant difference of various Parenting Styles, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning in Physics of secondary school students for the relevant subgroups:

**Investigation of group differences of various Parenting Styles based on gender, type of management of school and locale of school**

Differences between male and female, rural and urban, Govt., aided and unaided were investigated for the independent variable Parenting Style-Authoritative, Authoritarian and Permissive. They are presented in tables below.

Table 14

*Data and result of the tests of significance of difference between the mean scores of Authoritative Parenting Style based on gender, type of management and locale of school*

| | Category | | N | Mean | S.D | t-value | Level of Significance |
|---|---|---|---|---|---|---|---|
| Authoritative | Gender | Male | 544 | 41.57 | 5.42 | 3.52 | .01 |
| | | Female | 460 | 42.73 | 5.01 | | |
| | Type of management | Govt. | 405 | 42.19 | 4.96 | .06 | NS |
| | | Aided | 379 | 42.21 | 5.58 | | |
| | | Govt. | 405 | 42.19 | 4.96 | 1.03 | NS |
| | | Unaided | 220 | 41.74 | 5.27 | | |
| | | Aided | 379 | 42.21 | 5.58 | 1.03 | NS |
| | | Unaided | 220 | 41.74 | 5.27 | | |
| | Locale | Rural | 584 | 42.03 | 5.25 | -.47 | NS |
| | | Urban | 420 | 42.19 | 5.29 | | |

From Table 14, it was revealed that the t-value obtained for male and female Secondary School Students for Authoritative Parenting Style is 3.52, which is significant at .01 level since the value is greater than the tabled value 2.58. It was also revealed that there was no significant difference in the mean scores of Authoritative Parenting Style between subgroups government, aided; government, unaided, aided, unaided students; rural, urban sample of Secondary School Students as their t-values are less than 1.96, the table value at .05 level of significance.

Table 15

*Data and result of the test of significance of difference between the mean scores of Authoritarian Parenting Style based on gender, type of management and locale of school*

| | Category | | N | Mean | S.D | t-value | Level of Significance |
|---|---|---|---|---|---|---|---|
| Authoritarian | Gender | Male | 544 | 32.82 | 6.61 | 5.41 | .01 |
| | | Female | 460 | 35.13 | 6.84 | | |
| | Type of management | Govt. | 405 | 35.08 | 6.32 | 3.34 | .01 |
| | | Aided | 379 | 33.48 | 6.99 | | |
| | | Govt. | 405 | 35.08 | 6.32 | 4.79 | .01 |
| | | Unaided | 220 | 32.36 | 6.99 | | |
| | | Aided | 379 | 33.48 | 6.99 | 1.89 | NS |
| | | Unaided | 220 | 32.36 | 6.98 | | |
| | Locale | Rural | 584 | 33.87 | 6.74 | .08 | NS |
| | | Urban | 420 | 33.90 | 6.90 | | |

From Table 15, it was indicated that there was significant difference in the mean scores of Authoritarian Parenting Style between the subgroups male and female, Govt. and aided, Govt. and unaided sample of Secondary School Students as the t-values were 5.41, 3.34 and 4.79 respectively, which is greater than 2.58, the tabled value at .01 level of significance. Also, it was found that there was no significant difference in the mean scores of Authoritarian Parenting Style between the subgroups aided and unaided and also between rural and urban sample of Secondary School Students as their t-values were less than 1.96, the tabled value at .05 level of significance.

Table 16

*Data and result of the test of significance of difference between the mean scores of Permissive Parenting Style based on gender, type of management and locale of school*

| | Category | | N | Mean | S.D | t-value | Level of Significance |
|---|---|---|---|---|---|---|---|
| Permissive Parenting Style | Gender | Male | 544 | 42.44 | 7.08 | 4.55 | .01 |
| | | Female | 460 | 44.41 | 6.64 | | |
| | Type of management | Govt. | 405 | 42.28 | 7.61 | 2.01 | .05 |
| | | Aided | 379 | 43.32 | 7.01 | | |
| | | Govt. | 405 | 42.28 | 7.61 | 6.19 | .01 |
| | | Unaided | 220 | 45.35 | 4.79 | | |
| | | Aided | 379 | 43.32 | 7.01 | 4.23 | .01 |
| | | Unaided | 220 | 45.35 | 4.79 | | |
| | Locale | Rural | 584 | 42.96 | 7.19 | 2.13 | .05 |
| | | Urban | 420 | 43.89 | 6.54 | | |

Table 16 illustrates that the t-value obtained for Permissive Parenting Style between the subgroups male, female ; government, aided; government, unaided and aided, unaided students are 4.55, 6.19 and 4.23 respectively, which is significant at .01 level as their t-values are greater than the tabled value 2.58. Also, it was found that there was significant difference observed between Govt. and aided Secondary School Students, rural and urban Secondary School Students in perceiving Permissive Parenting Style as their t- values are greater than 1.96, the tabled value at .05 level of significance.

Table 17

*Data and result of the test of significance of difference between the mean scores of Classroom Climate based on gender, type of management and locale of school*

|  | Category |  | N | Mean | S.D | t-value | Level of Significance |
|---|---|---|---|---|---|---|---|
| Classroom Climate | Gender | Male | 544 | 117.05 | 14.24 | 7.83 | .01 |
|  |  | Female | 460 | 123.85 | 13.24 |  |  |
|  | Type of management | Govt | 405 | 120.04 | 13.54 | 1.63 | NS |
|  |  | Aided | 379 | 118.35 | 15.36 |  |  |
|  |  | Govt | 405 | 120.04 | 13.54 | 3.21 | .01 |
|  |  | Unaided | 220 | 123.52 | 12.64 |  |  |
|  |  | Aided | 379 | 118.35 | 15.36 | 4.45 | .01 |
|  |  | Unaided | 220 | 123.52 | 12.64 |  |  |
|  | Locale | Rural | 584 | 120.62 | 13.65 | 1.17 | NS |
|  |  | Urban | 420 | 119.54 | 14.91 |  |  |

From Table 17, it was revealed that there was significant difference in the mean scores of Classroom Climate between the subgroups male, female; Govt., unaided and aided, unaided Secondary School Students as the t-values obtained are 7.83, 3.21 and 4.45 respectively, which is greater than the tabled value 2.58 at .01 level of significance. It was also found that there was no significant difference observed in the mean scores of Classroom Climate between the sub groups Govt., aided and rural, urban sample of Secondary School Students, as their t- values 1.63 and 1.17 were less than 1.96, the tabled value at .05 level of significance.

Table 18

*Data and result of the test of significance of difference between the mean scores of Academic Delay of Gratification based on gender, type of management and locale of school*

|  | Category |  | N | Mean | S.D | t-value | Level of Significance |
|---|---|---|---|---|---|---|---|
| Academic Delay of Gratification | Gender | Male | 544 | 55.83 | 10.69 | 13.33 | .01 |
|  |  | Female | 460 | 64.12 | 9.01 |  |  |
|  | Type of management | Govt | 405 | 60.05 | 10.62 | 1.36 | NS |
|  |  | Aided | 379 | 59.04 | 10.25 |  |  |
|  |  | Govt | 405 | 60.05 | 10.62 | .22 | NS |
|  |  | Unaided | 220 | 59.84 | 11.88 |  |  |
|  |  | Aided | 379 | 59.04 | 10.25 | .83 | NS |
|  |  | Unaided | 220 | 59.84 | 11.88 |  |  |
|  | Locale | Rural | 584 | 60.87 | 10.48 | 4.32 | 0.01 |
|  |  | Urban | 420 | 57.90 | 10.95 |  |  |

From Table 18, it was found that the t-values obtained for Academic Delay of Gratification between the subgroups male, female secondary school students and rural, urban secondary school students are 13.33 and 4.32 respectively, which is significant at .01 level as the t-values are greater than the tabled value 2.58. There is no significant difference observed in the mean scores of Academic Delay of Gratification between the subgroups Govt., aided; Govt., unaided; aided, unaided Secondary School Students as their t-values 1.36, .22, .83 respectively are less than 1.96, the tabled value at .05 level of significance.

Table 19

*Data and result of the test of significance of difference between the mean scores of Self-regulated Learning in Physics based on gender, type of management and locale of school*

|  | Category |  | N | Mean | S.D | t-value | Level of Significance |
|---|---|---|---|---|---|---|---|
| Self-regulated Learning in Physics | Gender | Male | 544 | 90.41 | 11.41 | 2.34 | .05 |
|  |  | Female | 460 | 92.04 | 10.65 |  |  |
|  | Type of management | Govt. | 405 | 89.18 | 13.06 | 5.09 | .01 |
|  |  | Aided | 379 | 93.28 | 9.32 |  |  |
|  |  | Govt. | 405 | 89.18 | 13.06 | 2.19 | .05 |
|  |  | Unaided | 220 | 91.15 | 9.19 |  |  |
|  |  | Aided | 379 | 93.28 | 9.31 | 2.72 | .01 |
|  |  | Unaided | 220 | 91.15 | 9.19 |  |  |
|  | Locale | Rural | 584 | 91.34 | 11.60 | .61 | NS |
|  |  | Urban | 420 | 90.91 | 10.36 |  |  |

Table 19 illustrates the t-values obtained for male and female, Govt. and unaided sample of Secondary School Students for the variable Self-regulated Learning in Physics are 2.34 and 2.19 respectively, which is significant at .05 level as the t-values are greater than the tabled value 1.96. The t-values obtained for Govt. Vs aided, aided Vs unaided sample of Secondary School Students for Self-regulated Learning in Physics are 5.09 and 2.72 respectively, which is greater than 2.58, the tabled value at .01 level of significance. But, there is no significant difference observed in the mean scores of Self-regulated Learning in Physics between rural and urban Secondary School Students as their t-value is .61, which is less than 1.96, the tabled value at .05 level of significance.

**Analysis of Variance**

Third, fourth, fifth, sixth and seventh objectives analysis results of total sample, male sample, female sample, government school sample, aided school sample, unaided school sample, rural and urban school sample were given below in separate tables:

**Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning in Physics of Secondary School Students for total sample**

To find out the influence of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for the total sample and relevant sub groups viz. gender, type of management of the school and locale of the school. Influence of independent variables on dependent variable for total sample was calculated first and their interaction effect on the dependent variable was also found out. The data were analyzed with the help of 3 way ANOVA and the results are presented in Table 20

Table 20

*Summary of 3way ANOVA with 3X3X3 factorial design of Self-regulated Learning in Physics for total sample*

| Source of Variance | df | SS | MSS | F-value | Level of Significance |
|---|---|---|---|---|---|
| Parenting Style | 2 | 1081.24 | 540.62 | 5.05 | .01 |
| Classroom Climate | 2 | 652.99 | 326.49 | 3.05 | .05 |
| Academic Delay of Gratification | 2 | 2859.45 | 1429.72 | 13.35 | .01 |
| Parenting Style X Classroom Climate | 4 | 600.47 | 150.12 | 1.40 | NS |
| Parenting Style X Academic Delay of Gratification | 4 | 1323.71 | 330.93 | 3.09 | .01 |
| Classroom Climate X Academic Delay of Gratification | 4 | 416.24 | 104.06 | .97 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | 7 | 1113.28 | 159.04 | 1.49 | NS |
| Error | 978 | 104749.96 | 107.11 | | |

**Main Effects**

**Influence of Parenting Style on Self-regulated Learning in Physics for total sample**

From Table 20, it was evident that 'F' value for Parenting Style is 5.05, which is significant at .01 level with df = 2/978.It means that mean scores of Self-regulated Learning in Physics of students belonging to Authoritative, Authoritarian

and Permissive Parenting Style differ significantly. But, Post hoc analysis revealed that there was no significant difference between the mean scores of Self-regulated Learning in Physics of Secondary School Students belonging to Authoritative, Authoritarian and Permissive Parenting Styles.

**Influence of Classroom Climate on Self-regulated Learning in Physics for total sample**

From Table 20, it was clear that the 'F' value for Classroom Climate is 3.05, which is significant at .05 level with df =2/978. It means that mean scores of Self-regulated Learning in Physics of students belonging to high, moderate and low perceived classroom climate differ significantly. So there is significant influence of Classroom Climate on Self-regulated Learning in Physics for total sample. In order to know which group's mean score of Self-regulated Learning is significantly higher, the relevant data were further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 21

Table 21

*Summary of Sheffe's Test of Post hoc comparison with matrix of ordered mean of Classroom Climate on Self-regulated Learning in Physics for total sample*

| Levels of Classroom Climate | | High | Moderate | Low |
|---|---|---|---|---|
| | Mean Scores | 96.44 | 90.98 | 86.66 |
| High | 96.44 | .00 | 5.46* | 9.79* |
| Moderate | 90.98 | | .00 | 4.33* |
| Low | 86.66 | | | .00 |

*indicates significant at .05 level

Table 21 shows that the absolute difference between mean scores of high perceived classroom climate and moderate perceived classroom climate group is 5.46, which is significant at .05 level(F= 36.12,$F^1$  at .05 level is 5.98).The difference between mean scores of high perceived classroom climate and low perceived classroom climate is 9.79, which is significant at .05 level (F=71.23,$F^1$ at .05 level is 5.98).The difference between mean scores of moderate perceived classroom climate and low perceived classroom climate is 4.33, which is significant at .05 level(F=22.85, $F^1$ at .05 level is 5.98). From Table 20, the obtained F value for Classroom Climate is 3.05, which is significant at .05 level. Post hoc test which revealed that this significant F ratio is due to significant difference between high perceived classroom climate and moderate classroom climate, high perceived classroom climate and low perceived classroom climate and moderate perceived classroom climate and low perceived classroom climate. It may therefore be concluded that students perceiving high classroom climate group are found to have significantly higher Self-regulated Learning in Physics than those of moderate and low perceived classroom climate groups. Moderate perceived classroom climate group is significantly higher than low perceived classroom climate group.

**Influence of Academic Delay of Gratification on Self-regulated Learning in Physics for total sample**

From Table 20, it was obvious that the 'F' value for Academic Delay of Gratification is 13.35, which is significant at .01 level with df = 2/978. It means that mean scores of Self-regulated Learning in Physics of students belonging to high academic delay of gratification group, average academic delay of gratification group and low academic delay of gratification group differ significantly. So, there is significant influence of Academic Delay of Gratification on Self-regulated Learning

in Physics for total sample. In order to know which group's mean score of Self-regulated Learning in Physics is significantly higher, the data were further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 22.

Table 22

*Summary of Sheffe's Test of Post hoc Comparison with matrix of ordered mean of Academic Delay of Gratification on Self-regulated Learning in Physics for total sample*

| Levels of Academic Delay of Gratification | | High | Average | Low |
|---|---|---|---|---|
| | Mean Scores | 97.87 | 91.05 | 85.24 |
| High | 97.87 | .00 | 6.82* | 12.63* |
| Average | 91.05 | | .00 | 5.81* |
| Low | 85.24 | | | .00 |

*indicates significant at .05 level

Table 22 shows that the mean scores of high, average and low academic delay of gratification groups are not homogenous. The absolute difference between mean scores of high academic delay of gratification group and average academic delay of gratification group is 6.82, which is significant at .05 level(F= 56.10, $F^1$ at .05 level is 5.98).The absolute difference between mean scores of high and low academic delay of gratification group is 12.63, which is significant at .05 level (F=120.56, $F^1$ at .05 level is 5.98).The difference between mean scores of average and low academic delay of gratification group is 5.81, which is significant at .05 level.(F=42.64. $F^1$ at .05 level is 5.98). From Table 20, the obtained F value for Academic Delay of Gratification is 13.35, which is significant at .01 level. Post hoc test revealed that this significant F ratio is due to significant mean difference

between high academic delay of gratication and average academic delay of gratification, high and low academic delay of gratification, average and low academic delay of gratification. It may therefore be concluded that students with high academic delay of gratification group are found to have significantly higher Self-regulated Learning ability than those with average and low academic delay of gratification groups. Average academic delay of gratification group is significantly higher than low academic delay of gratification group.

**First Order Interaction Effects**

**Influence of Interaction between Parenting Style and Classroom Climate on Self-regulated Learning in Physics for total sample**

From Table 20, the F-value for interaction between Parenting Style and Classroom Climate is 1.40, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving high, moderate and low classroom climate belonging to Authoritative, Authoritarian and Permissive Parenting Style groups do not differ significantly. So there is no significant influence of Parenting Style and Classroom Climate on Self-regulated Learning in Physics for total sample. It may be concluded that Self-regulated Learning in Physics is found to be independent of the interaction between Parenting Style and Classroom Climate for total sample.

**Influence of Interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for total sample**

From Table 20, the F-value for interaction between Parenting Style and Academic Delay of Gratification is 3.09, which is significant at .01 level with df=4/978. It shows that the mean scores of Self-regulated Learning in Physics of

Secondary School Students perceiving Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, average and low academic delay of gratification groups do differ significantly. So there is significant influence of Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for total sample. It may be concluded that Self-regulated Learning in Physics of students is influenced by the interaction between Parenting Style of parents and Academic Delay of Gratification of Secondary School Students. In order to know the trend of influence of interaction between Parenting Style and Academic Delay of Gratification Figure 17 has been plotted.
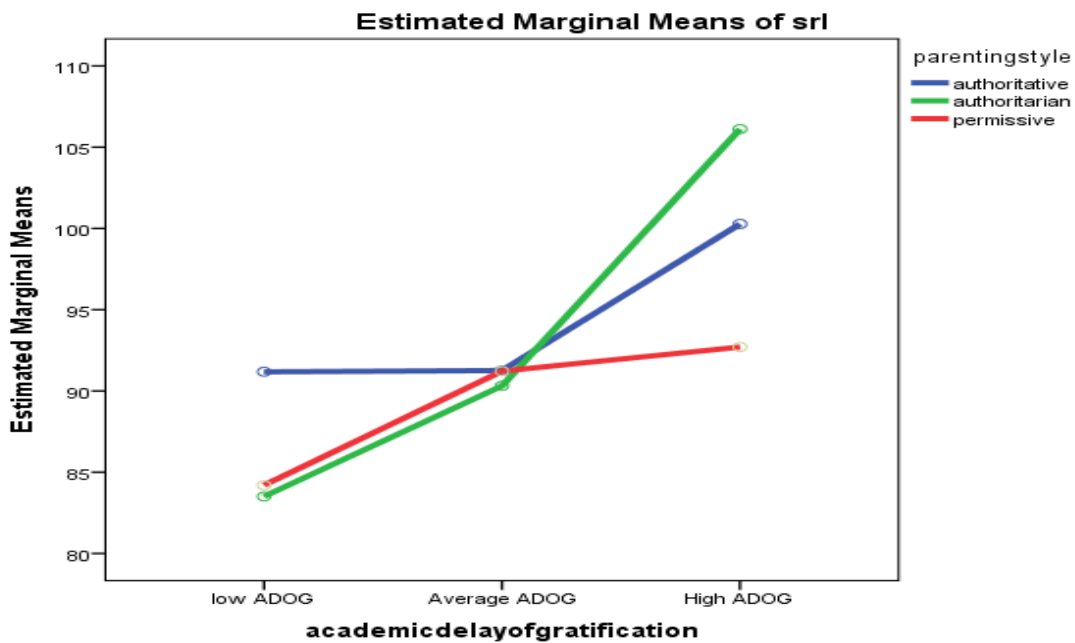


*Figure 17* Profile plot of interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for total sample

Figure 17 shows that the mean scores in Self-regulated Learning in Physics of high academic delay of gratification group belonging to Authoritarian Parenting Style show a higher mean score than Authoritative and Permissive Parenting Style

groups. The mean scores in Self-regulated Learning in Physics of average Academic Delay of Gratification group belonging to Authoritative, Authoritarian and Permissive Parenting Style groups show more or less a similar mean score. The mean scores in Self-regulated Learning in Physics belonging to Authoritarian and Permissive Parenting Style groups of low academic delay of gratification group shows a lower mean score in Self-regulated Learning in Physics compared with Authoritative Parenting Style. From the profile plot, it is clear that Self-regulated Learning in Physics is influenced by the interaction between Academic Delay of Gratification and Parenting Style of Secondary School Students.

**Influence of Interaction between Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for total sample**

From Table 20, it was evident that the F-value for interaction between Classroom Climate and Academic Delay of Gratification is .97, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of Secondary School Students perceiving high, moderate and low classroom climate belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for total sample. Hence, it may be concluded that Self-regulated Learning in Physics of students is independent of the interaction between Classroom Climate and Academic Delay of Gratification for total sample of students.

**Second Order Interaction Effects**

**Influence of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for total sample**

From Table 20, it was obvious that the F-value for interaction between Parenting Style, Classroom Climate and Academic Delay of Gratification is 1.49, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of Authoritative, Authoritarian and Permissive Parenting Styles seeking Secondary School Students belonging to high, moderate and low perceived classroom climate and high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for total sample of Secondary School Students.

**Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning in Physics of Secondary School Students for male sample**

Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning in Physics of Secondary School Students for male sample was calculated. The data are analyzed with the help of 3way ANOVA and the results are presented in Table 23

Table 23

*Summary of 3 way ANOVA with 3X3X3 factorial design of Self-regulated Learning in Physics for male sample*

| Source of Variance | Df | SS | MSS | F-value | Level of Significance |
|---|---|---|---|---|---|
| Parenting Style | 2 | 115.55 | 57.77 | .49 | NS |
| Classroom Climate | 2 | 690.57 | 345.28 | 2.97 | .05 |
| Academic Delay of Gratification | 2 | 550.03 | 275.02 | 2.37 | NS |
| Parenting Style X Classroom Climate | 4 | 433.96 | 108.49 | .93 | NS |
| Parenting Style X Academic Delay of Gratification | 4 | 705.33 | 176.33 | 1.52 | NS |
| Classroom Climate X Academic Delay of Gratification | 4 | 638.82 | 159.71 | 1.38 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | 5 | 1248.89 | 249.78 | 2.15 | NS |
| Error | 520 | 60413.83 | 116.18 | | |

**Main Effects**

**Influence of Parenting Style on Self-regulated Learning for Male Sample**

From Table 23, it was evident that 'F' value for Parenting Style is .49, which is not significant. It means that mean scores of Self-regulated Learning in Physics of Secondary School Students belonging to Authoritative, Authoritarian and Permissive Parenting Style do not differ significantly. So there is no significant

influence of Parenting Style on Self-regulated Learning for male sample. Thus, the hypothesis namely there is significant effect of Parenting Style on Self-regulated Learning for male sample is rejected.

**Influence of Classroom Climate on Self-regulated Learning in Physics for Male Sample**

From Table 23, it was clear that the 'F' value for Classroom Climate is 2.97, which is significant at .05 level with df =2/520. It means that mean scores of Self-regulated Learning in Physics of students belonging to high, moderate and low perceived classroom climate differ significantly. So there is significant influence of Classroom Climate on Self-regulated Learning in Physics for male sample. In order to know which group's mean score of Self-regulated Learning is significantly higher, the relevant data are further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 24.

Table 24

*Summary of Sheffe's Test of Post hoc Comparison with Matrix of Ordered Mean of Classroom Climate on Self-regulated Learning for Male Sample*

| Levels of Classroom Climate | | High | Moderate | Low |
|---|---|---|---|---|
| | Mean Scores | 95.94 | 90.82 | 86.53 |
| High | 95.94 | .00 | 5.13* | 9.41* |
| Moderate | 90.82 | | .00 | 4.28* |
| Low | 86.53 | | | .00 |

*indicates significant at .05 level

Table 24 shows that the absolute difference between mean scores of high perceived classroom climate and moderate perceived classroom climate group is

5.13, which is significant at .05 level (F=10.69,$F^1$ at .05 level is 5.98).The difference between mean scores of high perceived classroom climate and low perceived classroom climate is 9.41, which is significant at .05 level (F=27.98,$F^1$ at .05 level is 5.98).The difference between mean scores of moderate perceived classroom climate and low perceived classroom climate is 4.28, which is significant at .05 level(F=13.84, $F^1$ at .05 level is 5.98). From Table 23, the obtained F value for Classroom Climate is 2.97, which is significant at .05 level. Post hoc test revealed that this significant F ratio is due to significant difference between high perceived classroom climate and moderate classroom climate, high perceived classroom climate and low perceived classroom climate and moderate perceived classroom climate and low perceived classroom climate. It may therefore be concluded that students perceiving high classroom climate group are found to have significantly higher Self-regulated Learning ability than those of moderate and low perceived classroom climate groups. Moderate perceived classroom climate group is significantly higher than low perceived classroom climate group.

**Influence of Academic Delay of Gratification on Self-regulated Learning in Physics for male sample**

From Table 23, it was obvious that the 'F' value for Academic Delay of Gratification is 2.37, which is not significant. It means that mean scores of Self-regulated Learning of students belonging to high academic delay of gratification group, average academic delay of gratification group and low academic delay of gratification group do not differ significantly. So, there is no influence of Academic Delay of Gratification on Self-regulated Learning in Physics for male sample. Thus, the hypothesis viz. there is significant effect of Academic Delay of Gratification on Self-regulated Learning in Physics for male sample was rejected.

**First Order Interaction Effects**

**Influence of Interaction between Parenting Style and Classroom Climate on Self-regulated Learning in Physics for male sample**

From Table 23, the F-value for interaction between Parenting Style and Classroom Climate was .93 which was not significant. It shows that the mean scores of Self-regulated Learning in Physics of Secondary School Students perceiving high, moderate and low classroom climate belonging to Authoritative, Authoritarian and Permissive Parenting Style groups do not differ significantly. So there is no significant influence of Parenting Style and Classroom Climate on Self-regulated Learning in Physics for male sample. It may be concluded that Self-regulated Learning in Physics is found to be independent of the interaction between Parenting Style and Classroom Climate for male sample.

**Influence of Interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for male sample**

From Table 23, the F-value for interaction between Parenting Style and Academic Delay of Gratification is 1.52, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of Secondary School Students perceiving authoritative, authoritarian and permissive Parenting Styles belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for male sample. It may be concluded that Self-regulated Learning in Physics is not influenced by the interaction between Parenting Style and Academic Delay of Gratification of students for the male sample.

**Influence of interaction between Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for male sample**

From Table 23, the F-value for interaction between Classroom Climate and Academic Delay of Gratification is 1.38, which is not significant. It shows that the mean scores of Self-regulated Learning of Secondary School Students perceiving high, moderate and low classroom climate belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for male sample. It may be concluded that Self-regulated Learning in Physics of Secondary School Students is independent of the interaction between Classroom Climate and Academic Delay of Gratification for male sample.

<div align="center">

**Second Order Interaction Effects**

</div>

**Influence of Interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for male Sample**

From Table 23, the F-value for interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification is 2.15, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, moderate and low perceived classroom climate and high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for male sample of Secondary Schools Students.

**Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning of Secondary School Students for female sample**

To find out the Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning of Secondary School Students for female sample, data are analyzed with the help of 3Way ANOVA and the results are presented in Table 25

Table 25

*Summary of 3 Way ANOVA with 3X3X3 factorial design of Self-regulated Learning in Physics for female sample*

| Source of Variance | Df | SS | MSS | F-value | Level of Significance |
|---|---|---|---|---|---|
| Parenting Style | 2 | 215.22 | 107.61 | 1.12 | NS |
| Classroom Climate | 2 | 973.00 | 486.50 | 5.05 | .01 |
| Academic Delay of Gratification | 2 | 1720.61 | 860.30 | 8.92 | .01 |
| Parenting Style X Classroom Climate | 4 | 184.06 | 46.02 | .48 | NS |
| Parenting Style X Academic Delay of Gratification | 4 | 1264.67 | 316.17 | 3.28 | .01 |
| Classroom Climate X Academic Delay of Gratification | 4 | 197.52 | 49.38 | .51 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | 5 | 619.18 | 123.84 | 1.29 | NS |
| Error | 436 | 42030.33 | 96.40 | | |

**Main Effects**

**Influence of Parenting Style on Self-regulated Learning for Female Sample**

From Table 25, it was evident that 'F' value for Parenting Style is 1.12, which is not significant. It means that mean scores of Self-regulated Learning in Physics of Secondary School Students belonging to Authoritative, Authoritarian and Permissive Parenting Style do not differ significantly. So there is no significant influence of Parenting Style on Self-regulated Learning in Physics for female sample.

**Influence of Classroom Climate on Self-regulated Learning in Physics for female sample**

From Table 25, it was clear that the 'F' value for Classroom Climate is 5.05, which is significant at .01 level with df =2/436. It means that mean scores of Self-regulated Learning of Secondary School Students belonging to high, moderate and low perceived classroom climate differ significantly. So there is significant influence of Classroom Climate on Self-regulated Learning for female sample. In order to know which group's mean score of Self-regulated Learning in Physics is significantly higher, the relevant data are further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 26.

Table  26

*Summary of Sheffe's Test of Post hoc Comparison with matrix of ordered mean of Classroom Climate on Self-regulated Learning in Physics for female sample*

| Levels of Classroom Climate | | High | Moderate | Low |
|---|---|---|---|---|
| | Mean Scores | 96.70 | 91.18 | 86.98 |
| High | 96.70 | .00 | 5.51* | 9.72* |
| Moderate | 91.18 | | .00 | 4.21* |
| Low | 86.98 | | | .00 |

*indicates significant at .05 level

Table 26 shows that the absolute difference between mean scores of high perceived classroom climate and moderate perceived classroom climate group is 5.51, which is significant at .05 level(F=24.60,$F^1$ at .05 level is 5.98).The difference between mean scores of high perceived classroom climate and low perceived classroom climate is 9.72, which is significant at .05 level (F=30.80, $F^1$ at .05level is 5.98).The difference between mean scores of moderate perceived classroom climate and low perceived classroom climate is 4.21, which is significant at .05 level(F=7.18, $F^1$ at .05 level is 5.98). From Table 25, the obtained F value for Classroom Climate is 5.05, which is significant at .05 level. Post hoc test revealed that this significant F ratio is due to significant difference between high perceived classroom climate and moderate classroom climate, high perceived classroom climate and low perceived classroom climate and moderate perceived classroom climate and low perceived classroom climate. It may therefore be concluded that students perceiving high classroom climate group were found to have significantly higher Self-regulated Learning ability in Physics than those of moderate and low

perceived classroom climate groups. Moderate perceived classroom climate group is significantly higher than low perceived classroom climate group.

**Influence of Academic Delay of Gratification on Self-regulated Learning in Physics for female sample**

From Table 25, it was obvious that the 'F' value for Academic Delay of Gratification is 8.92, which is significant at .01 level with df = 2/436. It means that mean scores of Self-regulated Learning in Physics of Secondary School Students belonging to high academic delay of gratification group, average academic delay of gratification group and low academic delay of gratification group differ significantly. So, there is significant influence of Academic Delay of Gratification on Self-regulated Learning in Physics for female sample. In order to know which group's mean score of Self-regulated Learning in Physics is significantly higher, the data were further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 27.

Table 27

*Summary of Sheffe's Test of Post hoc Comparison with matrix of ordered mean of Academic Delay of Gratification on Self-regulated Learning in Physics for female sample*

| Levels of Academic Delay of Gratification | | High | Average | Low |
|---|---|---|---|---|
| | Mean Scores | 97.32 | 90.97 | 82.44 |
| High | 97.32 | .00 | 6.36* | 14.88* |
| Average | 90.97 | | .00 | 8.52* |
| Low | 82.44 | | | .00 |

*indicates significant at .05 level

Table 27 shows that the mean scores of high, average and low academic delay of gratification groups are not homogenous. The absolute difference between mean scores of high academic delay of gratification group and average academic delay of gratification group is 6.36 which is significant at .05 level(F=35.28, $F^1$ at .05 level is 5.98).The absolute difference between mean scores of high and low academic delay of gratification group is 14.88, which is significant at .05 level (F=50.27, $F^1$ at .05 level is 5.98).The difference between mean scores of average and low academic delay of gratification group is 8.52, which is significant at .05 level.(F=18.66, $F^1$ at .05 level is 5.98). From Table 25, the obtained F value for Academic Delay of Gratification is 8.92, which is significant at 0.01 level. Post hoc test revealed that this significant F ratio is due to significant mean difference between high academic delay of gratification and average academic delay of gratification, high and low academic delay of gratification, average and low academic delay of gratification. It may therefore be concluded that students with high academic delay of gratification group are found to have significantly higher Self-regulated Learning ability in Physics than those with average and low academic delay of gratification groups. Average academic delay of gratification group is significantly higher than low academic delay of gratification group.

**First Order Interaction Effects**

**Influence of interaction between Parenting Style and Classroom Climate on Self-regulated Learning in Physics for female sample**

From Table 25, it was revealed that the F-value for interaction between Parenting Style and Classroom Climate is .48 which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving high, moderate and low classroom climate belonging to authoritative, authoritarian and

permissive Parenting Style groups do not differ significantly. So there is no significant influence of Parenting Style and Classroom Climate on Self-regulated Learning in Physics for female students. It may be concluded that Self-regulated Learning is found to be independent of interaction between Parenting Style and Classroom Climate for female sample.

**Influence of interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for female sample**

From Table 25, it was found that the F-value for interaction between Parenting Style and Academic Delay of Gratification is 3.28 which is significant at .01 level with df=4/436. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, average and low academic delay of gratification groups do differ significantly. So there is significant influence of Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for female students. It may be concluded that Self-regulated Learning in Physics of students was influenced by the interaction between Parenting Style and Academic Delay of Gratification of students. In order to know the trend of influence of interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for female students, Figure 18 has been plotted.
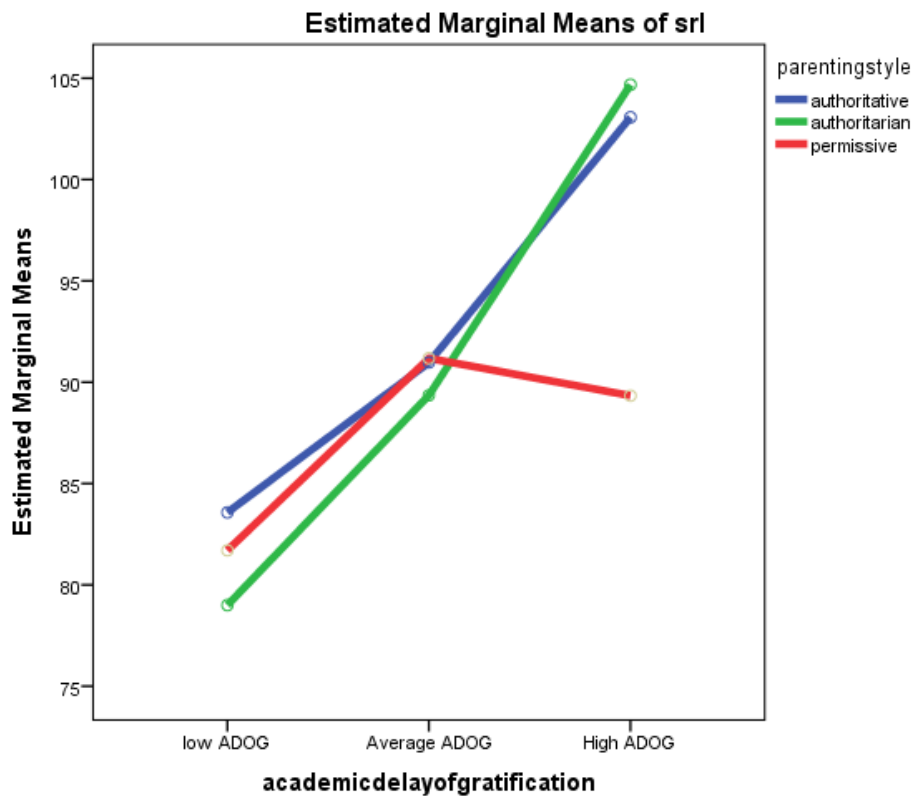
*Figure 18* Profile Plot of Interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning for female sample

Figure 18 shows that the mean scores in Self-regulated Learning of high academic delay of gratification category belonging to permissive Parenting Style group shows a lower mean score than authoritative and authoritarian groups. Also, it is found that for high academic delay of gratification group, authoritative Parenting Style group lies in between Authoritarian and Permissive Parenting Style group. The Authoritative and Permissive Parenting Style groups belonging to average academic delay of gratification group shows similar mean scores in Self-regulated Learning when compared with the authoritarian parenting groups. In the case of low academic delay of gratification group, mean scores in Self-regulated Learning belonging to Authoritative and Permissive Parenting Style groups show a higher mean score

compared with Authoritarian parenting groups. From the plot, it is clear that Self-regulated Learning in Physics is influenced by the interaction between Academic Delay of Gratification and Parenting Style of Secondary School Students.

**Influence of interaction between Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for female sample**

From Table 25, it was found that the F-value for interaction between Classroom Climate and Academic Delay of Gratification is .51, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of Secondary School Students perceiving high, moderate and low classroom climate belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for female students. Therefore, it may be concluded that Self-regulated Learning in Physics of students is independent of the interaction between Classroom Climate and Academic Delay of Gratification for female students.

**Second Order Interaction Effects**

**Influence of Interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for female sample**

From Table 25, it was noted that the F-value for interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification is 1.29, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of Secondary School Students of Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, moderate and low perceived classroom climate and high,

average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for female sample of Secondary School Students.

**Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning in Physics of Secondary School Students for Government school sample**

Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning in Physics of Secondary School Students for government school sample was calculated. The data are analyzed with the help of 3 Way ANOVA and the results are presented in Table 28.

Table 28

*Summary of 3Way ANOVA with 3X3X3 factorial design of Self-regulated Learning in Physics for government school sample*

| Source of Variance | df | SS | MSS | F-value | Level of Significance |
|---|---|---|---|---|---|
| Parenting Style | 2 | 1022.76 | 511.38 | 3.38 | .05 |
| Classroom Climate | 2 | 995.89 | 497.95 | 3.29 | .05 |
| Academic Delay of Gratification | 2 | 2083.34 | 1041.67 | 6.89 | .01 |
| Parenting Style X Classroom Climate | 4 | 260.33 | 65.08 | .43 | NS |
| Parenting Style X Academic Delay of Gratification | 4 | 1394.48 | 348.62 | 2.30 | NS |
| Classroom Climate X Academic Delay of Gratification | 4 | 373.218 | 93.31 | .62 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | 7 | 396.19 | 56.59 | .37 | NS |
| Error | 379 | 57342.75 | | | |

**Main Effects**

**Influence of Parenting Style on Self-regulated Learning in Physics for government school sample**

From Table 28, it was evident that 'F' value for Parenting Style is 3.38, which is significant at .05 level with df = 2/379. It means that mean scores of Self-regulated Learning in Physics of students belonging to Authoritative, Authoritarian and Permissive Parenting Style differ significantly. But, post hoc analysis revealed

that there is no significant difference between the mean scores of Self-regulated Learning in Physics of students belonging to Authoritative, Authoritarian and Permissive Parenting Styles.

**Influence of Classroom Climate on Self-regulated Learning in Physics for government school sample**

From Table 28, it was clear that the 'F' value for Classroom Climate is 3.29, which is significant at .05 level with df =2/379.It means that mean scores of Self-regulated Learning in Physics of Secondary School Students belonging to high, moderate and low perceived classroom climate differ significantly. So there is significant influence of Classroom Climate on Self-regulated Learning in Physics for government school sample. In order to know which group's mean score of Self-regulated Learning is significantly higher, the relevant data are further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 29.

Table 29

*Summary of Sheffe's Test of Post hoc Comparison with matrix of ordered mean of Classroom Climate on Self-regulated Learning in Physics for government school sample*

| Levels of Classroom Climate | | High | Moderate | Low |
|---|---|---|---|---|
| | Mean Scores | 96.92 | 88.55 | 85.66 |
| High | 96.92 | .00 | 8.38* | 11.26* |
| Moderate | 88.55 | | .00 | 2.89 |
| Low | 85.66 | | | .00 |

*indicates significant at .05 level

Table 29 shows that the absolute difference between mean scores of high perceived classroom climate and moderate perceived classroom climate group is 8.38, which is significant at .05 level (F=20.52, $F^1$ at .05 level is 5.98).The difference between mean scores of high perceived classroom climate and low perceived classroom climate is 11.26, which is significant at .05 level (F=23.72,$F^1$ at .05 level is 5.98). The difference between mean scores of moderate perceived classroom climate and low perceived classroom climate is 2.89, which is not significant at .05 level (F=2.82, $F^1$ at .05 level is 5.98). From Table 28, the obtained F value for Classroom Climate is 3.29, which is significant at .05 level. Post hoc test revealed that this significant F ratio is due to significant difference between high perceived classroom climate and moderate classroom climate, high perceived classroom climate and low perceived classroom climate and moderate perceived classroom climate and low perceived classroom climate. It may therefore be concluded that students perceiving high classroom climate group are found to have significantly higher Self-regulated Learning ability in Physics than those of moderate and low perceived classroom climate groups. Moderate perceived classroom climate group is significantly higher than low perceived classroom climate group.

**Influence of Academic Delay of Gratification on Self-regulated Learning in Physics for government school sample**

From Table 28, it was obvious that the 'F' value for Academic Delay of Gratification is 6.89, which is significant at .01 level with df = 2/379. It means that mean scores of Self-regulated Learning in Physics of students belonging to high, average and low academic delay of gratification group differ significantly. So, there is significant influence of Academic Delay of Gratification on Self-regulated

Learning in Physics for government school sample. In order to know which group's mean score of Self-regulated Learning in Physics is significantly higher, the data are further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 30.

Table 30

*Summary of Sheffe's Test of Post hoc Comparison with matrix of ordered mean of Academic Delay of Gratification on Self-regulated Learning in Physics for government school sample*

| Levels of Academic Delay of Gratification | | High | Average | Low |
|---|---|---|---|---|
| | Mean Scores | 96.85 | 88.70 | 83.30 |
| High | 96.85 | .00 | 8.15* | 13.55* |
| Average | 88.70 | | .00 | 5.39* |
| Low | 83.30 | | | .00 |

*indicates significant at .05 level

Table 30 shows that the mean scores of high, average and low academic delay of gratification groups are not homogenous. The absolute difference between mean scores of high academic delay of gratification group and average academic delay of gratification group is 8.15, which is significant at .05 level(F=22.18, $F^1$ at .05 level is 5.98).The absolute difference between mean scores of high and low academic delay of gratification group is 13.55, which is significant at .05 level (F=35.28, $F^1$ at .05 level is 5.98).The difference between mean scores of average and low academic delay of gratification group is 5.39, which is significant at .05 level.(F=9.06, $F^1$ at .05 level is 5.98). From Table 28, the obtained F value for Academic Delay of Gratification is 6.89, which is significant at .01 level. Post hoc

test revealed that this significant F ratio is due to significant mean difference between high academic delay of gratification and average academic delay of gratification, high and low academic delay of gratification, average and low academic delay of gratification. It may therefore be concluded that students with high academic delay of gratification group are found to have significantly higher Self-regulated Learning ability in Physics than those with average and low academic delay of gratification groups. Average academic delay of gratification group is significantly higher than low academic delay of gratification group.

**First Order Interaction Effects**

**Influence of Interaction between Parenting Style and Classroom Climate on Self-regulated Learning in Physics for government school sample**

From Table 28, it was found that the F-value for interaction between Parenting Style and Classroom Climate is .43, which is not significant. It shows that the mean scores of Self-regulated Learning of high, moderate and low classroom climate belonging to Authoritative, Authoritarian and Permissive Parenting Style groups do not differ significantly. So there is no significant influence of Parenting Style and Classroom Climate on Self-regulated Learning in Physics for government school students. It may be concluded that Self-regulated Learning in Physics is independent of the interaction between Parenting Style and Classroom Climate for government school sample.

**Influence of Interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for government school sample**

From Table 28, it was revealed that the F-value for interaction between Parenting Style and Academic Delay of Gratification is 2.30, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence on Self-regulated Learning. It may be concluded that Self-regulated Learning in Physics of students is not influenced by the interaction between Parenting Style and Academic Delay of Gratification of Students for government school sample.

**Influence of interaction between Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for government school sample**

From Table 28, it was found that the F-value for interaction between Classroom Climate and Academic Delay of Gratification is .62 which is not significant. It shows that the mean scores of Self-regulated Learning of students perceiving high, moderate and low classroom climate belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for government school sample. Therefore, it may be concluded that Self-regulated Learning in Physics of students was independent of the interaction between Classroom Climate and Academic Delay of Gratification of students for government sample.

**Second Order Interaction Effects**

**Influence of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for government school sample**

From Table 28, it was found that the F-value for interaction between Parenting Style, Classroom Climate and Academic Delay of Gratification is .37, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students, of Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, moderate and low perceived classroom climate and high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for government school sample of Secondary Schools Students.

**Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning in Physics of Secondary School Students for aided school sample**

Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning of Secondary School Students for aided school sample is calculated and the data are analyzed with the help 3 way ANOVA and the results are presented in Table 31

Table 31

*Summary of 3way ANOVA 3X3X3 factorial design of Self-regulated Learning in Physics for aided school sample*

| Source of Variance | df | SS | MSS | F-value | Level of Significance |
|---|---|---|---|---|---|
| Parenting Style | 2 | 134.37 | 67.18 | .97 | NS |
| Classroom Climate | 2 | 394.91 | 197.45 | 2.86 | NS |
| Academic Delay of Gratification | 2 | 506.15 | 253.07 | 3.67 | .05 |
| Parenting Style X Classroom Climate | 4 | 697.19 | 174.29 | 2.53 | .05 |
| Parenting Style X Academic Delay of Gratification | 4 | 43.89 | 10.97 | .16 | NS |
| Classroom Climate X Academic Delay of Gratification | 4 | 282.42 | 70.61 | 1.02 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | 6 | 1400.94 | 233.49 | 3.39 | .01 |
| Error | 354 | 24409.41 | 68.95 | | |

**Main Effects**

**Influence of Parenting Style on Self-regulated Learning for Aided School Sample**

From Table 31, it was evident that 'F' value for Parenting Style is .97, which is not significant. It means that mean scores of Self-regulated Learning of students

belonging to Authoritative, Authoritarian and Permissive Parenting Style do not differ significantly. So there is no significant influence of Parenting Style on Self-regulated Learning in Physics for aided school sample. Thus, the hypothesis viz. there is significant effect of Parenting Style on Self-regulated Learning in Physics for aided school sample is rejected.

**Influence of Classroom Climate on Self-regulated Learning in Physics for aided school sample**

From Table 31, it was clear that the 'F' value for Classroom Climate is 2.86, which is not significant. It means that mean scores of Self-regulated Learning of students belonging to high, moderate and low perceived classroom climate do not differ significantly. So there is no significant influence of Classroom Climate on Self-regulated Learning in Physics for aided school sample. Thus, the hypothesis viz. there is significant effect of Classroom Climate on Self-regulated Learning in Physics for aided school sample is rejected.

**Influence of Academic Delay of Gratification on Self-regulated Learning for Aided School Sample**

From Table 31, it was obvious that the 'F' value for Academic Delay of Gratification is 3.67, which is significant at .05 level with df = 2/354. It means that mean scores of Self-regulated Learning in Physics of students belonging to high academic delay of gratification group, average academic delay of gratification group and low academic delay of gratification group differ significantly. So, there is significant influence of Academic Delay of Gratification on Self-regulated Learning in Physics for aided school sample. In order to know which group's mean score of Self-regulated Learning is significantly higher, the data are further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 32.

Table 32

*Summary of Sheffe's Test of Post hoc Comparison with matrix of ordered mean of Academic Delay of Gratification on Self-regulated Learning in Physics for aided school sample*

| Levels of Academic Delay of Gratification | | High | Average | Low |
|---|---|---|---|---|
| | Mean Scores | 99.71 | 93.78 | 86.83 |
| High | 99.71 | .00 | 5.93* | 12.89* |
| Average | 93.78 | | .00 | 6.96* |
| Low | 86.83 | | | .00 |

*indicates significant at .05 level

Table 32 shows that the mean scores of high, average and low academic delay of gratification groups are not homogenous. The absolute difference between mean scores of high academic delay of gratification group and average academic delay of gratification group is 5.93 which was significant at .05 level(F=21.07, $F^1$ at .05 level is 5.98).The absolute difference between mean scores of high and low academic delay of gratification group is 12.89 which was significant at .05 level (F=69.22, $F^1$ at .05 level is 5.98).The difference between mean scores of average and low academic delay of gratification group is 6.96 which is significant at .05 level.(F= 38.56, $F^1$ at .05 level is 5.98). From Table 31, the obtained F value for Academic Delay of Gratification was 3.67, which was significant at .01 level. Post hoc test revealed that this significant F ratio is due to significant mean difference between high academic delay of gratification and average academic delay of gratification, high and low academic delay of gratification, average and low academic delay of gratification. It may therefore be concluded that students with high academic delay of gratification group are found to have significantly higher Self-regulated Learning ability in Physics than those with average and low academic

delay of gratification groups. Average academic delay of gratification group is significantly higher than low academic delay of gratification group.

**First Order Interaction Effects**

**Influence of Interaction between Parenting Style and Classroom Climate on Self-regulated Learning in Physics for aided school sample**

From Table 31, it was revealed that the F-value for interaction between Parenting Style and Classroom Climate is 2.53, which was significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving high, moderate and low classroom climate belonging to Authoritative, Authoritarian and Permissive Parenting Style groups do differ significantly. So there is significant influence on Self-regulated Learning. It may be concluded that Self-regulated Learning in Physics is influenced by the interaction between Parenting Style and Classroom Climate for aided school sample. In order to know the trend of influence of interaction between Parenting Style and Classroom Climate Figure 19 has been plotted.
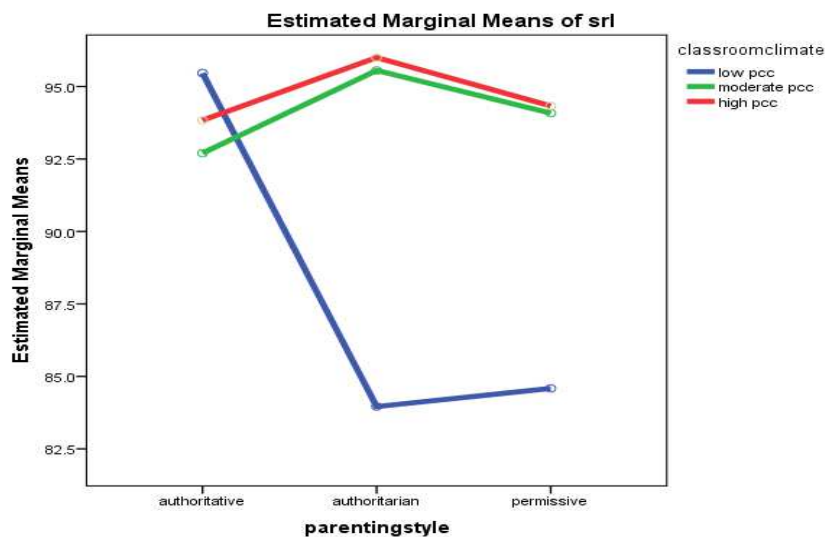


*Figure 19.* Profile plot of interaction between Parenting Style and classroom climate on Self-regulated Learning in physics for aided school sample

Figure 19 depicts that the mean scores in Self-regulated Learning in Physics of low perceived classroom climate group belonging to authoritative Parenting Style shows a higher mean score than moderate perceived classroom climate and high perceived classroom climate groups. Also, it is found that students perceiving low classroom climate group belonging to authoritarian category shows a very low mean score in Self-regulated Learning when compared with other two classroom climate groups. In the permissive parenting groups also, it is noticed that students perceiving low classroom climate group shows a lower mean score in Self-regulated Learning in Physics when compared with moderate and high classroom climate groups. High classroom climate perceived groups shows a higher value in the mean score of Self-regulated Learning in Physics belonging to Authoritarian and Permissive parenting groups.

**Influence of interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for aided school sample**

From Table 31, it was noted that the F-value for interaction between Parenting Style and Academic Delay of Gratification is .16, which is not significant. It shows that the mean scores of Self-regulated Learning of students perceiving Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for aided school students. It may be concluded that Self-regulated Learning in Physics for aided school students is independent of the interaction between Parenting Style and Academic Delay of Gratification.

**Influence of interaction between Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for aided school sample**

From Table 31, it was found that the F-value for interaction between Classroom Climate and Academic Delay of Gratification is 1.02, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving high, moderate and low classroom climate belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence on Self-regulated Learning in Physics. Therefore, it may be concluded that Self-regulated Learning in Physics of students is independent of the interaction between Classroom Climate and Academic Delay of Gratification of aided school students.

<p align="center">**Second Order Interaction Effects**</p>

**Influence of Interaction between Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for aided school sample**

From Table 31, it was found that the F-value for interaction between Parenting Style, Classroom Climate and Academic Delay of Gratification is 3.39, which is significant at .01 level with df= 6/354. It shows that the mean scores of Self-regulated Learning in Physics of students of Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, moderate and low perceived classroom climate and high, average and low academic delay of gratification groups differ significantly. So there is significant influence of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for aided school sample of Secondary Schools Students.

In order to know the trend of influence of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning for aided school sample, Figure 20 has been plotted.
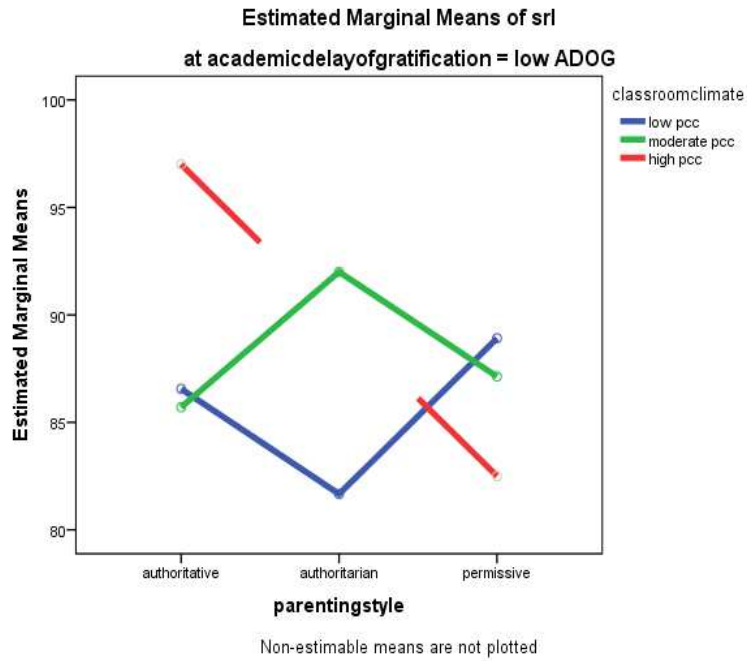


Figure 20(a)
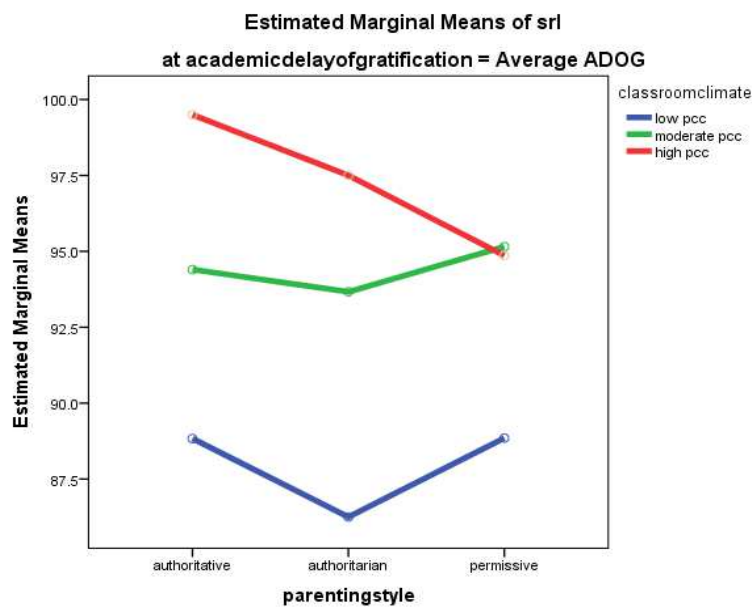


Figure 20(b)
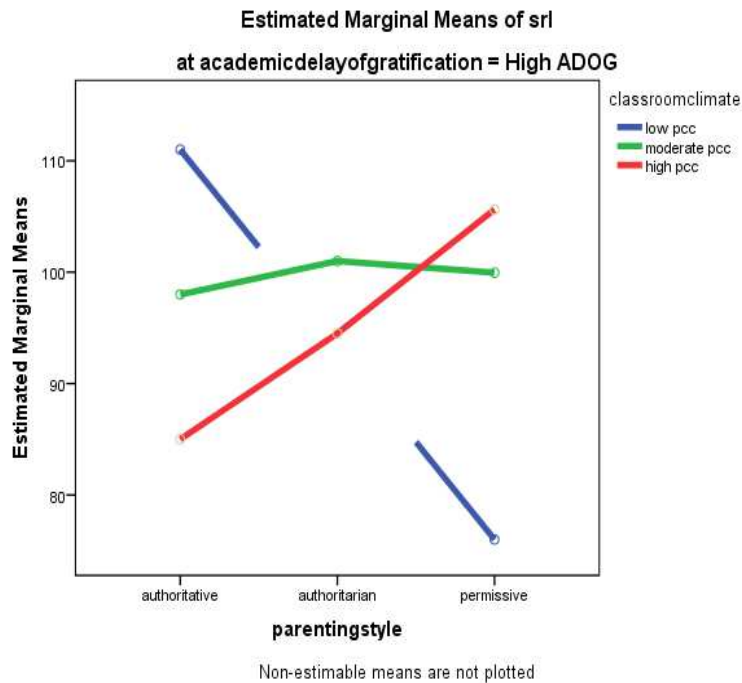
Figure 20(c)

*Figure 20* Profile plot of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for aided school sample

Figure 20(a)depicts the mean scores of Self-regulated Learning in Physics is higher for students perceiving high classroom climate with low academic delay of gratification belonging to Authoritative Parenting Style than students perceiving moderate and low perceived classroom climate. Students perceiving moderate classroom climate and having low academic delay of gratification belonging to Authoritarian Parenting Style have higher mean scores of Self-regulated Learning compared to those perceiving low classroom climate. It is also noted that there are no students perceiving high classroom climate belonging to Authoritarian Parenting Style group with low academic delay of gratification. Students belonging to

permissive Parenting Style and perceiving high classroom climate with low academic delay of gratification show a lower mean score in Self-regulated Learning when compared to moderate and low perceived classroom climate.

Figure 20 (b) depicts the mean scores of Self-regulated Learning in Physics is higher for students perceiving high classroom climate with average academic delay of gratification belonging to Authoritative Parenting Style compared moderate and low classroom climate groups. Students with average academic delay of gratification belonging to Authoritarian Parenting Style which perceives high classroom climate are having greater values of Self-regulated Learning in Physics compared to low and moderate classroom climate perceiving groups. The mean scores of Self-regulated Learning in Physics of students with average academic delay of gratification belonging to Permissive Parenting Style perceiving high and moderate classroom climate interact with each other and is higher when compared to low perceived classroom climate group.

Figure 20 (c) depicts the mean scores of Self-regulated Learning in Physics of students perceiving low classroom climate with high academic delay of gratification belonging to Authoritative Parenting Style is higher compared to moderate and high perceived classroom climate. The mean scores of Self-regulated Learning of students having high academic delay of gratification belonging to Authoritarian Parenting Style group is greater for moderate perceived classroom climate compared to high perceived classroom climate. It is also need that there are no students perceiving low perceived classroom climate belonging to Authoritarian Parenting Style having high academic delay of gratification. The mean scores of Self-regulated Learning in Physics is higher for students perceiving high classroom

climate belonging to Permissive Parenting Style with high academic delay of gratification compared to students perceiving moderate and low classroom climate.

**Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning in Physics of Secondary School Students for unaided school sample**

To find out the influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning of Secondary School Students for unaided school sample are calculated and data are analyzed with the help of 3way ANOVA and the results are presented in Table 33.

Table 33

*Summary of 3WayANOVA with 3X3X3 factorial design of Self-regulated Learning in Physics for unaided school sample*

| Source of Variance | df | SS | MSS | F-value | Level of Significance |
|---|---|---|---|---|---|
| Parenting Style | 2 | 123.65 | 61.83 | .92 | NS |
| Classroom Climate | 2 | 27.88 | 13.94 | .21 | NS |
| Academic Delay of Gratification | 2 | 974.50 | 487.25 | 7.25 | .01 |
| Parenting Style X Classroom Climate | 4 | 475.25 | 118.81 | 1.77 | NS |
| Parenting Style X Academic Delay of Gratification | 4 | 547.44 | 136.86 | 2.04 | NS |
| Classroom Climate X Academic Delay of Gratification | 2 | 207.49 | 103.75 | 1.54 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | 2 | 95.31 | 47.66 | .71 | NS |
| Error | 201 | 13516.81 | 67.25 | | |

**Main Effects**

**Influence of Parenting Style on Self-regulated Learning in Physics for unaided school sample**

From Table 33, it was evident that 'F' value for Parenting Style is .92, which is not significant. It means that mean scores of Self-regulated Learning in Physics of students belonging to Authoritative, Authoritarian and Permissive Parenting Style do not differ significantly. So there is no significant influence of Parenting Style on

Self-regulated Learning in Physics for unaided sample of Secondary School Students.

**Influence of Classroom Climate on Self-regulated Learning in Physics for unaided school sample**

From Table 33, it was found that the 'F' value for Classroom Climate is .21, which is not significant. It means that mean scores of Self-regulated Learning in Physics of students belonging to high, moderate and low perceived classroom climate do not differ significantly. So there is no significant influence of Classroom Climate on Self-regulated Learning in Physics for unaided sample of Secondary School Students.

**Influence of Academic Delay of Gratification on Self-regulated Learning in Physics for unaided school sample**

From Table 33, it was obvious that the 'F' value for Academic Delay of Gratification is 7.25, which is significant at .01 level with df = 2/201. It means that mean scores of Self-regulated Learning in Physics of students belonging to high academic delay of gratification group, average academic delay of gratification group and low academic delay of gratification group differ significantly. So, there is significant influence of Academic Delay of Gratification on Self-regulated Learning in Physics for unaided sample of Secondary School Students. In order to know which group's mean score of Self-regulated Learning is significantly higher, the data are further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 34.

Table 34

*Summary of Sheffe's Test of Post hoc Comparison with matrix of ordered mean of Academic Delay of Gratification on Self-regulated Learning in Physics for unaided school sample*

| Levels of Academic Delay of Gratification | | High | Average | Low |
|---|---|---|---|---|
| | Mean Scores | 97.29 | 90.80 | 85.21 |
| High | 97.29 | .00 | 6.49* | 12.08* |
| Average | 90.80 | | .00 | 5.59* |
| Low | 85.21 | | | .00 |

*indicates significant at .05 level

Table 34 shows that the mean scores of high, average and low academic delay of gratification groups are not homogenous. The absolute difference between mean scores of high academic delay of gratification group and average academic delay of gratification group is 6.49, which is significant at .05 level (F=21.81, $F^1$ at .05 level is 5.98).The absolute difference between mean scores of high and low academic delay of gratification group is 12.08 which is significant at .05 level (F=48.72, $F^1$ at .05 level is 5.98).The difference between mean scores of average and low academic delay of gratification group is 5.59 which is significant at .05 level.(F=14.67, $F^1$ at .05 level is 5.98.) From Table 33, the obtained F value for Academic Delay of Gratification is 7.25, which was significant at .01 level. Post hoc test revealed that this significant F ratio was due to significant mean difference between high academic delay of gratification and average academic delay of gratification, high and low academic delay of gratification, average and low academic delay of gratification. It may therefore be concluded that students with high academic delay of gratification group were found to have significantly higher Self-regulated Learning ability in Physics than those with average and low academic

delay of gratification groups. Average academic delay of gratification group is significantly higher than low academic delay of gratification group.

**First Order Interaction Effects**

**Influence of interaction between Parenting Style and Classroom Climate on Self-regulated Learning in Physics for unaided school sample**

From Table 33, it was indicated that the F-value for interaction between Parenting Style and Classroom Climate is 1.77, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving high, moderate and low classroom climate belonging to Authoritative, Authoritarian and Permissive Parenting Style groups do not differ significantly. So there was no significant influence of Parenting Style and Classroom Climate on Self-regulated Learning in Physics for unaided school students. It may be concluded that Self-regulated Learning in Physics is found to be independent of the interaction between Parenting Style and Classroom Climate for unaided school sample.

**Influence of Interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for unaided school sample**

From Table 33, it was found that the F-value for interaction between Parenting Style and Academic Delay of Gratification is 2.04, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for unaided school students. It may be concluded that Self-regulated Learning in Physics of

students is independent of the interaction between Parenting Style and Academic Delay of Gratification for unaided school sample.

**Influence of interaction between Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for unaided school sample**

From Table 33, it was found that the F-value for interaction between Classroom Climate and Academic Delay of Gratification is 1.54, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving high, moderate and low classroom climate belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence on Self-regulated Learning. It may be concluded that Self-regulated Learning ability in Physics of students is independent of the interaction between Classroom Climate and Academic Delay of Gratification for unaided school sample.

<div align="center">

**Second Order Interaction Effects**

</div>

**Influence of interaction between Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for unaided school sample**

From Table 33, it was found that the F-value for interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification is .71, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students of Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, moderate and low perceived classroom climate and high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of interaction among Parenting Style, Classroom Climate and

Academic Delay of Gratification on Self-regulated Learning in Physics for unaided school sample of Secondary Schools Students.

**Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning in Physics of Secondary School Students for rural sample**

Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning in Physics of Secondary School Students for rural sample was calculated. The data are analyzed with the help of 3way ANOVA and the results are presented in Table 35

Table 35

*Summary of 3WayANOVA with 3X3X3 factorial design of Self-regulated Learning in Physics for rural school sample*

| Source of Variance | df | SS | MSS | F-value | Level of Significance |
|---|---|---|---|---|---|
| Parenting Style | 2 | 964.58 | 482.29 | 4.08 | .05 |
| Classroom Climate | 2 | 882.55 | 441.28 | 3.73 | .05 |
| Academic Delay of Gratification | 2 | 1638.72 | 819.36 | 6.93 | .01 |
| Parenting Style X Classroom Climate | 4 | 566.59 | 141.65 | 1.19 | NS |
| Parenting Style X Academic Delay of Gratification | 4 | 1238.01 | 309.50 | 2.62 | .05 |
| Classroom Climate X Academic Delay of Gratification | 4 | 354.00 | 88.50 | .75 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | 6 | 437.95 | 72.99 | .62 | NS |
| Error | 559 | 66115.76 | 118.28 | | |

**Main Effects**

**Influence of Parenting Style on Self-regulated Learning in Physics for rural sample**

From Table 35, it was apparent that 'F' value for Parenting Style is 4.08, which is significant at .05 level with df = 2/559. It means that mean scores of Self-regulated Learning in Physics of students belonging to Authoritative, Authoritarian and Permissive Parenting Style differ significantly. But, Post hoc analysis revealed that there is no significant difference between the mean scores of Self-regulated Learning in Physics of students belonging to Authoritative, Authoritarian and Permissive Parenting Styles.

**Influence of Classroom Climate on Self-regulated Learning in Physics for rural sample**

From Table 35, it was found that the 'F' value for Classroom Climate was 3.73, which is significant at .05 level with df =2/559. It means that mean scores of Self-regulated Learning in Physics of students belonging to high, moderate and low perceived classroom climate differ significantly. So there is significant influence of Classroom Climate on Self-regulated Learning in Physics for rural sample. In order to know which group's mean score of Self-regulated Learning in Physics is significantly higher, the relevant data are further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 36

Table 36

*Summary of Sheffe's Test of Post hoc Comparison with matrix of ordered mean of Classroom Climate on Self-regulated Learning in Physics for rural sample*

| Levels of Classroom Climate | | High | Moderate | Low |
|---|---|---|---|---|
| | Mean Scores | 96.63 | 91.20 | 86.48 |
| High | 96.63 | .00 | 5.43* | 10.14* |
| Moderate | 91.20 | | .00 | 4.71* |
| Low | 86.48 | | | .00 |

*indicates significant at .05 level

Table 36 shows that the absolute difference between mean scores of high perceived classroom climate and moderate perceived classroom climate group is 5.43, which is significant at .05 level(F=18.84,$F^1$ at .05 level is 5.98).The difference between mean scores of high perceived classroom climate and low perceived classroom climate is 10.14, which is significant at .05 level (F=40.58, $F^1$ at .05 level is 5.98).The difference between mean scores of moderate perceived classroom climate and low perceived classroom climate is 4.71, which is significant at .05 level(F=13.99, $F^1$ at .05 level is 5.98). From Table 35, the obtained F value for Classroom Climate is 3.73, which is significant at .05 level. Post hoc test revealed that this significant F ratio is due to significant difference between high perceived classroom climate and moderate classroom climate, high perceived classroom climate and low perceived classroom climate and moderate perceived classroom climate and low perceived classroom climate. It may therefore be concluded that students perceiving high classroom climate group are found to have significantly higher Self-regulated Learning ability in Physics than those of moderate and low

perceived classroom climate groups. Moderate perceived classroom climate group is significantly higher than low perceived classroom climate group.

**Influence of Academic Delay of Gratification on Self-regulated Learning in Physics for rural school sample**

From Table 35, it was observed that the 'F' value for Academic Delay of Gratification is 6.93, which is significant at .01 level with df = 2/559. It means that mean scores of Self-regulated Learning of students belonging to high academic delay of gratification group, average academic delay of gratification group and low academic delay of gratification group differ significantly. So, there is significant influence of Academic Delay of Gratification on Self-regulated Learning in Physics for aided school sample. In order to know which group's mean score of Self-regulated Learning in Physics is significantly higher, the data were further analyzed with the help of Sheffe's test of Post hoc comparison and the result were given in Table 37

Table 37

*Summary of Sheffe's Test of Post hoc Comparison with matrix of ordered mean of Academic Delay of Gratification on Self-regulated Learning in Physics for rural sample*

| Levels of Academic Delay of Gratification | | High | Average | Low |
|---|---|---|---|---|
| | Mean Scores | 97.63 | 90.85 | 84.96 |
| High | 97.63 | .00 | 6.79* | 12.67* |
| Average | 90.85 | | .00 | 5.89* |
| Low | 84.96 | | | .00 |

*indicates significant at .05 level

Table 37 shows that the mean scores of high, average and low academic delay of gratification groups are not homogenous. The absolute difference between mean scores of high academic delay of gratification group and average academic delay of gratification group is 6.79, which is significant at .05 level (F=33.06, $F^1$ at .05 level is 5.98).The absolute difference between mean scores of high and low academic delay of gratification group is 12.67 which is significant at .05 level (F=61.15, $F^1$ at .05 level is 5.98).The difference between mean scores of average and low academic delay of gratification group is 5.89 which is significant at .05 level.(F= 19.01, $F^1$ at .05 level is 5.98). From Table 35, the obtained F value for Academic Delay of Gratification is 6.93, which is significant at .01 level. Post hoc test revealed that this significant F ratio is due to significant mean difference between high academic delay of gratification and average academic delay of gratification, high and low academic delay of gratification, average and low academic delay of gratification. It may therefore be concluded that students with high academic delay of gratification group are found to have significantly higher Self-regulated Learning ability in Physics than those with average and low academic delay of gratification groups. Average academic delay of gratification group is significantly higher than low academic delay of gratification group.

**First Order Interaction Effects**

**Influence of interaction between Parenting Style and Classroom Climate on Self-regulated Learning in Physics for rural sample**

From Table 35, it was observed that the 'F'-value for interaction between Parenting Style and Classroom Climate is 1.19, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving high, moderate and low classroom climate belonging to authoritative, authoritarian

and permissive Parenting Style groups do not differ significantly. So there is no significant influence on Self-regulated Learning in Physics. It may be concluded that Self-regulated Learning in physics is found to be independent of the interaction between Parenting Style and Classroom Climate for rural sample.

**Influence of interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for rural sample**

From Table 35, it was observed that the F-value for interaction between Parenting Style and Academic Delay of Gratification is 2.62, which is significant at 0.05 level with df=4/559. It shows that the mean scores of Self-regulated Learning of students perceiving Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, average and low academic delay of gratification groups do differ significantly. So there is significant influence on Self-regulated Learning. It may be concluded that Self-regulated Learning in Physics of students is influenced by the interaction between Parenting Style and Academic Delay of Gratification of students. In order to know the trend of influence of interaction between Parenting Style and Academic Delay of Gratification Figure 21 has been plotted.
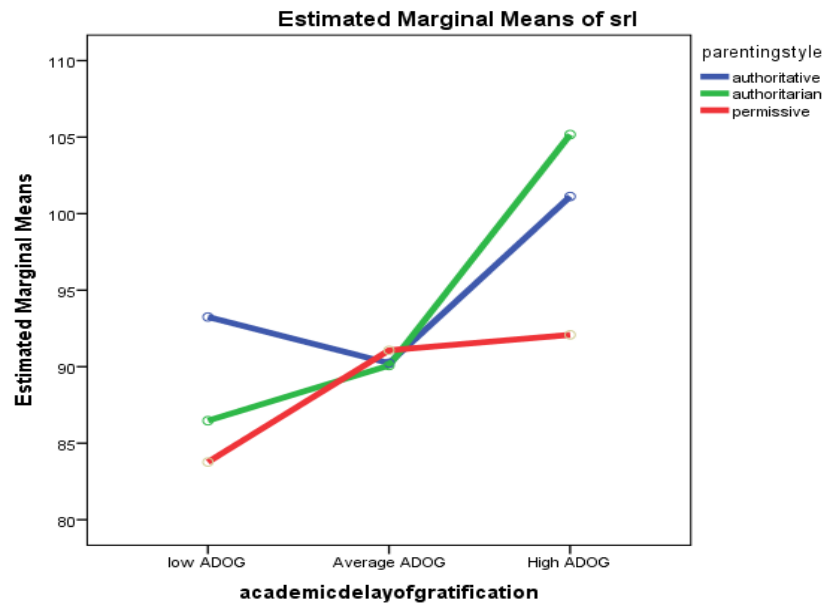
*Figure 21* Profile Plot of Interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for rural school sample

Figure 21 shows the mean score in Self -regulated Learning of low academic delay of gratification group belonging to permissive Parenting Style group is lower than that of authoritarian and authoritative Parenting Style groups. In the case of average academic delay of gratification group, the mean scores in Self-regulated Learning belonging to Authoritative and Authoritarian Parenting Style groups shows no variation in their scores, but Permissive parenting group shows a very little higher value compared to these two groups. High academic delay of gratification group belonging to Authoritative, Authoritarian and Permissive Parenting Style groups shows variation in the mean scores in Self-regulated Learning. Authoritarian parenting group occupies the higher position and Permissive parenting group occupies the lowest position. The mean scores in Self-regulated Learning of high academic delay of gratification group belonging to Authoritative Parenting Style group occupies a position in between Authoritarian Parenting Style group and

Permissive Parenting Style group. Also, shows an increase in mean scores of Self-regulated Learning when moves from low academic delay of gratification to high academic delay of gratification group. From the plot, it is evident that the Self-regulated Learning is influenced by the interaction between Academic Delay of Gratification and Parenting Style of Secondary School Students.

**Influence of interaction between Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for rural school sample**

From Table 35, it was found that the F-value for interaction between Classroom Climate and Academic Delay of Gratification is .75, which is not significant. It shows that the mean scores of Self-regulated Learning of students perceiving high, moderate and low classroom climate belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for rural school students. It may therefore be concluded that Self-regulated Learning in Physics of students is independent of the interaction between Classroom Climate and Academic Delay of Gratification for rural school sample.

**Second Order Interaction Effects**

**Influence of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for rural sample**

From Table 35, it was revealed that the F-value for interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification is .62, which is not significant. It shows that the mean scores of Self-regulated Learning in

Physics of students of Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, moderate and low perceived classroom climate and high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for rural sample of Secondary School Students.

**Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning in Physics of Secondary School Students for urban school sample**

Influence of Parenting Style, Classroom Climate and Academic Delay of Gratification and their interaction on Self-regulated Learning of Secondary School Students for urban school sample was calculated. The data are analyzed with the help of 3 Way ANOVA and the results are presented in Table 38

Table 38

*Summary of 3Way ANOVA with 3X3X3 factorial design of Self-regulated Learning in Physics for urban school sample*

| Source of Variance | df | SS | MSS | F-value | Level of Significance |
|---|---|---|---|---|---|
| Parenting Style | 2 | 23.92 | 11.96 | .13 | NS |
| Classroom Climate | 2 | 15.99 | 7.99 | .09 | NS |
| Academic Delay of Gratification | 2 | 1475.55 | 737.77 | 7.97 | .01 |
| Parenting Style X Classroom Climate | 4 | 229.62 | 57.41 | .62 | NS |
| Parenting Style X Academic Delay of Gratification | 4 | 490.09 | 122.52 | 1.32 | NS |
| Classroom Climate X Academic Delay of Gratification | 4 | 619.61 | 154.90 | 1.67 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | 5 | 954.98 | 190.99 | 2.06 | NS |
| Error | 396 | 36675.59 | 92.62 | | |

**Main Effects**

**Influence of Parenting Style on Self-regulated Learning in Physics for urban school sample**

From Table 38, it was revealed that 'F' value for Parenting Style is .13, which is not significant. It means that mean scores of Self-regulated Learning in Physics of students belonging to Authoritative, Authoritarian and Permissive

Parenting Style do not differ significantly. So there is no significant influence of Parenting Styles on Self-regulated Learning in Physics for urban school sample.

**Influence of Classroom Climate on Self-regulated Learning in Physics for urban school sample**

From Table 38, it was clear that the 'F' value for Classroom Climate is .09, which is not significant. It means that mean scores of Self-regulated Learning in Physics of students belonging to high, moderate and low perceived classroom climate do not differ significantly. So there is no significant influence of Classroom Climate on Self-regulated Learning in Physics for urban school sample.

**Influence of Academic Delay of Gratification on Self-regulated Learning in Physics for urban school sample**

From Table 38, it was obvious that the 'F' value for Academic Delay of Gratification is 7.97, which is significant at .01 level with df = 2/396. It means that mean scores of Self-regulated Learning in Physics of students belonging to high academic delay of gratification group, average academic delay of gratification group and low academic delay of gratification group differ significantly. So, there is significant influence of Academic Delay of Gratification on Self-regulated Learning in Physics for urban sample of Secondary School Students. In order to know which group's mean score of Self-regulated Learning in Physics is significantly higher, the data are further analyzed with the help of Sheffe's test of Post hoc comparison and the result are given in Table 39.

Table 39

*Summary of Sheffe's Test of Post hoc Comparison with matrix of ordered mean of Academic Delay of Gratification on Self-regulated Learning for urban school sample*

| Levels of  Academic Delay of Gratification | | High | Average | Low |
|---|---|---|---|---|
| | Mean  Scores | 98.41 | 91.35 | 85.48 |
| High | 98.41 | .00 | 7.06* | 12.93* |
| Average | 91.35 | | .00 | 5.87* |
| Low | 85.48 | | | .00 |

*indicates significant at .05 level

Table 39 shows that the mean scores of high, average and low academic delay of gratification groups are not homogenous. The absolute difference between mean scores of high academic delay of gratification group and average academic delay of gratification group is 7.06 which is significant at .05 level(F=22.47, $F^1$ at .05 level is 5.98).The absolute difference between mean scores of high and low academic delay of gratification group is 12.93, which is significant at .05 level (F=57.15, $F^1$ at .05 level is 5.98).The difference between mean scores of average and low academic delay of gratification group is 5.87, which is significant at .05 level.(F=25.20, $F^1$ at .05 level is 5.98). From Table 38, the obtained F value for Academic Delay of Gratification is 7.97, which is significant at .01 level. Post hoc test revealed that this significant F ratio was due to significant mean difference between high academic delay of gratification and average academic delay of gratification, high and low academic delay of gratification, average and low academic delay of gratification. It may therefore be concluded that students with high academic delay of gratification group are found to have significantly higher Self-regulated Learning ability in Physics than those with average and low academic

delay of gratification groups. Average academic delay of gratification group is significantly higher than low academic delay of gratification group.

**First Order Interaction Effects**

**Influence of interaction between Parenting Style and Classroom Climate on Self-regulated Learning in Physics for urban school sample**

From Table 38, it was found that the F-value for interaction between Parenting Style and Classroom Climate is .62, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving high, moderate and low classroom climate belonging to Authoritative, Authoritarian and Permissive Parenting Style groups do not differ significantly. So there is no significant influence of Parenting Style and Classroom Climate on Self-regulated Learning in Physics for urban school students. Hence, it may be concluded that Self-regulated Learning in Physics is found to be independent of the interaction between Parenting Style and Classroom Climate for urban sample of Secondary School Students.

**Influence of interaction between Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for urban school sample**

From Table 38, it was found that the F-value for interaction between Parenting Style and Academic Delay of Gratification is 1.32, which is not significant. It shows that the mean scores of Self-regulated Learning in Physics of students perceiving Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics for Urban

School Students. It may be concluded that Self-regulated Learning of students is independent of the interaction between Parenting Style and Academic Delay of Gratification of urban school students.

**Influence of interaction between Classroom Climate and Academic Delay of Gratification on Self-regulated Learning for urban school sample**

From Table 38, the F-value for interaction between Classroom Climate and Academic Delay of Gratification is 1.67, which is not significant. It shows that the mean scores of Self-regulated Learning of students perceiving high, moderate and low classroom climate belonging to high, average and low academic delay of gratification groups do not differ significantly. So there is no significant influence of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for urban school students. Therefore, it is concluded that Self-regulated Learning of students is independent of the interaction between Classroom Climate and Academic Delay of Gratification of urban school students.

**Second Order Interaction Effects**

**Influence of Interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for urban school sample**

From Table 38, it was revealed that the F-value for interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification is 2.06, which is not significant. It shows that the mean scores of Self-regulated Learning of students of Authoritative, Authoritarian and Permissive Parenting Styles belonging to high, moderate and low perceived classroom climate and high, average and low academic delay of gratification groups do not differ significantly. So there is no

significant influence of interaction among Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics for urban sample of Secondary School Students.

**Multiple Regression Analysis**

Multiple Correlation and Regression Analysis using enter method has been employed to find out the individual and joint contributions of Parenting Style, Classroom Climate and Academic Delay of Gratification in predicting Self-regulated Learning in Physics of Secondary School Students. Analysis has been done using SPSS programme and details were given below. Enter method is a regression method in which predictors are forced in to the model simultaneously. This method relies on good theoretical reasons for including the chosen predictors, but experimenter makes no decision about the order in which variables are entered. Researchers believed that this method is the only appropriate method for theory testing because stepwise technique are influenced by random variation in the data and seldom give replicable results if the model is retested. The data of inter-correlation of criterion variable with five predictor variables are given in Table 40 below

Table 40

*Correlation matrix of dependent variable and independent variables*

| Variables | Self-regulated Learning in Physics | Authoritative Parenting Style | Authoritarian Parenting Style | Permissive Parenting Style | Classroom Climate | Academic Delay of Gratification |
|---|---|---|---|---|---|---|
| Self-regulated Learning in Physics | 1.00 | .239 | .160 | .219 | .282 | .372 |
| Authoritative Parenting Style | .239 | 1.00 | .426 | .464 | .278 | .248 |
| Authoritarian Parenting Style | .160 | .426 | 1.00 | .343 | .241 | .228 |
| Permissive Parenting Style | .219 | .464 | .343 | 1.00 | .383 | .304 |
| Classroom Climate | .282 | .278 | .241 | .383 | 1.00 | .436 |
| Academic Delay of Gratification | .372 | .248 | .228 | .304 | .436 | 1.00 |

From Table 40, It was clear that the predictor variable Academic Delay of Gratification obtained highest correlation coefficient ($r=0.372$) when compared with other predictor variables with the criterion variable. The second in the sequence is Classroom Climate($r=0.282$).The model summary of multiple regression analysis is given in Table 41

Table 41

*Model Summary of Multiple Correlation Coefficients for Self-regulated Learning in Physics*

| Predictors | R | $R^2$ | Level of Significance |
|---|---|---|---|
| Academic Delay of Gratification<br>Classroom Climate<br>Authoritative Parenting Style<br>Authoritarian Parenting Style<br>Permissive Parenting Style | .417 | .174 | .01 |

Table 41 shows that multiple correlation coefficient was found to be .417, which is significant at .01 level. It means that Parenting Style, Classroom Climate and Academic Delay of Gratification jointly contribute significantly in predicting Self-regulated Learning of Secondary School Students. Further, the percentage of joint contribution of Parenting Style, Classroom Climate and Academic Delay of Gratification in predicting Self-regulated Learning is 17.4%. Inorder to know the individual contributions, the data were further analysed with the help of regression analysis and the results are shown in Table 42.

Table 42

*Variable wise Beta Coefficients, Percentage of Contribution and t-values in indicating Self-regulated Learning in Physics*

| Predictors | Beta Coefficients | % of contribution | t-value | Level of Significance |
|---|---|---|---|---|
| Academic Delay of Gratification | .28 | 10.53 | 8.67 | .01 |
| Classroom Climate | .11 | 3.13 | 3.32 | .01 |
| Authoritative Parenting Style | .12 | 2.89 | 3.49 | .01 |
| Authoritarian Parenting Style | .01 | .09 | .17 | .01 |
| Permissive Parenting Style | .03 | .70 | .93 | .01 |

From Table 42, it was clear that Beta coefficients for Academic Delay of Gratification, Classroom Climate, Authoritative Parenting Style, Authoritarian Parenting Style and Permissive Parenting Style are .28, .11, .12, .01 and .03 respectively which are significant at .01 level. It means the individual contributions of Academic Delay of Gratification, Classroom Climate and Authoritative, Authoritarian and Permissive Parenting Styles in predicting Self-regulated Learning in Physics are significant. Further, the individual contributions of Academic Delay of Gratification, Classroom Climate and Authoritative, Authoritarian and Permissive Parenting Styles in predicting Self-regulated Learning in Physics are 10.53%, 3.13 %, 2.89%, .09% and .70 % respectively. From this, it can be inferred that the Academic Delay of Gratification contributes higher than Classroom Climate and all Parenting Styles. Classroom Climate comes second in the sequence. Authoritarian Parenting Style shows the lowest contribution in predicting Self-regulated Learning. Thus, Self-regulated Learning in Physics can be enhanced by encouraging Academic Delay of Gratification among students. For predicting Self-regulated Learning from five predictor variables viz. Academic Delay of Gratification, Classroom Climate, Authoritative Parenting Style, Authoritarian Parenting Style and Permissive Parenting Style, the regression equation is calculated and presented as follows:

$$Y = .291X_1 + .087X_2 + .254X_3 + .051X_4 + .009 X_5 + 50.07$$

Where. $Y$ = Self-regulated Learning in Physics

$X_1$ = Academic Delay of Gratification

$X_2$ = Classroom Climate

$X_3$ = Authoritative Parenting Style

$X_4$ = Permissive Parenting Style

$X_5$ = Authoritarian Parenting Style

This equation can be used for predicting Self-regulated Learning in Physics of Secondary School Students provided the score of the subject in Academic Delay of Gratification, Classroom Climate, Authoritative Parenting Style, Authoritarian Parenting Style and Permissive Parenting Style are known.

*Chapter 5*

# SUMMARY OF FINDINGS AND SUGGESTIONS

Study in retrospect

Major Findings

Conclusion

Findings in a Nutshell

Scope and delimitation of the study

Support / Nonsupport of Hypotheses

Suggestions for improving Educational Practices

Directions for future research

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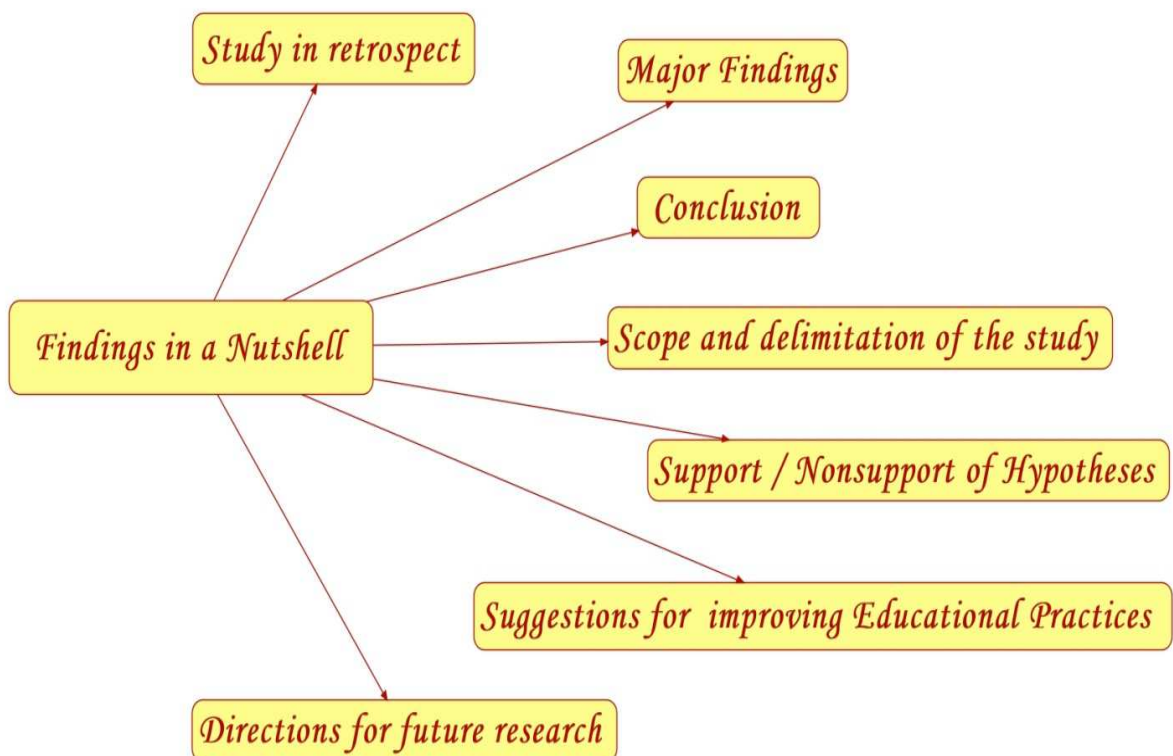
# SUMMARY OF FINDINGS AND SUGGESTIONS

An overview of the important aspects of the stages in executing the study, the major findings of the study and their educational significance, suggestion for improving educational practice and suggestion for further research are presented briefly in this chapter. This chapter is organized under the following headings:

**Study in Retrospect**

**Major Findings of the study**

**Conclusions**

**Scope and Delimitation of the study**

**Support/Nonsupport of Hypotheses**

**Suggestion for improving Educational Practices**

**Directions for Future Research**

## Study in Retrospect

The various aspects in the different stage of the present investigations like the title, variables, objectives, hypotheses, methodology used are viewed retrospectively.

**Restatement of the problem**

The present study entitled as INFLUENCE OF PARENTING STYLE, CLASSROOM CLIMATE AND ACADEMIC DELAY OF GRATIFICATION ON SELF- REGULATED LEARNING IN PHYSICS AMONG SECONDARY SCHOOL STUDENTS.

**Variables selected for the study**

The dependent and independent variables selected for the study are the following:

**Dependent Variable**

The dependent variable in the present study was Self- regulated Learning in Physics.

**Independent Variables**

The Independent Variables for the present study were Parenting Style, Classroom Climate and Academic Delay of Gratification

**Objectives**

1.  To find the extent of various Parenting Styles, Classroom Climate, Academic Delay of Gratification and Self- regulated Learning in Physics among Secondary School Students for the total sample and relevant subgroups.

2.  To study whether there exist any significant difference of Parenting Style, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning in Physics of Secondary school students for the relevant subgroups viz. gender, locale of the school and type of management of school

3.  To study the main effects of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups viz. gender, locale of the school and type of management of school.

4.  To find out the first order interaction effect of Parenting Style and Classroom Climate on Self- regulated Learning in Physics of Secondary School Students for the total sample and relevant  subgroups.

5.  To find out the first order interaction effect of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

6.  To find out the first order interaction effect of Parenting Style and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

7.  To study the second order interaction effects of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for the total sample and relevant subgroups.

8.  To develop a regression equation to predict Self-regulated Learning in Physics from the Parenting Style, Classroom Climate and Academic Delay of Gratification.

**Hypotheses**

1.  There exists significant difference in the mean scores of various Parenting Styles of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school.

2.  There exists significant difference in the mean scores of Classroom Climate of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school.

3. There exists significant difference in the mean scores of Academic Delay of Gratification of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school

4. There exists significant difference in the mean scores of Self- regulated Learning in Physics of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school

5. The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for the total sample.

6. The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the male subgroups.

7. The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the female subgroups.

8. The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for rural subgroups.

9. The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for urban subgroups.

10. The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for government subgroups.

11.     The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for aided subgroups

12.     The main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for unaided subgroups

13.     The first order interaction effect of Parenting Style and Classroom Climate on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups

14.     The first order interaction effect of Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups.

15.     The first order interaction effect of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups.

16.     The second order interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups.

17.     There is significant individual and combined contribution of three Parenting Styles, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for total sample.

## Methodology

**Sample**

The present study is carried out in a representative sample of 1027 Secondary School Students from 12 districts of Kerala using stratified sampling method giving due weightages to gender, locale of the school and type of management of the school. Final sample size limited to 1004.

**Tools employed for the study**

Four tools were used for the present study.

**1) Self-regulated Learning Scale in Physics(Bindhu & Sindhu , 2014)**

This tool is a 3 point scale, consisted of 40 + 7 items from six dimensions of Self-regulated Learning-Epistemological beliefs, Motivation, Metacognition, Learning Strategies, Contextual Sensitivity, Environmental Utilization. Initially, there were 50+10 items and it was standardized using item analysis method. The tool was standardized by the investigators.

**2) Academic Delay of Gratification Scale (Bindhu & Sindhu , 2014)**

Academic Delay of Gratification Scale (Bembenutty, 1998) was modified in to Kerala cultural context. The tool is a 4 point scale consisted of 20 items. Under each item two sub divisions - **a** and **b** either positive or negative and its counter parts. The tool was standardized by the investigators.

**3) Perceived Parenting Style Scale (Manikandan & Divya &, 2013)**

The tool is a 5 point scale consists of 30 items –Authoritative, Authoritarian and Permissive Parenting Styles each comprising 10 items each. Tool consists of 10 positive items and 20 negative items.

**4) Perceived Classroom Climate Scale (Bindhu & Nincy, 2012-revised in 2014)**

The actual tool Perceived Classroom Climate Scale (2012) consisted of 75 items. The revised version of Perceived Classroom Climate Scale consists of 50 items including 29 positive items and 21 negative items were used for the present study. The scale has developed by giving due weightages to three factors – Physical, Social and educational factors.

**Statistical Techniques used for the study**

The present study is quantitative one and the investigators used both descriptive and inferential statistics for the analysis. The major statistical techniques used for the present study can be summarized as follows.

**Basic Descriptive Statistics**

Basic Descriptive Statistics such as mean, median, mode, standard deviation, skewness and kurtosis of each of the independent variables and dependent variable were calculated. Descriptive statistics were calculated for the total sample and subgroups based on the gender, locality of the schools and type of management of schools.

**Mean Difference Analysis**

Test of significance of difference between two large independent sample means were calculated to compare the mean scores of all the independent variables and dependent variables based on gender, locale of the school and type of management of school.

**3 Way ANOVA**

The main effect and interaction effect of three independent variables on dependent variable were estimated using 3way ANOVA with 3X3X3 factorial design. Each independent variable was divided in to three levels and the main effect of each independent variable on dependent variable was calculated along with their first order and second order interaction. Data were analyzed for total sample and sub samples based on locality, gender and type of management of schools. The significance F values were subjected to Sheffe's test of Post hoc comparison to identify differences among means.

**Multiple Regression Analysis**

To predict the individual and joint contribution of Authoritative, Authoritarian and Permissive Parenting Styles, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students, multiple regression analysis using enter method was administered. A regression equation was also developed to predict the score of Self-regulated Learning in Physics from the given criterion variables.

**Major Findings of the Study**

The major findings of the study is summarized as the findings of the mean difference of the independent variables and dependent variables based on their gender, type of management and locale of the school, 49 ANOVA executed (seven for total sample and seven for each of the seven subgroups viz: male, female, government, aided, unaided rural and urban) to examine the main effect and interaction effects (first order and second order interaction effects) of the three

independent variables on Self-regulated Learning in Physics and individual and joint contributions of independent variables on the dependent variable.

**Mean Difference Analysis**

The mean difference analysis was done to know whether there exist any significant difference between male and female, Govt., aided and unaided, rural and urban Secondary School Students in their various Parenting Styles, Classroom Climate, Academic Delay of Gratification and Self- regulated Learning in Physics of Secondary School Students.

**Gender Differences**

The mean difference analysis based on the gender (male & female) of Secondary School Students were done for Authoritative, Authoritarian and Permissive Parenting Styles, Classroom Climate and Self-regulated Learning in Physics and the findings are summarized as given below.

| Variable | | t-value | Level of significance |
|---|---|---|---|
| | Authoritative | 3.52 | 0.01 |
| Parenting Styles | Authoritarian | 5.41 | .01 |
| | Permissive | 4.55 | .01 |
| Classroom Climate | | 7.83 | .01 |
| Academic Delay of Gratification | | 13.33 | .01 |
| Self-regulated Learning in Physics | | 2.34 | .05 |

The t-value obtained for Authoritative, Authoritarian and Permissive Parenting Styles, Classroom Climate, Academic Delay of Gratification are significant at .01 level and Self regulated Learning in Physics is significant at .05 level. Hence, it can be concluded that there exists a gender difference in Parenting

Style, Classroom Climate, Academic Delay of Gratification and Self-regulated Learning in Physics of Secondary School Students.

**Management Difference**

The mean difference analysis based on the type of management (Govt., aided & unaided) of secondary schools were done for Authoritative, Authoritarian and Permissive Parenting Styles, Classroom Climate and Self-regulated Learning in Physics and the findings are summarized as given below.

**(For Govt. & Aided Category**)

| Variables | | t-value | Level of significance |
|---|---|---|---|
| Parenting Styles | Authoritative | .07 | NS |
| | Authoritarian | 3.34 | .01 |
| | Permissive | 2.01 | .05 |
| Classroom Climate | | 1.63 | NS |
| Academic Delay of Gratification | | 1.36 | NS |
| Self-regulated Learning in Physics | | 5.09 | .01 |

The t-value obtained for Authoritarian Parenting Style and Self-regulated Learning in Physics are significant at .01 level and Permissive Parenting Style is significant at .05 level. Authoritative Parenting Style, Classroom Climate and Academic Delay of Gratification are not significant. Hence, it can be concluded that perception of Authoritarian and Permissive Parenting Style and Self-regulated Learning in Physics of Secondary School Students are influenced by management of schools.(Govt. & aided schools)

**(For Govt. & unaided Category)**

|  | Variables | t-value | Level of significance |
|---|---|---|---|
| Parenting Styles | Authoritative | 1.03 | NS |
|  | Authoritarian | 4.79 | .01 |
|  | Permissive | 6.19 | .01 |
| Classroom Climate |  | 3.21 | .01 |
| Academic Delay of Gratification |  | .22 | NS |
| Self-regulated Learning in Physics |  | 2.19 | .05 |

The t- value obtained for Authoritarian and Permissive Parenting Style, Classroom Climate are significant at .01 level and t- value obtained for Self-regulated Learning is significant at .05 level. The t-value obtained for Authoritative Parenting Style and Academic Delay of Gratification are not significant. Hence, it can be concluded that Authoritarian and Permissive Parenting Style perceived by students and Self-regulated Learning in Physics of Secondary School Students are influenced by the type of management of schools (Govt. & unaided schools)

**(For Aided & Unaided Category)**

|  | Variables | t-value | Level of significance |
|---|---|---|---|
| Parenting Styles | Authoritative | 1.03 | NS |
|  | Authoritarian | 1.89 | NS |
|  | Permissive | 4.20 | .01 |
| Classroom Climate |  | 4.45 | .01 |
| Academic Delay of Gratification |  | .83 | NS |
| Self-regulated Learning in Physics |  | 2.72 | 0.01 |

The t- value obtained for Permissive Parenting Style, Classroom Climate and Self-regulated Learning in Physics are significant at .01 level. The t-value obtained for Authoritative and Authoritarian Parenting Style and Academic Delay of Gratification are not significant. Hence, it can be concluded that Permissive Parenting Style perceived by students, Classroom Climate and Self-regulated Learning in Physics of Secondary School Students are influenced by management of schools.(Aided & unaided schools).

**Locality Difference**

The mean difference analysis based on the locality of secondary schools were done for Authoritative, Authoritarian and Permissive Parenting Styles, Classroom Climate and Self-regulated Learning in Physics and the findings are summarized as given below.

| | Variables | t-value | Level of significance |
|---|---|---|---|
| Parenting Styles | Authoritative | .473 | NS |
| | Authoritarian | .08 | NS |
| | Permissive | 2.13 | .05 |
| Classroom Climate | | 1.17 | NS |
| Academic Delay of Gratification | | 4.32 | .01 |
| Self-regulated Learning in Physics | | .61 | NS |

The t-value obtained for Permissive Parenting Style and Academic Delay of Gratification of Secondary School Students are significant at .05 and .01 respectively. The t-value obtained for Authoritative and Authoritarian Parenting Style, Classroom Climate and Self-regulated Learning in Physics are not significant.

Hence, it can be concluded that Permissive Parenting Style perceived by students and Academic Delay of Gratification are influenced by the locale of the schools.

**Main effects of independent variables**

Main effect of the independent variables Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics were estimated for total sample and relevant subgroups based on gender, type of management and locale of the schools and the summary of the findings are presented.

**Main effects of independent variables for total sample**

The main effect of the independent variables- three Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics is estimated for total sample and is given below:

| Variables | F –value | Level of significance |
|---|---|---|
| Parenting Style | 5.05 | .01 |
| Classroom Climate | 3.05 | .05 |
| Academic Delay of Gratification | 13.35 | .01 |

The F value obtained for Parenting Style and Academic Delay of Gratification are significant at .01 level and Classroom Climate is significant at .05 level. But, Post hoc analysis reveals that there exists no significant difference among three Parenting Styles. There exists a significant difference between high and moderate, high and low, moderate and low perceived classroom climate. Also, there exist a significant difference between high and average, high and low and average and low academic delay of gratification.

**Main effects of independent variables for male sample**

The main effect of the independent variables- three Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics is estimated for male sample and is given below:

| Variables | F –value | Level of significance |
|---|---|---|
| Parenting Style | .49 | NS |
| Classroom Climate | 2.97 | .05 |
| Academic Delay of Gratification | 2.37 | NS |

The F value obtained for Parenting Style and Academic Delay of Gratification are not significant. The F value obtained for Classroom Climate is significant at .05 level for male sample. The Post hoc analysis reveals that there exists a significant difference between high and moderate, high and low, moderate and low perceived classroom climate.

**Main effects of independent variables for female sample**

The main effects of the independent variables-three Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning is estimated for female sample and is given below:

| Variables | F- value | Level of significance |
|---|---|---|
| Parenting Style | 1.12 | NS |
| Classroom Climate | 5.05 | .01 |
| Academic Delay of Gratification | 8.92 | .01 |

The F value obtained for Parenting Style is not significant. The F value obtained for Classroom Climate and Academic Delay of Gratification is significant at .01 level. The Post hoc analysis reveals that there exists a significant difference between high and moderate, high and low, moderate and low perceived classroom climate.  Also, there exist a significant difference between high and average, high and low and average and low academic delay of gratification for female sample.

**Main effects of independent variables for government school sample**

The main effects of the independent variables- three Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics is estimated for government school sample and is given below:

| Variables | F-value | Level of significance |
|---|---|---|
| Parenting Style | 3.38 | .05 |
| Classroom Climate | 3.29 | .05 |
| Academic Delay of Gratification | 6.89 | .01 |

The F value obtained for Parenting Style and Classroom Climate are significant at .05 level. The F value obtained for Academic Delay of Gratification is significant at .01 level. But, Post hoc analysis reveals there exists no significant difference among three Parenting Styles.  The Post hoc analysis reveals that there exists a significant difference between high and moderate, high and low, moderate and low perceived classroom climate. Also, significant difference exist between high and average, high and low and average and low academic delay of gratification for government school students

**Main effects of independent variables for aided school sample**

The main effects of the independent variables- three Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics is estimated for aided school sample and is given below:

| Variables | F value | Level of significance |
|---|---|---|
| Parenting Style | .97 | NS |
| Classroom Climate | 2.86 | NS |
| Academic Delay of Gratification | 3.67 | .05 |

The F value obtained for Parenting Style and Classroom Climate are not significant. The main effect of Academic Delay of Gratification is found significant at .05 level. The Post- hoc analysis reveals there exists significant difference between high and average, high and low and average and low academic delay of gratification for aided school sample.

**Main effects of independent variables for unaided school sample**

The main effects of the independent variables-three Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics is estimated for unaided school sample and is given below:

| Variables | F value | Level of significance |
|---|---|---|
| Parenting Style | .92 | NS |
| Classroom Climate | .21 | NS |
| Academic Delay of Gratification | 7.25 | .01 |

The F value obtained for Parenting Style and Classroom Climate are not significant. The main effect of Academic Delay of Gratification is found significant at .01 level. The Post hoc analysis reveals there exists significant difference between high and average, high and low and average and low academic delay of gratification for unaided school sample.

**Main effects of independent variables for rural school sample**

The main effects of the independent variables- three Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics is estimated for rural school sample and is given below:

| Variables | F value | Level of significance |
|---|---|---|
| Parenting Style | 4.08 | .05 |
| Classroom Climate | 3.73 | .05 |
| Academic Delay of Gratification | 6.93 | .01 |

The F value obtained for Parenting Style and Classroom Climate are significant at .05 level**.** The F value obtained for Academic Delay of Gratification is significant at .01 level. But, Post-hoc analysis reveals there exists no significant difference among three Parenting Styles. The Post- hoc analysis reveals that there exists a significant difference between high and moderate, high and low, moderate and low perceived classroom climate. Also, significant difference exists between high and average, high and low and average and low academic delay of gratification for rural school sample.

**Main effects of independent variables for urban school sample**

The main effects of the independent variables- three Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics is estimated for urban school sample and is given below:

| Variables | F value | Level of significance |
|---|---|---|
| Parenting Style | .13 | NS |
| Classroom Climate | .09 | NS |
| Academic Delay of Gratification | 7.97 | .01 |

The F value obtained for Parenting Style and Classroom Climate are not significant. The main effect of Academic Delay of Gratification is found significant at .01 level. The Post hoc analysis reveals there exists significant difference between high and average, high and low and average and low academic delay of gratification groups of urban school sample.

**Interaction effect of independent variables**

Interaction effects of independent variables Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics were estimated for total sample and relevant subgroups based on gender, type of management and locale of the schools. Summary of the first order and second order interaction effects are presented.

**Interaction effect of independent variables for total sample**

Three first order interaction effects and second order interaction effects for the independent variables -Parenting Styles, Classroom Climate and Academic

Delay of Gratification on the dependent variable Self-regulated Learning in Physics of Secondary School Students for the total sample were estimated and presented below:

| Interaction of variables | F- value | Level of significance |
|---|---|---|
| Parenting Style X Classroom Climate | 1.40 | NS |
| Parenting Style X Academic Delay of Gratification | 3.09 | .01 |
| Classroom Climate X Academic Delay of Gratification | .97 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | 1.49 | NS |

The F value obtained for the interaction effects of Parenting Style Vs Classroom Climate and Classroom Climate Vs Academic Delay of Gratification are not significant. First order interaction effect of Parenting Style and Academic Delay of Gratification is not significant. The interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics is not significant for total sample.

**Interaction effect of independent variables for male sample**

Three first order interaction effects and second order interaction effects for the independent variables Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics of Secondary School Students for male sample were estimated and presented below:

| Interaction of Variables | F- value | Level of significance |
|---|---|---|
| Parenting Style  X Classroom Climate | .93 | NS |
| Parenting Style  X Academic Delay of Gratification | 1.52 | NS |
| Classroom Climate  X Academic Delay of Gratification | 1.38 | NS |
| Parenting Style  X Classroom Climate X Academic Delay of Gratification | 2.15 | NS |

The F value obtained for the interaction effects of Parenting Style Vs Classroom Climate, Parenting Style Vs Academic Delay of Gratification and Classroom Climate Vs Academic Delay of Gratification are not significant. The interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics is not significant for male sample.

**Interaction effect of independent variables for female sample**

Three first order interaction effects and second order interaction effects for the independent variables Parenting Styles, Classroom Climate and Academic Delay of Gratification on the Dependent Variable Self-regulated Learning in Physics of Secondary School Students for female sample were estimated and presented below:

| Interaction of Variables | F- value | Level of significance |
|---|---|---|
| Parenting Style  X Classroom Climate | .48 | NS |
| Parenting Style  X Academic Delay of Gratification | 3.28 | .01 |
| Classroom Climate  X Academic Delay of Gratification | .51 | NS |
| Parenting Style  X Classroom Climate X Academic Delay of Gratification | 1.28 | NS |

The F value obtained for the interaction effects of Parenting Style Vs Classroom Climate and Classroom Climate Vs Academic Delay of Gratification are not significant. The first order interaction effect of Parenting Style and Academic Delay of Gratification is significant at .01 level. The interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics is not significant for female sample.

**Interaction effect of independent variables for government school sample**

Three first order interaction effects and second order interaction effects for the independent variables Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics of Secondary School Students for government school sample were estimated and presented below:

| Interaction of Variables | F- value | Level of significance |
|---|---|---|
| Parenting Style X Classroom Climate | .43 | NS |
| Parenting Style X Academic Delay of Gratification | 2.30 | NS |
| Classroom Climate X Academic Delay of Gratification | .62 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | .37 | NS |

The F value obtained for the interaction effects of Parenting Style Vs Classroom Climate, Parenting Style Vs Academic Delay of Gratification and Classroom Climate Vs Academic Delay of Gratification are not significant. The interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics is not significant for government school students.

**Interaction effect of independent variables for aided school sample**

Three first order interaction effects and second order interaction effects for the independent variables Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics of Secondary School Students for aided school sample were estimated and presented below:

| Interaction of Variables | F- value | Level of significance |
|---|---|---|
| Parenting Style X Classroom Climate | 2.53 | .05 |
| Parenting Style X Academic Delay of Gratification | .16 | NS |
| Classroom Climate X Academic Delay of Gratification | 1.02 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | 3.39 | .01 |

The F value obtained for Parenting Style and Classroom Climate is significant at .05 level. The first order interaction effects of Parenting Style Vs Academic Delay of Gratification and Classroom Climate Vs Academic Delay of Gratification are not significant. The interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics is significant at .01 level for aided school students.

**Interaction effect of independent variables for unaided school sample**

Three first order interaction effects and second order interaction effects for the independent variables Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics of

Secondary School Students for unaided school sample were estimated and presented below:

| Interaction of Variables | F- value | Level of significance |
| --- | --- | --- |
| Parenting Style X Classroom Climate | 1.77 | NS |
| Parenting Style X Academic Delay of Gratification | 2.04 | NS |
| Classroom Climate X Academic Delay of Gratification | 1.54 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | .71 | NS |

The F value obtained for the interaction effects of Parenting Style Vs Classroom Climate, Parenting Style Vs Academic Delay of Gratification and Classroom Climate Vs Academic Delay of Gratification are not significant. The interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics is not significant for unaided school students.

**Interaction effect of independent variables for rural school sample**

Three first order interaction effects and second order interaction effects for the independent variables Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics of Secondary School Students for rural school sample were estimated and presented below:

| Interaction of Variables | F- value | Level of significance |
|---|---|---|
| Parenting Style X Classroom Climate | 1.19 | NS |
| Parenting Style X Academic Delay of Gratification | 2.62 | .05 |
| Classroom Climate X Academic Delay of Gratification | .75 | NS |
| Parenting Style X Classroom Climate X Academic Delay of Gratification | .62 | NS |

The F value obtained for the interaction effects of Parenting Style Vs Classroom Climate and Classroom Climate Vs Academic Delay of Gratification are not significant for rural school students. The first order interaction effect of Parenting Style and Academic Delay of Gratification is significant at .05 level. The interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics is not significant for rural school students.

**Interaction effect of independent variables for urban school sample**

Three first order interaction effects and second order interaction effects for the independent variables Parenting Styles, Classroom Climate and Academic Delay of Gratification on the dependent variable Self-regulated Learning in Physics of Secondary School Students for urban school sample were estimated and presented below:

| Interaction of Variables | F- value | Level of significance |
|---|---|---|
| Parenting Style  X Classroom Climate | .62 | NS |
| Parenting Style  X Academic Delay of Gratification | 1.32 | NS |
| Classroom Climate  X Academic Delay of Gratification | 1.67 | NS |
| Parenting Style  X Classroom Climate  X Academic Delay of Gratification | 2.06 | NS |

The F value obtained for the interaction effects of Parenting Style Vs Classroom Climate, Parenting Style Vs Academic Delay of Gratification and Classroom Climate Vs Academic Delay of Gratification are not significant for urban school students. The interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics is not significant for urban school students.

**Individual and Joint Contributions of independent variables**

Multiple correlation and Regression analysis using enter method has been applied to find out the individual and joint contributions of Parenting Styles, Classroom Climate and Academic Delay of Gratification in Predicting Self-regulated Learning in Physics of Secondary School Students.

The multiple correlation co efficient was found to be .42 which is significant at .01 level. It means that Parenting Style, Classroom Climate and Academic Delay of Gratification contribute significantly in predicting Self-regulated Learning in Physics of Secondary School Students. Further the percentage of joint contribution of Parenting Style, Classroom Climate and Academic Delay of Gratification in predicting Self-regulated Learning in Physics is 17.4 percent. The individual

contributions of Academic Delay of Gratification, Classroom Climate and Authoritative, Permissive and Authoritarian Parenting Styles in predicting Self-regulated Learningn in Physics are 10.53%, 3.13 %, 2.89%, .70 % and .09% respectively.

For predicting Self-regulated Learning in Physics from five predictor variables viz. Academic Delay of Gratification, Classroom Climate, Authoritative, Permissive and Authoritarian Parenting Styles, the regression equation is calculated and presented as follows:

$$Y = .291X_1 + .087X_2 + .254X_3 + .051X_4 + .009X_5 + 50.07$$

Where, $Y$ =    Self-regulated Learning in Physics

$X_1$ =    Academic Delay of Gratification

$X_2$ =    Classroom Climate

$X_3$ =    Authoritative Parenting Style

$X_4$ =    Permissive Parenting Style

$X_5$ =    Authoritarian Parenting Style

**Major Findings-at a glance**

1.    The ANOVA results revealed that the three independent variables Parenting Style, Classroom Climate and Academic Delay of Gratification have significant main effects on Self-regulated Learning in Physics.  The multiple regression results revealed that all the three Parenting Styles, Classroom Climate and Academic Delay of Gratification are significant predictors of Self-regulated Learning in Physics among which Academic Delay of Gratification (Beta weights =10.53) is the highest contributing factor to the Self-regulated Learning in  Physics, the least being Authoritarian Parenting

Style (Beta weights =.096). Among the three Parenting Styles selected-Authoritative, Authoritarian and Permissive, Authoritative Parenting Style (Beta weights=2.89) influences Self-regulated Learning in Physics more when compared with other two.

## 2. Gender difference

i.  There is significant gender difference in the three Parenting Styles viz. Authoritative, Authoritarian and Permissive perceived by Secondary School Students ($p<=.01$)

ii.  There is significant gender difference in the Classroom Climate perceived by Secondary School Students ($p<=.01$)

iii.  There is significant gender difference in Academic Delay of Gratification of Secondary Students ($p<=.01$)

iv.  There exists a significant difference in Self-regulated Learning ability in Physics of Secondary Students based on gender($p<=.01$)

## 3. Management Difference

i.  No significant difference is found among Secondary School Students in perceiving Authoritative Parenting Style based on type of management of schools($p>.05$). There is significant difference in perceiving Authoritarian Parenting Style between Govt. and aided school students and also between Govt. and unaided school students ($p<=.01$). Also, there found a significant difference in perceiving Permissive Parenting Style based on type of management of schools.

ii.     No significant difference is found among Secondary School Students in perceiving Classroom Climate of Govt. and aided schools (*p>.05*), but found significant difference in perceiving Classroom Climate of Govt. and unaided schools and also between aided and unaided schools(*p<=.01*).

iii.    No significant difference in Academic Delay of Gratification is found among Secondary School Students based on the type of management of schools (*p>.05*).

iv.     A significant difference is found in the variable Self-regulated Learning in Physics of Secondary School Students based on the type of management of schools. That is, Self-regulated Learning in Physics between Govt. and aided school students (*p<=.01*), Govt. and unaided school students (*p<=.05*), for aided and unaided school students (*p<=.01*) is significant.

**4      Locale Differences**

i.      There is no significant difference in perceiving Authoritative and Authoritarian Parenting Styles of Secondary School Students based on locale of the school(*p>.05*), but a significant difference is found in perceiving Permissive Parenting Style is found among Secondary School Students based on the locale of school(*p<=.05*)

ii.     No significant difference is found among Secondary School Students in perceiving Classroom Climate based on locale of the school(*p>.05*)

iii.    There is significant difference found in Academic Delay of Gratification among Secondary School Students based on locale of the school(*p<=.01*)

iv.   No significant difference is found among Secondary School Students in the variable Self-regulated Learning in Physics based on locale of the school($p>.05$)

5.    Significant main effects exist for Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics among Secondary School Students.

6.    The main effect of Parenting Style on Self-regulated Learning in Physics is not significant in the case of male, female ,aided, unaided, urban group of Secondary School Students($p>.05$), but it is significant in the case of  Govt. and rural group of Secondary School Students($p<=.01$)

7.    The main effect of Classroom Climate on Self-regulated Learning in Physics is significant for male, female, Govt. and rural group of Secondary School Students, but it is not significant for aided, unaided and urban group of Secondary School Students($p>.05$)

8.    The main effect of Academic Delay of Gratification on Self-regulated Learning in Physics is significant among Secondary School Students except for male students. In the case of male students, the main effect of Academic Delay of Gratification on Self-regulated Learning in Physics is not significant($p>.05$)

9.    The interaction effect of Parenting Style and Classroom Climate on Self-regulated Learning in Physics is not significant ($p>.05$) for any of the groups except aided school students. In the case of aided school students, the interaction effect of  Parenting Style and Classroom Climate on Self-regulated Learning in Physics is significant($p<=.05$)

10. The interaction effect of Parenting Style and Academic Delay of Gratification on Self-regulated Learning in Physics is significant among Secondary School Students($p<=.01$), female ($p<=.01$)and rural group of Secondary School Students($p<=.05$), but not significant for any other groups($p>.05$).

11. The interaction effect of Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics is not significant ($p>.05$) among Secondary School Students.

12. The interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics is significant for aided school students($p<=.01$), but not significant for any other groups($p>.05$).

13. Multiple regression analysis reveals that Parenting Style, Classroom Climate and Academic Delay of Gratification jointly contribute significantly in predicting Self-regulated Learning in Physics among students. The individual contributions of Parenting Style, Classroom Climate and Academic Delay of Gratification in predicting Self-regulated Learning are also significant. Hence, it is concluded that Self-regulated Learning can be predicted from Parenting Styles, Classroom Climate and Academic Delay of Gratification of Secondary School Students.

## Conclusion

The present study was to study the influence of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics among Secondary School Students. From the study the investigator concluded that

three independent variables Parenting Style, Classroom Climate and Academic Delay of Gratification has a significant influence on dependent variable Self-regulated Learning.

Among the variables, Academic Delay of Gratification is found to be the major contributor of Self-regulated Learning in Physics. The main effect of Academic Delay of Gratification has vital influence on Self-regulated Learning in Physics for the total sample and all other relevant subgroups except male sample. This findings hold up with the results of studies conducted by Pychyl (2009), Bembenutty (2007) and Avci (2013).The interaction effect of Academic Delay of Gratification and Parenting Style is significant only for total sample, female and rural sample of students. The interaction effect of Academic Delay of Gratification and Classroom Climate is not significant for total sample and relevant subgroups. Another important finding is that Academic Delay of Gratification is found to be more in female students than male students. This finding also supports with the results of Pychyl (2009). No difference in Academic Delay of Gratification is found based on the type of management of schools. It is also noticed that rural school students' Academic Delay of Gratification is more when compared with their counter parts.

The second most contributors to Self-regulated Learning in Physics are Classroom Climate. The main effect of Classroom Climate has influence on Self-regulated Learning in Physics for total sample, male, female, government and rural school sample. The interaction effect between Classroom Climate and Parenting Style is only significant in the case of aided school students. The interaction effect between Classroom Climate and Academic Delay of Gratification among students is not found significant. Also, found a significant difference in Classroom Climate

between female and male students. Female students are more satisfied with the existing classroom climatic conditions than male students. This findings agree with the results of study conducted by Das, K.K.S. and Kumar, P.K.S.(2002).It is noted that there is a significant difference in perception of Classroom Climate between Govt. Vs unaided school students and aided Vs unaided school students. No difference in perception of class room climate is observed between rural and urban school students.

The third contributor to Self-regulated Learning is Parenting Style. Among the three selected Parenting Styles- Authoritative, Authoritarian and Permissive, Authoritative Parenting Style influences Self-regulated Learning in Physics more when compared with other two. The main effect of Parenting Style has no much influence on Self-regulated Learning in Physics for total sample and relevant subgroups. This findings supports partially with results of studies conducted by Jittaseno and Varma (2016) and also by Huang,J. and Prochner (2003).Interaction effect between Parenting Style and Classroom Climate is only significant for aided school students. Interaction effect between Parenting Style and Academic Delay of Gratification is found significant for total sample, female and rural sample. A significant gender difference is noted in perceiving various Parenting Styles. Female students perceive better Parenting Styles than male students. This finding supports with the results of Stephen (2009) and Mathibe (2015) and contradictory with some results of Kausar and Shafique (2008). No significant difference is observed in perceived Authoritative Parenting Style based on the type of management. A significant difference is noticed in perceiving authoritarian Parenting Style between Govt. Vs aided school students and also between Govt. Vs unaided school students. Perception of permissive Parenting Style also found significant based on the type of management of schools. Students of unaided schools perceive better permissive

Parenting Style than aided and govt. school students. Rural and urban school students are found no difference in the perception of Authoritative and Authoritarian Parenting Styles. Also, noticed urban school students perceive better permissive Parenting Style than rural school students.

Self-regulated Learning ability in Physics is more in female students when compared with male students. In a study conducted by Bidjerano (2005), a gender difference is found in reporting the use of Self-regulated Learning strategies, which is supporting the present study results. Aided school students followed by unaided and govt. school students possess more Self-regulated Learning ability in Physics. Also, found no disparity in Self-regulated Learning ability in Physics between rural and urban school students.

From the study it was concluded that Parenting Style, Classroom Climate and Academic Delay of Gratification jointly contribute significantly in predicting Self-regulated Learning ability in Physics among students. The individual contributions of Parenting Style, Classroom Climate and Academic Delay of Gratification in predicting Self-regulated Learning in Physics are also significant. Hence, it is concluded that Self-regulated Learning in Physics can be predicted from Parenting Styles, Classroom Climate and Academic Delay of Gratification of Secondary School Students. This findings agree with the results of studies conducted by Tigist (2008) and Bembenutty and Karabenick (1998).

**Scope and Delimitation of the study**

The main purpose of investigation is to explore how Parenting Style, Classroom Climate and Academic Delay of Gratification influenced on the Self-regulated Learning in Physics of Secondary School Students. For this study, appropriate tools available as well as constructed by investigator were used. With

the help of appropriate tools, the required data were collected from 1004 Secondary School Students from all districts of Kerala state to make the study more objective and precise. Analysis of data was done with utmost care.

It is expected to yield generalized results from study as the sample taken covered from almost all districts of Kerala. The inference of the study may provide valuable suggestions for educators and administrators.

But, due to practical considerations, the following delimitations are as follows

1.      Data were not taken from Idukki and Pathanamthitta districts.
2.      The study was limited to IX$^{th}$ standard students only.
3.      The study could not take in to account the effect of difference in medium of educational institution.
4.      A number of intervening variables may associate with Self-regulated Learning, but all variables were not taken in to consideration.
5.      The study is limited to 1004 students only.

## Support / Nonsupport of Hypotheses

The first hypothesis states that *there exists significant difference in the mean scores of various Parenting Styles of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school.* The findings of the study revealed that there exists a significant difference between male and female students in perceiving Authoritative, Authoritarian and Permissive Parenting Style. Also, found that there exists a significant management difference in perceiving Authoritarian and Permissive Parenting Styles and significant locality difference exist in perceiving Permissive Parenting Style. There is no significant

management difference in perceiving Authoritative Parenting Style and no significant locality difference in perceiving Authoritative and Authoritarian Parenting Style. Hence, the hypothesis is partially substantiated.

The second hypothesis states that ***there exists significant difference in the mean scores of Classroom Climate of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school***. The findings of the study revealed there exists a significant difference between male and female students in their Classroom Climate. There exists no significant difference between government and aided school students in perceiving their Classroom Climate. But, there exist significant difference for government Vs unaided and aided Vs unaided school students in perceiving their classroom climate. There is no significant locality difference in perceiving their Classroom Climate. Hence, the hypothesis is partially substantiated.

The third hypothesis states that ***there exists significant difference in the mean scores of Academic Delay of Gratification of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school.*** Results of the study show that there is significant difference between male and female students in Academic Delay of Gratification. There is no significant management difference exist in Academic Delay of Gratification among students. Also, there exists significant difference in academic delay of gratification among students based on their locality. Hence, the hypothesis is partially substantiated.

The fourth hypothesis states that ***there exists significant difference in the mean scores of Self-regulated Learning in Physics of Secondary School Students based on the subgroups gender, locale of the school and type of management of the school***. The findings of the study revealed that there exists a significant

difference between male and female students in their Self-regulated Learning. There exist significant management difference exist among students in their Self-regulated Learning ability in Physics. There is no significant locality difference in Self-regulated Learning in Physics among secondary school students. Hence, the hypothesis is partially substantiated.

The fifth hypothesis states that ***the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for the total sample***. Statistical findings revealed that the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics for total sample is significant. Hence, the hypothesis is fully substantiated.

The sixth hypothesis states that ***the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for the male subgroups.*** The findings revealed that the main effect of Parenting Style, and Academic Delay of Gratification on Self- regulated Learning in Physics for male sample is not significant. The main effect of Classroom Climate on Self-regulated Learning in Physics for male sample is significant. Hence, the hypothesis is partially substantiated.

The seventh hypothesis states that ***the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for the female subgroups***. The study results revealed that Parenting Style on Self-regulated Learning for female sample is not significant. The main effect of Classroom Climate

and Academic Delay of Gratification on Self-regulated Learning in Physics for female sample is significant. Therefore, the hypothesis is partially substantiated.

The eighth hypothesis states that ***the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for rural sub sample.*** Results of the study revealed that the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics for rural school students is significant. Hence, the hypothesis is fully substantiated.

The ninth hypothesis states that ***the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for urban subgroups***. Statistical results revealed that the main effect of Parenting Style and Classroom Climate on Self-regulated Learning in Physics for urban school students are not significant. The main effect of academic delay of gratification on Self-regulated Learning for urban school students is significant. Therefore, the hypothesis is partially substantiated.

The tenth hypothesis states that ***the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for government subgroups***. The findings revealed that the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- Regulated Learning in Physics for government sample is significant. Hence, the hypothesis is fully substantiated.

The eleventh hypothesis states that ***the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for aided subgroups***. Statistical results revealed that the main effect of Parenting Style and Classroom Climate on Self-regulated Learning in Physics for aided school students are not significant. The main effect of Academic Delay of Gratification on Self-regulated Learning in Physics for aided school students is significant. Therefore, the hypothesis is partially substantiated.

The twelfth hypothesis states that ***the main effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for unaided subgroups***. The findings revealed that the main effect of Parenting Style and Classroom Climate on Self-regulated Learning for unaided school students are not significant. The main effect of Academic Delay of Gratification on Self-regulated Learning in Physics for unaided school students is significant. Therefore, the hypothesis is partially substantiated.

The thirteenth hypothesis states that ***the first order interaction effect of Parenting Style and Classroom Climate on Self- regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups***. Statistical results revealed that the interaction effect of Parenting Style and Classroom Climate on Self- regulated Learning in Physics of Secondary School Students is not significant for the total sample and relevant subgroups except aided school students. Hence, the hypothesis is partially rejected.

The fourteenth hypothesis states that ***the first order interaction effect of Parenting Style and Academic Delay of Gratification on Self- regulated Learning***

*of Secondary School Students will be significant for the total sample and relevant subgroups*. The findings revealed that the interaction effect of Parenting Style and Academic Delay of Gratification on Self- regulated Learning of Secondary School Students is significant for the total sample, female sample, rural sample of students and is not significant for male students, government school students, aided, unaided and urban school students. Hence, the hypothesis is partially rejected.

The fifteenth hypothesis states that *the first order interaction effect of Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups*. The findings revealed that the interaction effect of Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics of Secondary School Students is not significant for the total sample and relevant subgroups. Hence, the hypothesis is completely rejected.

The sixteenth hypothesis states that *the second order interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students will be significant for the total sample and relevant subgroups.* The study results revealed that the second order interaction effect of Parenting Style, Classroom Climate and Academic Delay of Gratification on Self- regulated Learning in Physics is only significant for aided school students, but not significant for total sample, male, female, government, unaided, rural and urban category of students. Hence, the hypothesis is partially substantiated.

The seventeenth hypothesis states that *there is significant individual and combined contribution of three Parenting Styles, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of*

***Secondary School Students for total sample.*** Results of the analysis show that there is a significant individual and joint contribution of Parenting Styles, Classroom Climate and Academic Delay of Gratification on Self-regulated Learning in Physics of Secondary School Students for total sample. Hence, the hypothesis is fully substantiated

## Suggestions for Improving Educational Practices

Self-regulation is a life skill to be developed in every child. Self-regulated learners not only excel in academic activities alone, but could regulate their work in future career and life endeavors. Hence, this behavior should be encouraged in children from the grass root level onwards.

As far as the present study is concerned, Secondary School Students possess Self-regulated Learning ability in Physics; still, it is to be raised in them. It could be increased by raising their Academic Delay of Gratification, providing better Classroom Climate, also by promoting Authoritative Parenting Style.

Delaying gratification is one of the life examining skill to be developed in children. Though Academic Delay of Gratification is a student factor, it can be developed in them by the conscious efforts of parents and teachers. They need not believe high IQ and good test scores are the best indicators for a successful child in future. They need to cultivate strong self control in their children. For that, create an environment in which self-control is consistently rewarded, model self-control for them, develop and practice 'if-then' plans(i.e. forming implementation intensions-if situation X is encountered, then I will perform behavior Y), teach them to set achievable goals, prioritize the most important one from the wish lists made by them. Learn them how to cope with discomfort of waiting, teach positive self-talk (I am capable, I am confident, I can, I am ok…), play games that require focus and

attention, play quiet games-learning to become quiet in certain circumstances. Also to become a patient postponers of gratified items for better results and rewards in the future. Being a student, all the gratifying things must be set aside and concentrate in academic matters first. Provide them motivation and self-awareness classes for framing a bright academic career and to have a better life in future.

Though parents could not stick on to a particular Parenting Style throughout, circumstances make them -Authoritative, Authoritarian and Permissive. But, in order to build up Self regulated learners, Authoritative Parenting Style is found to be more preferred. Parents need to become Authoritative while dealing with children and it is not a tedious task to become such a parent. For that, they should listen their children, allow them autonomy, but set some limits on behavior and encourage independence. Parents do not demand children's respect; situationally they earn and use positive discipline instead of punitive. Non-punitive discipline should be promoted in children, to develop honesty and to prevent aggressive behavior in them. Through Authoritative Parenting Style, better problem solving skills, cognitive competence and emotional control could be developed among children.

Classroom ecology also should be considered for developing self-regulated behavior in students. Pursue a curriculum not only academic, but also social and emotional, that promote learning. Foster intrinsic motivation among students, provide social support mechanisms for students and staff. Praise the children frequently and find something positive to say about, for each student. If a student has better Classroom Climate in his/her school, he/she has a greater chance to develop his/her cognitive and affective behavior. The components of Classroom Climate have a greater influence in the academic matters and then, they themselves develop Self-regulated Learning ability in them. So, there will not be any delay in

academic activities. By providing better Classroom Climate, a glorious educational system should be enhanced. For that, better curriculum and new transactional strategies are needed. It is not a thing that happens suddenly or automatically; rather students approach learning with goals and the extent to which they self-regulate, depends on their commitment towards the goals, their beliefs about the likely outcomes of their actions and self-efficacy or personal beliefs, about their capabilities to learn or perform. Prior to all this, policy makers, administrators and stake holders should take attention to prepare well-versed curriculum and its organization. And it should be implemented from kindergarten level onwards.

Teachers are likely to integrate student-centered activities in their instruction planning, variety of scaffolding techniques, explicit instruction in classroom, could offer autonomy, control challenge etc. Intensive pre-service and in-service training should be given to teachers for raising self-regulatory skills and self-regulatory behavior among students. Teachers who engage in self-regulation only could be able to meet those demands; otherwise less likely to support the development of these abilities. And if needed, necessary training to promote self-regulatory activities also should be given to them. Data from the logs can help teachers to know the strengths and weakness of students, and help them to overcome their weaknesses. Research evidence showed that students' self-regulation skills and motivational beliefs correlate positively with their homework activities. So, teachers support these kinds of home works that promote self-regulation abilities in children.

### Directions for future research

The possibility of expanding this research is limitless. The investigator suggests a few directions for which future researches must be concentrated.

- Self-regulated Learning should be promoted from primary school students onwards as in this stage; one can mould the behavior of children. Ensure Self-regulated Learning abilities in higher secondary school students also as they are going through their first turning point in their academic life. Then only they could develop self-regulatory behaviors in their future life. ***So the present study can be extended among primary school students and higher secondary school students.***

- Many psycho social variables are there in addition to Parenting Styles, Classroom Climate and Academic Delay of Gratification that influence Self-regulated Learning. Researchers need to identify those variables. Hence, ***Studies can be conducted to identify other psycho social variables that influence Self-regulated Learning***.

- Students Self-regulated Learning can be promoted through the use of self-instructional materials. ***Research works are needed to develop packages and modules in Self-regulated Learning.***

- Apart from literature subjects, logical sequences are needed for studying certain subjects like Physics, Chemistry, Maths etc. ***Hence, the present study can be duplicated to find the Self-regulated Learning ability in Mathematics, Chemistry etc.***

- As long as the world is there, rearing of children also will be there. But, there will be changes in the Parenting Style from generations to generations. And in this busy world, consciously, each parent should find time to spend precious moments with their children especially during their academic period. ***So further efforts are needed to examine the differences in the academic achievement of children perceiving various Parenting Styles.***

- In addition to the predictor variables in the present study, so many other variables are there for predicting Self-regulated Learning. ***So Studies can be conducted to identify other variables as predictors of Self-regulated Learning.***

- Self-regulated Learning has philosophical aspect also in addition to socio-cognitive perspective. ***Hence, a qualitative design can be used which will allow for an in-depth exploration of philosophical perspective of Self-regulated Learning among students***.

- Today is the era of Inclusive education. Self-regulated Learning modules and packages promote cognitive capacity in differently abled children. ***Hence, a study can be conducted to find the effect of Self-regulated Learning packages on academic achievement among differently abled children in Kerala.***

- From literature review the researcher hardly find studies on Academic Delay of Gratification and in combination with Self-regulated Learning in Indian context. ***Researches need to be conducted in the area of Academic Delay of Gratification and Self-regulated Learning among students in Indian context.***

- Cognitive variables like Intelligence, Learning Style etc will influence Self-regulated Learning of students. ***Studies are to be done by incorporating these variables to find their effectiveness on Self-regulated Learning among students.***

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# Appendices

# Appendix 1

## FAROOK TRAINING COLLEGE, CALICUT
## Self-regulated Learning Scale in Physics
## (Draft-2014)

**Dr.C.M.BINDHU**                    **SINDHU.C.M**
Associate Professor                   Research Scholar (JRF)
Farook Training College               Farook Training College

**Personal Information**

Name of the Student       :

Name of the School        :

Type of School            :         Govt./Private

Gender                    :         Male/Female

Locality                  :         Rural/Urban

## Section A

**നിർദ്ദേശങ്ങൾ:**

നിങ്ങളുടെ ഭൗതികശാസ്ത്രവിഷയവുമായി ബന്ധമുള്ള 50 പ്രസ്താവനകളാണ് താഴെ കൊടുത്തിരിക്കുന്നത്. ഓരോ പ്രസ്താവനയ്ക്കും എല്ലായ്പ്പോഴും/ചിലപ്പോൾ മാത്രം/ഒരിക്കലുമില്ല എന്നിങ്ങനെ മൂന്ന് പ്രതികരണങ്ങളുണ്ട് അനുയോജ്യമെന്ന് തോന്നുന്ന പ്രതികരണങ്ങൾ ശരി ചിഹ്നം (✓) ഉപയോഗിച്ച് രേഖപ്പെടുത്തുക

| Sl. No | പ്രസ്താവനകൾ | എല്ലായ്പ്പോഴും | ചിലപ്പോൾ മാത്രം | ഒരിക്കലുമില്ല |
|---|---|---|---|---|
| 1 | പഠനത്തിന്റെ ആവശ്യകതയെക്കുറിച്ച് എനിക്ക് നല്ല ധാരണയുണ്ട്. | | | |
| 2 | ഭാവിയെപറ്റിയുള്ള ചിന്തകളാണ് കൂടുതൽ പഠിക്കാൻ എനിക്ക് പ്രചോദനമാകുന്നത്. | | | |
| 3 | പഠിക്കുമ്പോൾ അനുഭവപ്പെടുന്ന പ്രയാസങ്ങൾ ഒഴിവാക്കാനായി ഞാൻ അതുവരെ തുടർന്നിരുന്ന പഠനരീതി ഒഴിവാക്കാറുണ്ട്. | | | |

| Sl. No | പ്രസ്താവനകൾ | യോജിക്കുന്നു | യോജിക്കുന്നില്ല | അഭിപ്രായമില്ല |
|--------|-------------|---------------|-----------------|----------------|
| 4 | പ്രയാസമേറിയ പാഠഭാഗങ്ങൾപദ്യരൂപത്തിലാക്കിയോ ദൃശ്യരൂപത്തിൽ സങ്കല്പിച്ചോ ആണ് ഞാൻ പഠിക്കാറുള്ളത്. | | | |
| 5 | പഠനപ്രവർത്തനങ്ങളിൽ സ്ക്കൂൾ ലൈബ്രറിയുടെ സഹായം തേടാറുണ്ട്. | | | |
| 6 | പഠിക്കാനുള്ള എന്റെ കഴിവുകളും പരിമിതികളും എനിക്ക് അറിയാം | | | |
| 7 | പഠനകാര്യങ്ങൾ കൃത്യമായി ചെയ്യാൻ എനിക്ക് യാതൊരു പ്രചോദനത്തിന്റെയും ആവശ്യമില്ല. | | | |
| 8 | പഠിച്ച കാര്യങ്ങൾ സ്വയം വിലയിരുത്താറുണ്ട്. | | | |
| 9 | പഠനത്തിൽ നിന്ന് ശ്രദ്ധമാറി പോകുമ്പോൾ " ഇവിടെ ശ്രദ്ധിക്കൂ " എന്നു സ്വയം ഓർമ്മപ്പെടുത്താറുണ്ട്. | | | |
| 10 | പഠനവിഷയവുമായി ബന്ധപ്പെട്ട് സമൂഹത്തിലെ പ്രഗല്ഭരുടെ ക്ലാസ്സുകൾ ശ്രവിക്കാറുണ്ട്. | | | |
| 11 | സംവാദം, സംഘചർച്ച തുടങ്ങിയ പാഠ്യപ്രവർത്തനങ്ങളിൽ തിളങ്ങി നിൽക്കാൻ എനിക്ക് സാധിക്കാറില്ല | | | |
| 12 | ശാസ്ത്രമേളയിൽ സഹപാഠിയുടെ മികവിന് ലഭിക്കുന്ന അംഗീകാരം എന്നിൽ അസൂയ ഉളവാക്കാറുണ്ട് | | | |
| 13 | വായിക്കുന്നത് എന്തിനെക്കുറിച്ചാണെന്ന് എനിക്ക് തന്നെ ധാരണയുണ്ടാവാറില്ല | | | |
| 14 | പാഠഭാഗങ്ങൾ ആഴത്തിൽ മനസ്സിലാക്കി പഠിക്കാൻ കഴിയാറില്ല | | | |
| 15 | ശാസ്ത്രസംബന്ധമായ എന്റെ കഴിവുകൾ പ്രകടമാക്കാൻ സ്ക്കൂൾ ശാസ്ത്രമേളകൾ സഹായകരമാവാറില്ല. | | | |
| 16 | പഠനകാര്യങ്ങളിൽ ശരിയായി തയ്യാറെടുക്കുകയും മനസ്സിലാക്കുകയും ചെയ്യാത്തതാണ് പലപഠന പ്രശ്നങ്ങളും അഭിമുഖീകരിക്കാൻ കഴിയാത്തതിന്റെ കാരണം. | | | |
| 17 | ശാസ്ത്രജ്ഞരുടെ ജീവചരിത്രങ്ങൾ ശാസ്ത്രസംബന്ധമായ പുസ്തകങ്ങൾ തുടങ്ങിയവ വായിക്കുന്നതിലൂടെ എനിക്ക് ശാസ്ത്ര വിഷയങ്ങളോടുള്ള താൽപര്യം വർദ്ധിക്കാറുണ്ട്. | | | |

| Sl. No | പ്രസ്താവനകൾ | യോജിക്കുന്നു | യോജിക്കുന്നില്ല | അഭിപ്രായമില്ല |
|--------|-------------|--------------|-----------------|---------------|
| 18 | പഠിച്ച കാര്യങ്ങൾ ഉചിതമായ സന്ദർഭങ്ങളിൽ പ്രാബല്യത്തിൽ വരുത്താൻ കഴിയാറുണ്ട്. | | | |
| 19 | പഠിച്ച ഭാഗത്തു നിന്നും വരാൻ സാധ്യതയുള്ള ചോദ്യങ്ങൾ സ്വയം കണ്ടുപിടിച്ച് അവയുടെ ഉത്തരങ്ങൾ ചെറുകുറുപ്പുകളായി എഴുതി സൂക്ഷിക്കാറുണ്ട്. | | | |
| 20 | ശാസ്ത്രമേളയിലെ എന്റെ പ്രകടനത്തിന് പ്രത്യേക പരിഗണന ലഭിച്ചിട്ടുണ്ട് | | | |
| 21 | ക്ലാസ്സിൽ ഒന്നാമനാകുക എന്നതാണ് എന്നെ സംബന്ധിച്ച് പ്രധാന കാര്യം | | | |
| 22 | ശാസ്ത്രീയമായ കണ്ടുപിടുത്തങ്ങൾക്ക് ലോകം നൽകുന്ന ബഹുമതികൾ എന്നിൽ അത്തരം പ്രവർത്തനങ്ങളിൽ ഏർപ്പെടുന്നതിന് പ്രചോദനം ആവാറുണ്ട്. | | | |
| 23 | പഠനവേളകളിൽ എന്റെ ചിന്ത പല മേഖലകളിലേക്കും തിരിയാറുണ്ട്. | | | |
| 24 | ഏതു പാഠം പഠിക്കാനും ഒരേതരം പഠനരീതി തന്നെയാണ് തിരഞ്ഞെടുക്കാറുള്ളത്. | | | |
| 25 | പഠനവുമായി ബന്ധപ്പെട്ട സംശയ ദുരീകരണത്തിനും കൂടുതൽ അറിവു നേടുന്നതിനും വേണ്ടി വിദ്യാഭ്യാസ സൈറ്റുകൾ ഉപയോഗപ്പെടുത്താറുണ്ട്. | | | |
| 26 | എനിക്ക് നല്ല ആത്മധൈര്യമുണ്ടെന്ന് ഞാൻ വിശ്വസിക്കുന്നില്ല | | | |
| 27 | സഹപാഠികളുടെ വിജയങ്ങൾ വിജയത്തിലേക്ക് എത്തിച്ചേരാൻ എനിക്ക് പ്രേരണ ആവാറുണ്ട്. | | | |
| 28 | എന്റെ പഠനസംബന്ധമായ ചിന്തകളും പ്രവൃത്തികളും തമ്മിൽ യാതൊരു ബന്ധവുമില്ല | | | |
| 29 | പ്രശ്ന നിർദ്ധാരണം ആവശ്യമുള്ള പാഠഭാഗങ്ങൾ കാണാപാഠം പഠിക്കാറാണ് പതിവ്. | | | |
| 30 | പഠിച്ച ഭൗതികശാസ്ത്ര തത്വങ്ങൾ പരീക്ഷണ വിധേയമാക്കാൻ ഞാൻ ശ്രമിക്കാറുണ്ട്. | | | |
| 31 | വിജയിക്കുമെന്ന പ്രതീക്ഷയോടെ ഞാൻ എടുത്ത പല തീരുമാനങ്ങളും പിന്നീട് മാറ്റാറുണ്ട്. | | | |
| 32 | ഭൗതിക ശാസ്ത്രലോകത്ത് ഉണ്ടാകുന്ന കണ്ടുപിടുത്തങ്ങൾ എന്നിൽ കൗതുകം ജനിപ്പിക്കാറുണ്ട്. | | | |

| Sl. No | പ്രസ്താവനകൾ | യോജിക്കുന്നു | യോജിക്കുന്നില്ല | അഭിപ്രായമില്ല |
|--------|-------------|------------|---------------|--------------|
| 33 | ഭൗതികശാസ്ത്ര വിഷയത്തിലെ ആശയങ്ങളും വസ്തുതകളും മനസ്സിലാക്കി പഠിക്കുന്നതു വഴി ഉയർന്ന നിലയിൽ ചിന്തിക്കാൻ എനിക്ക് സാധിക്കാറുണ്ട്. | | | |
| 34 | പ്രകൃതി പ്രതിഭാസങ്ങളെക്കുറിച്ച് പഠിക്കുമ്പോൾ അവയുടെ ഓരോ തലങ്ങളേയും ഞാൻ മനസ്സിൽ ചിത്രീകരിക്കാൻ ശ്രമിക്കാറുണ്ടെങ്കിലും കഴിയാറില്ല. | | | |
| 35 | സയൻസ് ക്ലബ്ബുകളിൽ എന്റേതായ പ്രാതിനിധ്യം ഉണ്ടാവാറില്ല | | | |
| 36 | ചിന്തിക്കാതെയാണ് പഠനസംബന്ധമായ കാര്യങ്ങൾ ഞാൻ ചെയ്യാറുള്ളത്. | | | |
| 37 | പഠനസംബന്ധമായ കാര്യങ്ങൾ ചെയ്യുന്നതിനുള്ള ബാഹ്യപ്രചോദനങ്ങളെ ഞാൻ ഇഷ്ടപ്പെടുന്നില്ല. | | | |
| 38 | അനുയോജ്യമായ അവസരങ്ങളിൽ എന്റെ ചിന്താശേഷിയെ വേണ്ടും വിധത്തിൽ പ്രയോജനപ്പെടുത്താൻ കഴിയാറില്ല. | | | |
| 39 | ഓരോ പാഠഭാഗം വായിക്കുന്നതിനു മുമ്പുതന്നെ ആ പാഠഭാഗത്തെക്കുറിച്ച് എനിക്കുള്ള മുൻധാരണയെന്തെന്ന് ഞാൻ ചിന്തിക്കാറുണ്ട്. | | | |
| 40 | വിദ്യാഭ്യാസ ചാനലുകളിലൂടെ വിദ്യാഭ്യാസ വിദ്ഗധരുമായി സംവദിക്കുകയും സംശയനിവാരണം നടത്തുകയും ചെയ്യാറുണ്ട്. | | | |
| 41 | സെമിനാറുകൾ, പ്രൊജക്ട്, അസൈൻമെന്റ് തുടങ്ങിയ കാര്യങ്ങൾ പഠനത്തിന് കൂടുതൽ ഉപകാരപ്രദമാകും എന്ന തോന്നൽ എനിക്കില്ല. | | | |
| 42 | പഠനപ്രവർത്തനങ്ങളിൽ താല്പര്യമുണ്ടെങ്കിലും ഒരു ബാഹ്യപ്രേരണയോടെ മാത്രമെ ഞാൻ അത് ചെയ്യാറുള്ളൂ | | | |
| 43 | പഠിച്ച കാര്യങ്ങളാണെങ്കിലും അതു പ്രാബല്യത്തിൽ വരുത്താൻ ശ്രമിക്കുമ്പോൾ ഞാൻ പരാജയപ്പെടാറുണ്ട്. | | | |
| 44 | ബുദ്ധിമുട്ടുള്ള പാഠഭാഗങ്ങൾ ഓർമ്മിക്കുന്നതിനു വേണ്ടി പ്രത്യേകം കുറിപ്പുകളാക്കി പഠനമുറിയിൽ ഒട്ടിച്ചു വെക്കാറുണ്ട്. | | | |
| 45 | പഠനത്തിന് സഹായകമാകുന്ന രീതിയിലുള്ള ക്ലാസ്സന്തരീക്ഷമാണെങ്കിലും ഞാൻ അത് വേണ്ടത്ര പ്രയോജനപ്പെടുത്താറില്ല. | | | |

| Sl. No | പ്രസ്താവനകൾ | ശരിയാണ്/യോജിക്കുന്നു | ശരിയല്ല/യോജിക്കുന്നില്ല | നിശ്ചയമില്ല |
|---|---|---|---|---|
| 46 | ലക്ഷ്യത്തിനനുസരിച്ച്മുന്നോട്ടുപോയാലേ വിജയിക്കൂ എന്ന് ഞാൻ വിശ്വസിക്കുന്നില്ല. | | | |
| 47 | നിത്യജീവിതവുമായി ബന്ധപ്പെട്ട കാര്യങ്ങൾ പഠിക്കുമ്പോൾ അത് ചെയ്ത് നോക്കാൻ എനിക്ക് പ്രചോദനമാവാറുണ്ട്. | | | |
| 48 | പഠിച്ച ചില വിഷയങ്ങളുമായി ബന്ധപ്പെട്ട കാര്യങ്ങളിൽ തുടർ പഠനം നടത്താനാണ് എനിക്ക് താൽപര്യം . | | | |
| 49 | ഒരു പാഠഭാഗത്തിലെ പ്രധാന ആശയങ്ങൾ ക്രമത്തിൽ അടുക്കി രസകരമായി ചില ചുരുക്കപ്പേരുകൾ ഉണ്ടാക്കി ഓർക്കാൻ ശ്രമിക്കാറുണ്ട്. | | | |
| 50 | പഠനസംബന്ധമായ സംശയനിവാരണത്തിന് വെബ്സൈറ്റുകളുടെ സഹായം തേടാറില്ല. | | | |

## Section B

**നിർദ്ദേശങ്ങൾ:**

ഈ വിഭാഗത്തിൽ കൊടുത്തിരിക്കുന്ന 10 പ്രസ്താവനകൾക്ക് ഉണ്ട്/ഇല്ല or ശരി/ തെറ്റ് എന്നീ രണ്ട് തരത്തിലുള്ള പ്രതികരണങ്ങളാണ് കൊടുത്തിരിക്കുന്നത്.അതിൽ ഏതെങ്കിലും ഒന്നിൽ നിങ്ങളുടെ പ്രതികരണം ശരി ചിഹ്നം (✓) ഉപയോഗിച്ച് രേഖപ്പെടുത്തുക.

| Sl. No | പ്രസ്താവനകൾ | ഉണ്ട്/ ശരി | ഇല്ല/ തെറ്റ് |
|---|---|---|---|
| 1 | നല്ല വെയിലുള്ള ദിവസം നേർപാതയിലൂടെ സഞ്ചരിക്കുമ്പോൾ പാതയിൽ വെള്ളം നിൽക്കുന്നതുപോലെ തോന്നുന്നത് മരീചിക (Mirage) എന്ന പ്രതിഭാസം മൂലമാണെന്ന് ഞാൻ ഓർമ്മിക്കാറുണ്ട് | | |
| 2 | ഓടിക്കൊണ്ടിരിക്കുന്ന ബസ് പെട്ടെന്ന് നിർത്തുമ്പോൾ മുന്നോട്ട് വീഴാനുള്ള പ്രവണത കാണിക്കുന്നത് ജഡത്വം(Inertia)മൂലമാണെന്ന് ഞാൻ ചിന്തിക്കാറു ണ്ട്. | | |
| 3 | ജാവലിൻ ത്രോയിൽ പങ്കെടുക്കുന്നവർ ജാവലിൻ ഗ്രൗണ്ടുമായി ഏകദേശം 45$^\circ$ കോണളവിൽ എറിയുന്നത് കൂടുതൽ സഞ്ചരിക്കാനാണെന്ന കാര്യം എന്റെ ശ്രദ്ധയിൽ പെട്ടിരുന്നില്ല. | | |

| Sl. No | പ്രസ്താവനകൾ | ഉണ്ട്/ ശരി | ഇല്ല/ തെറ്റ് |
|---|---|---|---|
| 4 | വൈദ്യുതി പാഴായി പോകുന്നത് കുറയ്ക്കാൻ വേണ്ടിയാണ് സാധാരണ ബൾബു കൾ മാറ്റി CFLബൾബുകൾ ഉപയോഗിക്കുന്നത് എന്ന് ഞാൻ മനസ്സിലാക്കി യിട്ടുണ്ട്. | | |
| 5 | ഉയരം കൂടുന്നതിനനുസരിച്ച് അന്തരീക്ഷമർദ്ധം കുറഞ്ഞ് കുപ്പിയിലുള്ള ദ്രാവക ത്തിന്റെ മർദ്ധം കൂടി ദ്രാവകം പുറത്തേക്ക് വരാൻ സാധ്യത ഉള്ളതിനാൽ വിമാന യാത്രയ്ക്ക് തയ്യാറെടുക്കുന്നവർ ദ്രാവകാവസ്ഥയിലുള്ള സാധനങ്ങൾ വിമാന ത്തിൽ കൊണ്ടുപോകുമ്പോൾ ഭദ്രമായി പൊതിഞ്ഞ് സൂക്ഷിക്കുന്നത് എന്റെ ശ്രദ്ധയിൽപ്പെട്ടിട്ടുണ്ട്. | | |
| 6 | കേശികത്വം (Capillarity) മൂലമാണ് സാധാരണ ചെടികളെ അപേക്ഷിച്ച് വെള്ളത്തണ്ടിൽ കൂടുതൽ വെള്ളം തങ്ങി നിൽക്കുന്നത് എന്ന വസ്തുത ഞാൻ ഇതുവരെ മനസ്സിലാക്കിയിരുന്നില്ല. | | |
| 7 | മനുഷ്യർക്ക് പറവകളെ പോലെ പറന്ന് നടക്കാൻ കഴിയില്ലെങ്കിലും അവർക്ക് ശൂന്യാകാശത്ത് പറക്കാൻ കഴിയുന്നത് ഭൂഗുരുത്വാകർഷണ ബലത്തിന്റെ അഭാവം മൂലമാണെന്ന് എനിക്ക് അറിയില്ലായിരുന്നു. | | |
| 8 | ക്യാരംസ് കളിക്കുമ്പോൾ ക്യാരം ബോർഡിൽ പൗഡർ വിതറുന്നത് ഘർഷണം (Friction)കുറച്ച് കളിസുഗമമാക്കാൻ വേണ്ടിയാണെന്ന് എനിക്കറിയില്ലായിരുന്നു | | |
| 9 | മിന്നൽ കണ്ടതിന് ശേഷം ഇടിയുടെ ശബ്ദം കേൾക്കുന്നത് പ്രകാശത്തിന്റെ വേഗത കൂടിയതുകൊണ്ടാണെനിക്കറിയാം. | | |
| 10 | സാധനങ്ങൾ തൂക്കുമ്പോൾ കടക്കാർ കൂടുതൽ ബലം തുലാസിൽ കൊടുക്കുന്ന ത് ആക്കം (Momentum) കൂട്ടി കൂടുതൽ പണം ഈടാക്കാനാണെന്ന വസ്തുത എനിക്കറിയാം. | | |

# Appendix 2

## FAROOK TRAINING COLLEGE, CALICUT
## Self-regulated Learning Scale in Physics
## (Final-2015)

**Dr.C.M.BINDHU**                    **SINDHU.C.M**
Associate Professor                  Research Scholar (JRF)
Farook Training College              Farook Training College

### Personal Information

Name of the Student      :

Name of the School       :

Type of School           :        Govt./Private

Gender                   :        Male/Female

Locality                 :        Rural/Urban

### Section A

**നിർദ്ദേശങ്ങൾ:**

നിങ്ങളുടെ ഭൗതികശാസ്ത്രവിഷയവുമായി ബന്ധമുള്ള 50 പ്രസ്താവനകളാണ് താഴെ കൊടുത്തിരിക്കുന്നത്. ഓരോ പ്രസ്താവനയ്ക്കും എല്ലായ്പ്പോഴും/ചിലപ്പോൾ മാത്രം/ഒരിക്കലുമില്ല എന്നിങ്ങനെ മൂന്ന് പ്രതികരണങ്ങളുണ്ട് അനുയോജ്യമെന്ന് തോന്നുന്ന പ്രതികരണങ്ങൾ ശരി ചിഹ്നം (✓) ഉപയോഗിച്ച് രേഖപ്പെടുത്തുക

| Sl. No | പ്രസ്താവനകൾ | എല്ലായ്പ്പോഴും | ചിലപ്പോൾ മാത്രം | ഒരിക്കലുമില്ല |
|---|---|---|---|---|
| 1 | ഭാവിയെപറ്റിയുള്ള ചിന്തകളാണ് കൂടുതൽ പഠിക്കാൻ എനിക്ക് പ്രചോദനമാകുന്നത്. | | | |
| 2 | പ്രയാസമേറിയ പാഠഭാഗങ്ങൾപദ്യരൂപത്തിലാക്കിയോ ദൃശ്യരൂപത്തിൽ സങ്കൽപ്പിച്ചോ ആണ് ഞാൻ പഠിക്കാറുള്ളത്. | | | |
| 3 | പഠനപ്രവർത്തനങ്ങളിൽ സ്ക്കൂൾ ലൈബ്രറിയുടെ സഹായം തേടാറുണ്ട്. | | | |

| Sl. No | പ്രസ്താവനകൾ | എല്ലായ്പ്പോഴും | ചിലപ്പോഴൊക്കെ | ഒരിക്കലുമില്ല |
|--------|------------|---------------|---------------|---------------|
| 4 | പഠിച്ച കാര്യങ്ങൾ സ്വയം വിലയിരുത്താറുണ്ട്. | | | |
| 5 | പഠനത്തിൽ നിന്ന് ശ്രദ്ധമാറി പോകുമ്പോൾ " ഇവിടെ ശ്രദ്ധിക്കൂ " എന്നു സ്വയം ഓർമ്മപ്പെടുത്താറുണ്ട്. | | | |
| 6 | പഠനവിഷയവുമായി ബന്ധപ്പെട്ട് സമൂഹത്തിലെ പ്രഗല്ഭരുടെ ക്ലാസ്സുകൾ ശ്രവിക്കാറുണ്ട്. | | | |
| 7 | സംവാദം, സംഘചർച്ച തുടങ്ങിയ പാഠ്യപ്രവർത്തനങ്ങളിൽ തിളങ്ങി നിൽക്കാൻ എനിക്ക് സാധിക്കാറില്ല | | | |
| 8 | വായിക്കുന്നത് എന്തിനെക്കുറിച്ചാണെന്ന് എനിക്ക് തന്നെ ധാരണയുണ്ടാവാറില്ല | | | |
| 9 | പാഠഭാഗങ്ങൾ ആഴത്തിൽ മനസ്സിലാക്കി പഠിക്കാൻ കഴിയാറില്ല | | | |
| 10 | ശാസ്ത്രസംബന്ധമായ എന്റെ കഴിവുകൾ പ്രകടമാക്കാൻ സ്ക്കൂൾ ശാസ്ത്രമേളകൾ സഹായകരമാവാറില്ല. | | | |
| 11 | ശാസ്ത്രജ്ഞരുടെ ജീവചരിത്രങ്ങൾ ശാസ്ത്രസംബന്ധമായ പുസ്തകങ്ങൾ തുടങ്ങിയവ വായിക്കുന്നതിലൂടെ എനിക്ക് ശാസ്ത്ര വിഷയങ്ങളോടുള്ള താൽപര്യം വർദ്ധിക്കാറുണ്ട്. | | | |
| 12 | പഠിച്ച കാര്യങ്ങൾ ഉചിതമായ സന്ദർഭങ്ങളിൽ പ്രാബല്യത്തിൽ വരുത്താൻ കഴിയാറുണ്ട്. | | | |
| 13 | പഠിച്ച ഭാഗത്തു നിന്നും വരാൻ സാധ്യതയുള്ള ചോദ്യങ്ങൾ സ്വയം കണ്ടുപിടിച്ച് അവയുടെ ഉത്തരങ്ങൾ ചെറുകുറുപ്പുകളായി എഴുതി സൂക്ഷിക്കാറുണ്ട്. | | | |
| 14 | ശാസ്ത്രമേളയിലെ എന്റെ പ്രകടനത്തിന് പ്രത്യേക പരിഗണന ലഭിച്ചിട്ടുണ്ട് | | | |
| 15 | ക്ലാസ്സിൽ ഒന്നാമനാകുക എന്നതാണ് എന്നെ സംബന്ധിച്ച് പ്രധാന കാര്യം | | | |
| 16 | ശാസ്ത്രീയമായ കണ്ടുപിടുത്തങ്ങൾക്ക് ലോകം നൽകുന്ന ബഹുമതികൾ എന്നിൽ അത്തരം പ്രവർത്തനങ്ങളിൽ ഏർപ്പെടുന്നതിന് പ്രചോദനം ആവാറുണ്ട്. | | | |
| 17 | പഠനവേളകളിൽ എന്റെ ചിന്ത പല മേഖലകളിലേക്കും തിരിയാറുണ്ട്. | | | |

| Sl. No | പ്രസ്താവനകൾ | യോജിക്കുന്നു | യോജിക്കുന്നില്ല | അഭിപ്രായമില്ല |
|---|---|---|---|---|
| 18 | പഠനവുമായി ബന്ധപ്പെട്ട സംശയ ദുരീകരണത്തിനും കൂടുതൽ അറിവു നേടുന്നതിനും വേണ്ടി വിദ്യാഭ്യാസ സൈറ്റുകൾ ഉപയോഗപ്പെടുത്താറുണ്ട്. | | | |
| 19 | എനിക്ക് നല്ല ആത്മധൈര്യമുണ്ടെന്ന് ഞാൻ വിശ്വസിക്കുന്നില്ല | | | |
| 20 | എന്റെ പഠനസംബന്ധമായ ചിന്തകളും പ്രവൃത്തികളും തമ്മിൽ യാതൊരു ബന്ധവുമില്ല | | | |
| 21 | പഠിച്ച ഭൗതികശാസ്ത്ര തത്വങ്ങൾ പരീക്ഷണ വിധേയമാക്കാൻ ഞാൻ ശ്രമിക്കാറുണ്ട്. | | | |
| 22 | വിജയിക്കുമെന്ന പ്രതീക്ഷയോടെ ഞാൻ എടുത്ത പല തീരുമാനങ്ങളും പിന്നീട് മാറ്റാറുണ്ട്. | | | |
| 23 | ഭൗതിക ശാസ്ത്രലോകത്ത് ഉണ്ടാകുന്ന കണ്ടുപിടുത്തങ്ങൾ എന്നിൽ കൗതുകം ജനിപ്പിക്കാറുണ്ട്. | | | |
| 24 | ഭൗതികശാസ്ത്ര വിഷയത്തിലെ ആശയങ്ങളും വസ്തുതകളും മനസ്സിലാക്കി പഠിക്കുന്നതു വഴി ഉയർന്ന നിലയിൽ ചിന്തിക്കാൻ എനിക്ക് സാധിക്കാറുണ്ട്. | | | |
| 25 | പ്രകൃതി പ്രതിഭാസങ്ങളെക്കുറിച്ച് പഠിക്കുമ്പോൾ അവയുടെ ഓരോ തലങ്ങളേയും ഞാൻ മനസ്സിൽ ചിത്രീകരിക്കാൻ ശ്രമിക്കാറുണ്ടെങ്കിലും കഴിയാറില്ല. | | | |
| 26 | സയൻസ് ക്ലബ്ബുകളിൽ എന്റേതായ പ്രാതിനിധ്യം ഉണ്ടാവാറില്ല | | | |
| 27 | ചിന്തിക്കാതെയാണ് പഠനസംബന്ധമായ കാര്യങ്ങൾ ഞാൻ ചെയ്യാറുള്ളത്. | | | |
| 28 | പഠനസംബന്ധമായ കാര്യങ്ങൾ ചെയ്യുന്നതിനുള്ള ബാഹ്യപ്രചോദനങ്ങളെ ഞാൻ ഇഷ്ടപ്പെടുന്നില്ല. | | | |
| 29 | അനുയോജ്യമായ അവസരങ്ങളിൽ എന്റെ ചിന്താശേഷിയെ വേണ്ടും വിധത്തിൽ പ്രയോജനപ്പെടുത്താൻ കഴിയാറില്ല. | | | |
| 30 | ഓരോ പാഠഭാഗം വായിക്കുന്നതിനു മുമ്പുതന്നെ ആ പാഠഭാഗത്തെക്കുറിച്ച് എനിക്കുള്ള മുൻധാരണയെന്തെന്ന് ഞാൻ ചിന്തിക്കാറുണ്ട്. | | | |
| 31 | വിദ്യാഭ്യാസ ചാനലുകളിലൂടെ വിദ്യാഭ്യാസ വിദ്ഗഗ്ദധരുമായി സംവദിക്കുകയും സംശയനിവാരണം നടത്തുകയും ചെയ്യാറുണ്ട്. | | | |

| Sl. No | പ്രസ്താവനകൾ | പൂർണ്ണമായും യോജിക്കുന്നു | ഭാഗികമായി യോജിക്കുന്നു | യോജിക്കുന്നില്ല |
|--------|-------------|------|------|------|
| 32 | സെമിനാറുകൾ, പ്രൊജക്ട്, അസൈൻമെന്റ് തുടങ്ങിയ കാര്യങ്ങൾ പഠനത്തിന് കൂടുതൽ ഉപകാരപ്രദമാകും എന്ന തോന്നൽ എനിക്കില്ല. | | | |
| 33 | പഠിച്ച കാര്യങ്ങളാണെങ്കിലും അതു പ്രാബല്യത്തിൽ വരുത്താൻ ശ്രമിക്കുമ്പോൾ ഞാൻ പരാജയപ്പെടാറുണ്ട്. | | | |
| 34 | ബുദ്ധിമുട്ടുള്ള പാഠഭാഗങ്ങൾ ഓർമ്മിക്കുന്നതിനു വേണ്ടി പ്രത്യേകം കുറിപ്പുകളാക്കി പഠനമുറിയിൽ ഒട്ടിച്ചു വെക്കാറുണ്ട്. | | | |
| 35 | പഠനത്തിന് സഹായകമാകുന്ന രീതിയിലുള്ള ക്ലാസ്സന്തരീക്ഷമാണെങ്കിലും ഞാൻ അത് വേണ്ടത്ര പ്രയോജനപ്പെടുത്താറില്ല. | | | |
| 36 | ലക്ഷ്യത്തിനനുസരിച്ച്മുന്നോട്ടുപോയാലെ വിജയിക്കൂ എന്ന് ഞാൻ വിശ്വസിക്കുന്നില്ല. | | | |
| 37 | നിത്യജീവിതവുമായി ബന്ധപ്പെട്ട കാര്യങ്ങൾ പഠിക്കുമ്പോൾ അത് ചെയ്ത് നോക്കാൻ എനിക്ക് പ്രചോദനമാവാറുണ്ട്. | | | |
| 38 | പഠിച്ച ചില വിഷയങ്ങളുമായി ബന്ധപ്പെട്ട കാര്യങ്ങളിൽ തുടർ പഠനം നടത്താനാണ് എനിക്ക് താൽപര്യം . | | | |
| 39 | ഒരു പാഠഭാഗത്തിലെ പ്രധാന ആശയങ്ങൾ ക്രമത്തിൽ അടുക്കി രസകരമായി ചില ചുരുക്കപ്പേരുകൾ ഉണ്ടാക്കി ഓർക്കാൻ ശ്രമിക്കാറുണ്ട്. | | | |
| 40 | പഠനസംബന്ധമായ സംശയനിവാരണത്തിന് വെബ്സൈറ്റുകളുടെ സഹായം തേടാറില്ല. | | | |

## **Section B**

**നിർദ്ദേശങ്ങൾ:**

ഈ വിഭാഗത്തിൽ കൊടുത്തിരിക്കുന്ന 7 പ്രസ്താവനകൾക്ക് ഉണ്ട്/ഇല്ല or ശരി/ തെറ്റ് എന്നീ രണ്ട് തരത്തിലുള്ള പ്രതികരണങ്ങളാണ് കൊടുത്തിരിക്കുന്നത്.അതിൽ ഏതെങ്കിലും ഒന്നിൽ നിങ്ങളുടെ പ്രതികരണം ശരി ചിഹ്നം (✓) ഉപയോഗിച്ച് രേഖപ്പെടുത്തുക.

| Sl. No | പ്രസ്താവനകൾ | ഉണ്ട്/ ശരി | ഇല്ല/ തെറ്റ് |
|--------|------------|-----------|-------------|
| 1 | നല്ല വെയിലുള്ള ദിവസം നേർപാതയിലൂടെ സഞ്ചരിക്കുമ്പോൾ പാതയിൽ വെള്ളം നിൽക്കുന്നതുപോലെ തോന്നുന്നത് മരീചിക (Mirage) എന്ന പ്രതിഭാസം മൂലമാണെന്ന് ഞാൻ ഓർമ്മിക്കാറുണ്ട് | | |
| 2 | വൈദ്യുതി പാഴായി പോകുന്നത് കുറയ്ക്കാൻ വേണ്ടിയാണ് സാധാരണ ബൾബു കൾ മാറ്റി CFLബൾബുകൾ ഉപയോഗിക്കുന്നത് എന്ന് ഞാൻ മനസ്സിലാക്കി യിട്ടുണ്ട്. | | |
| 3 | ഉയരം കൂടുന്നതിനനുസരിച്ച് അന്തരീക്ഷമർദ്ദം കുറഞ്ഞ് കുപ്പിയിലുള്ള ദ്രാവക ത്തിന്റെ മർദ്ദം കൂടി ദ്രാവകം പുറത്തേക്ക് വരാൻ സാധ്യത ഉള്ളതിനാൽ വിമാന യാത്രയ്ക്ക് തയ്യാറെടുക്കുന്നവർ ദ്രാവകാവസ്ഥയിലുള്ള സാധനങ്ങൾ വിമാന ത്തിൽ കൊണ്ടുപോകുമ്പോൾ ഭദ്രമായി പൊതിഞ്ഞ് സൂക്ഷിക്കുന്നത് എന്റെ ശ്രദ്ധയിൽപ്പെട്ടിട്ടുണ്ട്. | | |
| 4 | കേശികത്വം (Capillarity) മൂലമാണ് സാധാരണ ചെടികളെ അപേക്ഷിച്ച് വെള്ളത്തണ്ടിൽ കൂടുതൽ വെള്ളം തങ്ങി നിൽക്കുന്നത് എന്ന വസ്തുത ഞാൻ ഇതുവരെ മനസ്സിലാക്കിയിരുന്നില്ല. | | |
| 5 | മനുഷ്യർക്ക് പറവകളെ പോലെ പറന്ന് നടക്കാൻ കഴിയില്ലെങ്കിലും അവർക്ക് ശൂന്യാകാശത്ത് പറക്കാൻ കഴിയുന്നത് ഭൂഗുരുത്വാകർഷണ ബലത്തിന്റെ അഭാവം മൂലമാണെന്ന് എനിക്ക് അറിയില്ലായിരുന്നു. | | |
| 6 | മിന്നൽ കണ്ടതിന് ശേഷം ഇടിയുടെ ശബ്ദം കേൾക്കുന്നത് പ്രകാശത്തിന്റെ വേഗത കൂടിയതുകൊണ്ടാണെനിക്കറിയാം. | | |
| 7 | സാധനങ്ങൾ തൂക്കുമ്പോൾ കടക്കാർ കൂടുതൽ ബലം തുലാസിൽ കൊടുക്കുന്ന ത് ആക്കം (Momentum) കൂട്ടി കൂടുതൽ പണം ഈടാക്കാനാണെന്ന വസ്തുത എനിക്കറിയാം. | | |

# Appendix 3

# FAROOK TRAINING COLLEGE
## Self-regulated Learning Scale in Physics
### (Draft-2014)

**Dr. C. M. Bindhu**                                    **Sindhu C M**
Associate Professor                                    Research Scholar
Farook Training College                                Farook Training College

Personal Information
Name of the student        :
Name of the school         :
Type of School             :        Govt. /Private
Gender                     :        Male/ Female
Locality                   :        Rural/ Urban

## Section A

**INSTRUCTIONS:**

Given below are 50 statements related to physics learning. For each response three alternatives are given-Always/ sometimes /never. Put tick (√) mark in the appropriate columns.

| Sl. No | Statements | Always | Sometimes | Never |
|---|---|---|---|---|
| 1. | I have good understanding on necessity of learning | | | |
| 2. | Thoughts on my future motivates me to learn | | | |
| 3. | In order to avoid the difficulties in learning, I change my method of learning | | | |
| 4. | I learn the difficult chapters by visualizing or by making it in the form of a poem. | | | |
| 5. | I seek the help of school library for doing learning activities | | | |
| 6. | I know my strength and weakness in learning | | | |
| 7. | I don't need any motivation for doing my duties accurately. | | | |

| Sl. No | Statements | Always | Sometimes | Never |
|---|---|---|---|---|
| 8. | I myself assess learned matters. | | | |
| 9. | Whenever I deviate from learning, I remind myself "listen here" | | | |
| 10. | I listen to experts class on learning. | | | |
| 11. | I am not able to shine in learning activities like debate, group discussion etc. | | | |
| 12. | I feel jealous when my classmate receives recognition for his performance in science fair. | | | |
| 13. | I can't understand what I am reading | | | |
| 14. | I am not able to study the chapters deeply. | | | |
| 15. | Science fairs in school doesn't help to express/ bring out my abilities | | | |
| 16 | Improper preparation and wrong understanding of learning matters is the reason behind me to face many learning problems | | | |
| 17 | My interest towards science will get increased whenever I read the biographies of scientists, books related to science etc. | | | |
| 18 | I can practice what I learned at the right time | | | |
| 19 | I keep short notes on expected questions for the exam | | | |
| 20 | I received special recognition for my performance in science exhibition. | | | |
| 21 | To secure first rank in class is most important to me | | | |
| 22 | Awards to scientific inventions inspire me to involve in such activities. | | | |
| 23 | My mind divert to many things during learning. | | | |
| 24 | I follow same method of learning for all lessons. | | | |
| 25 | I make use of educational websites in order to clarify doubts and also to know more. | | | |

| Sl. No | Statements | Always | Sometimes | Never |
|---|---|---|---|---|
| 26 | I don't believe I am confident. | | | |
| 27 | The success of my classmates inspire me to win. | | | |
| 28 | My learning thoughts and actions are contradicting. | | | |
| 29 | I by-heart the areas which need problem solving. | | | |
| 30 | I try to experiment on principles in physics. | | | |
| 31 | I change decisions which I am sure of success. | | | |
| 32 | Inventions of Physics makes me curious. | | | |
| 33 | Understanding facts and concepts in Physics, am able to think in higher level. | | | |
| 34 | Even though I try to imagine the different levels of natural phenomena, I am not able to do so. | | | |
| 35 | I am not a representative of science club. | | | |
| 36 | I do learning activities without thinking. | | | |
| 37 | I don't like external motivations in learning. | | | |
| 38 | I fail to relate my cognitive power at right time. | | | |
| 39 | I check my previous knowledge before learning each lesson. | | | |
| 40 | I discourse with educationists through educational channels. | | | |
| 41 | I don't think seminar, projects, assignments etc are more useful in learning. | | | |
| 42 | Even though I am interested in learning I need an external motivation. | | | |
| 43 | I fail to put in to practice the learned matters | | | |
| 44 | To memorize the difficult areas I prepare short notes and stick on the walls of my study room | | | |

| Sl. No | Statements | Always | Sometimes | Never |
|---|---|---|---|---|
| 45 | I don't make use of my classroom atmosphere even though it is supportive. | | | |
| 46 | I don't believe firm with goals leads to success. | | | |
| 47 | Learning related to daily life motivates me to experiment with. | | | |
| 48 | I like to do higher studies related to my areas of learning. | | | |
| 49 | I make interesting acronyms to remember main concepts and ideas. | | | |
| 50 | I don't seek the help of websites for clearing doubts in learning. | | | |

## Section B

**INSTRUCTIONS:**

The statements in this section have two alternatives yes / No – true / false. Put your response as tick ($\checkmark$) mark in the appropriate columns.

| Sl. No. | Statements | Yes/ True | No/ False |
|---|---|---|---|
| 1 | I remember that it is because of *mirage* it seems to see water on straight road during sunny days. | | |
| 2 | I think it is because of *inertia* that we tempt to fall forward when running bus suddenly stops. | | |
| 3 | I didn't notice that the athletes throw javelin at *45°* is to cover more distance. | | |
| 4 | I am aware that *CFL bulbs* are used instead of ordinary bulbs to save power. | | |
| 5 | I came to notice that air passengers keep liquid items firmly wrapped in order to avoid the spilling of liquid with *decreasing pressure as increase in altitude.* | | |
| 6 | I didn't yet understand it's because of *capillarity rise* presence of water content is more in Peperomia pellucida ("Vellathandu" in Malayalam) when compared with other plants. | | |

| Sl. No. | Statements | Yes/ True | No/ False |
|---|---|---|---|
| 7 | I don't know it's because of the absence of *gravitational force* people fly in space just like birds. | | |
| 8 | Powder is poured on carom board to reduce *friction* is not known to me. | | |
| 9 | I know we hear thunder after lighting owing to the *speed of light*. | | |
| 10 | I know shop keepers put more force in weigh balance to raise *momentum* there by earning more money. | | |

**Appendix 4**

# FAROOK TRAINING COLLEGE
## Self-regulated Learning Scale in Physics
**(Final-2015)**

**Dr. C. M. Bindhu**        **Sindhu C M**
Associate Professor        Research Scholar
Farook Training College        Farook Training College

Personal Information

Name of the student    :

Name of the school    :

Type of School    :    Govt. /Private

Gender    :    Male/ Female

Locality    :    Rural/ Urban

## Section A

**INSTRUCTIONS:**

Given below are 50 statements related to physics learning. For each response three alternatives are given-Always/ sometimes /never. Put tick (✓) mark in the appropriate columns.

| Sl. No. | Statements | Always | Sometimes | Never |
|---|---|---|---|---|
| 1. | Thoughts on my future motivate me to learn. | | | |
| 2. | I learn the difficult chapters by visualizing or by making it in the form of a poem. | | | |
| 3. | I seek the help of school library for doing learning activities | | | |
| 4. | I myself assess learned matters. | | | |
| 5. | Whenever I deviate from learning, I remind myself "listen here" | | | |
| 6. | I listen to experts class on learning. | | | |
| 7. | I am not able to shine in learning activities like debate, group discussion etc. | | | |
| 8. | I can't understand what I am reading . | | | |

| Sl. No. | Statements | Always | Sometimes | Never |
|---|---|---|---|---|
| 9. | I am not able to study the chapters deeply. | | | |
| 10. | Science fairs in school doesn't help to express/ bring out my abilities. | | | |
| 11. | My interest towards science will get increased whenever I read the biographies of scientists, books related to science etc. | | | |
| 12. | I can practice what I learned at the right time. | | | |
| 13. | I keep short notes on expected questions for the exam. | | | |
| 14. | I received special recognition for my performance in science exhibition. | | | |
| 15. | To secure first rank in class is most important to me. | | | |
| 16. | Awards to scientific inventions inspire me to involve in such activities. | | | |
| 17. | My mind divert to many things during learning. | | | |
| 18. | I make use of educational websites in order to clarify doubts and also to know more. | | | |
| 19. | I don't believe I am confident. | | | |
| 20. | My learning thoughts and actions are contradicting. | | | |
| 21. | I try to experiment on principles in physics. | | | |
| 22. | I change decisions which I am sure of success. | | | |
| 23. | Inventions of physics make me curious. | | | |
| 24. | Understanding facts and concepts in physics, am able to think in higher level. | | | |
| 25. | Even though I try to imagine the different levels of natural phenomena, I am not able to do so. | | | |
| 26. | I am not a representative of science club | | | |
| 27. | I do learning activities without thinking. | | | |
| 28. | I don't like external motivations in learning. | | | |

| Sl. No. | Statements | Always | Sometimes | Never |
|---|---|---|---|---|
| 29. | I fail to relate my cognitive power at right time. | | | |
| 30. | I check my previous knowledge before learning each lesson. | | | |
| 31. | I discourse with educationists through educational channels. | | | |
| 32. | I don't think seminar, projects, assignments etc are more useful in learning. | | | |
| 33. | I fail to put in to practice the learned matters. | | | |
| 34. | To memorize the difficult areas I prepare short notes and stick on the walls of my study room | | | |
| 35. | I don't make use of my classroom atmosphere even though it is supportive. | | | |
| 36. | I don't believe firm with goals leads to success. | | | |
| 37. | Learning related to daily life motivates me to experiment with. | | | |
| 38. | I like to do higher studies related to my areas of learning. | | | |
| 39. | I make interesting acronyms to remember main concepts and ideas. | | | |
| 40. | I don't seek the help of websites for clearing doubts in learning. | | | |

# Section B

**INSTRUCTIONS:**

The statements in this section have two alternatives yes / No – true / false. Put your response as tick (✓) mark in the appropriate columns.

| Sl. No | Statements | Yes/ True | No/ False |
|---|---|---|---|
| 1. | I remember that it is because of *mirage* it seems to see water on straight road during sunny days. | | |
| 2. | I am aware that CFL bulbs are used instead of ordinary bulbs to save power. | | |
| 3. | I came to notice that air passengers keep liquid items firmly wrapped in order to avoid the spilling of liquid with *decreasing pressure as increase in altitude.* | | |
| 4. | I didn't yet understand it's because of *capillarity rise* presence of water content is more in Peperomia pellucida ("Vellathandu" in Malayalam) when compared to other plants. | | |
| 5. | Powder is poured on carom board to reduce *friction* is not known to me. | | |
| 6. | I know we hear thunder after lighting owing to the *speed of light.* | | |
| 7. | I know shop keepers put more force in weigh balance to raise *momentum* there by earning more money. | | |

# Appendix 5
## FAROOK TRAINING COLLEGE, CALICUT
## Academic Delay of Gratification Scale
## (2015 - FINAL)

**Dr.C.M.BINDHU**                                    **SINDHU.C.M**
Associate Professor                                  Research Scholar (JRF)
Farook Training College                              Farook Training College

**Personal Information**

Name of the Student          :

Name of the School           :

Type of School               :          Govt./Private

Gender                       :          Male/Female

Locality                     :          Rural/Urban

## നിർദ്ദേശങ്ങൾ:

പഠനസംബന്ധമായ കാര്യങ്ങൾക്ക് നിങ്ങൾ എടുക്കാവുന്ന തീരുമാനങ്ങളുമായി ബന്ധപ്പെട്ട ചില പ്രസ്താവനകളാണ് താഴെ കൊടുത്തിരിക്കുന്നത്. ഓരോ കാര്യത്തിനും രണ്ടു വിധത്തിലുള്ള പ്രസ്താവനകളാണ് ഉള്ളത്. ''തീർച്ചയായും തിരഞ്ഞെടുക്കും'' (definitely Choose)'' ചിലപ്പോൾ തിരഞ്ഞെടുക്കും'' (Probably Choose) എന്നിങ്ങനെ രണ്ടു തരം പ്രതികരണങ്ങൾ ഓരോ പ്രസ്താവനയ്ക്കും കൊടുത്തിട്ടുണ്ട്. ഓരോന്നിനും നിങ്ങൾക്ക് അനുയോജ്യമെന്ന് തോന്നുന്ന പ്രതികരണങ്ങൾ(√) ശരി ചിഹ്നം ഉപയോഗിച്ച് രേഖപ്പെടുത്തുക.

| Sl. No | പ്രസ്താവനകൾ | definitely Choose (a) തീർച്ചയായും (a) തിരഞ്ഞെടുക്കും | Probably Choose (a) ചിലപ്പോൾ (a) തിരഞ്ഞെടുക്കും | Probably Choose (b) ചിലപ്പോൾ (b) തിരഞ്ഞെടുക്കും | Definitely Choose (b) തീർച്ചയായും (b) തിരഞ്ഞെടുക്കും |
|---|---|---|---|---|---|
| 1 (a)<br><br>(b) | പരീക്ഷയുടെ പഠനാവധി ഭൂരിഭാഗവും മറ്റു പല ആവശ്യങ്ങൾക്കുമാണ് വിനിയോഗിക്കാറ്.<br><br>പഠനാവധികൾ മുഴുവനും പഠനാവശ്യത്തിന് മാത്രം ഉപയോഗിക്കും. | | | | |

| Sl. No | പ്രസ്താവനകൾ | definitely Choose (a) തീർച്ചയായും (a) തിരഞ്ഞെടുക്കും | Probably Choose (a) പിലപ്പോൾ (a) തിരഞ്ഞെടുക്കും | Probably Choose (b) പിലപ്പോൾ (b) തിരഞ്ഞെടുക്കും | Definitely Choose (b) തീർച്ചയായും (b) തിരഞ്ഞെടുക്കും |
|---|---|---|---|---|---|
| 2 (a)<br><br>(b) | സ്ക്കൂൾ അസൈൻമെന്റ്സ് ചെയ്തു തീർക്കാൻ ഉണ്ടെ ങ്കിലും കൂട്ടുകാർ ബീച്ചിൽ പോവാൻ ക്ഷണിച്ചാൽ മടി കാണിക്കാതെ അവരുടെ കൂടെ പോകും.<br><br>പ്രത്യേകിച്ച് അക്കാദമിക കാര്യങ്ങൾ ഒന്നും ചെയ്യാനില്ല എന്നുറപ്പ് വരുത്തിയ ശേഷമേ കൂട്ടുകാരുടെ കൂടെ ബീച്ചിൽ പോവുകയുള്ളൂ. | | | | |
| 3 (a)<br><br>(b) | മഴക്കാലമാണെങ്കിലും പഠനകാര്യങ്ങൾ കൃത്യമായി തന്നെ നടത്തും.<br><br>പഠനകാര്യങ്ങൾക്ക് പ്രാധാന്യം നൽകാതെ മഴക്കാലത്ത് മൂടി പുതച്ച് ഉറങ്ങാറാണ് പതിവ്. | | | | |
| 4 (a)<br><br>(b) | പഠനസംബന്ധമായ കാര്യങ്ങൾ ഒരുപാടുണ്ടെങ്കിലും വിവാഹഘോഷപരിപാടികളൊന്നും ഒഴിവാക്കാറില്ല.<br><br>വിവാഹത്തിനും മറ്റും പോയി സമയം കളയാതെ പഠിക്കാനുള്ളത് പഠിക്കും | | | | |
| 5 (a)<br><br>(b) | ക്ലാസ്സിൽ അധ്യാപകരില്ലാത്ത സമയത്ത് കൂട്ടുകാരൊ ന്നിച്ച് കളിക്കുകയൊ വർത്തമാനം പറയുകയോ ചെയ്യും.<br><br>ക്ലാസ്സിൽ അധ്യാപകരില്ലാത്ത സമയം H.Wകളും മറ്റു പഠനകാര്യങ്ങളും ചെയ്തു തീർക്കും. | | | | |
| 6 (a)<br><br>(b) | പരീക്ഷയുടെ തലേന്ന് ആയാൽ പോലും പാർട്ടിക്കു പോകുന്നതിൽ താൽപര്യം കാണിക്കും.<br><br>പരീക്ഷയുടെ തലേന്ന് വേറെ എവിടെയും പോകാതെ ഇരുന്ന് പഠിക്കും. | | | | |
| 7 (a)<br><br>(b) | പഠനക്ലാസ്സ് ഒഴിവാക്കി വ്യക്തി വികസന ക്ലാസ്സുകളിൽ പങ്കെടുക്കുന്നതിൽ താൽപ്പര്യം കാണിക്കാറില്ല.<br><br>പഠനക്ലാസ്സുകൾ ഒഴികെ മറ്റെന്താണെങ്കിലും അതിനായിരിക്കും കൂടുതൽ പ്രാധാന്യം നൽകുന്നത്. | | | | |
| 8 (a)<br><br>(b) | കലാ-സാമൂഹിക-സാംസ്കാരിക വേദികൾ സംഘടിപ്പിക്കുന്ന Exhibitions കാണാൻ ക്ലാസ്സ് ഒഴിവാക്കി പോകുന്നതിൽ എനിക്ക് യാതൊരു പ്രയാസവുമില്ല.<br><br>സ്ക്കൂളില്ലാത്ത ഒഴിവു ദിവസങ്ങളിൽ മാത്രമെ Exhibitions പോലുള്ള പരിപാടികളിൽ പോകാൻ താൽപര്യപ്പെടാറുള്ളൂ. | | | | |

| Sl. No | പ്രസ്താവനകൾ | definitely Choose (a) തീർച്ചയായും (a) തിരഞ്ഞെടുക്കും | Probably Choose (a) ചിലപ്പോൾ (a) തിരഞ്ഞെടുക്കും | Probably Choose (b) ചിലപ്പോൾ (b) തിരഞ്ഞെടുക്കും | Definitely Choose (b) തീർച്ചയായും (b) തിരഞ്ഞെടുക്കും |
|---|---|---|---|---|---|
| 9 (a) | പഠിക്കുന്നതിലും ഭേദം കൂട്ടുകാരുടേയോ വീട്ടുകാരു ടെയോ കൂടെയിരുന്ന് തമാശ പറഞ്ഞ് രസിക്കുന്നതാണ്. | | | | |
| (b) | വെറുതെ തമാശ പറഞ്ഞ് സമയം കളയാതെ മാറി ഇരുന്ന് പഠിക്കാനുള്ളത് പഠിക്കും. | | | | |
| 10(a) | പഠനാവധികളിൽ വീട്ടിൽ വരുന്ന വിരുന്നകാരൊന്നിച്ച് സമയം ചെലവഴിക്കും.. | | | | |
| (b) | പഠിക്കാനുണ്ടെന്നും പറഞ്ഞ് കഴിയുന്നതും വേഗം എല്ലാവരേയും കണ്ട് പഠിക്കാനിരിക്കും. | | | | |
| 11(a) | ട്യൂഷൻ സെന്ററിൽ നടത്തുന്ന പരീക്ഷകൾക്കൊന്നും പ്രാധാന്യം നൽകാറില്ല. | | | | |
| (b) | ആര് എവിടെ നടത്തുന്ന പരീക്ഷ എന്നല്ല. പരീക്ഷയാണെങ്കിൽ അതിന് അർഹിക്കുന്ന പ്രാധാന്യം കൊടുക്കാറുണ്ട്. | | | | |
| 12(a) | പഠിപ്പിച്ച സമയത്ത് മനസ്സിലാവാത്ത പാഠഭാഗങ്ങൾ ക്ലാസ്സ് കഴിഞ്ഞും അധ്യാപകരോട് ചോദിച്ച് മനസ്സിലാക്കാറുണ്ട്. | | | | |
| (b) | പാഠഭാഗങ്ങൾ പഠിപ്പിക്കുന്നത് മനസ്സിലാവാതെ വന്നാലും ക്ലാസ്സ് ഒന്ന് നിർത്തി കിട്ടിയാൽ മതി എന്നാണ് ചിന്തിക്കാറ് | | | | |
| 13 (a) | പഠനകാര്യങ്ങളിൽ കൂടുതൽ സമയം മുഴുകി ബാക്കിയുള്ള സമയം പാഠ്യേതര വിഷയങ്ങൾക്കായി ചിലവഴിക്കും | | | | |
| (b) | പാഠ്യേതര വിഷയങ്ങൾക്ക് പാഠ്യവിഷയങ്ങളേക്കാളും കൂടുതൽ പ്രാധാന്യം കൊടുക്കാറുണ്ട്. | | | | |
| 14(a) | കൂടുതൽ സമയവും തമാശകൾ മാത്രം പറഞ്ഞ് ക്ലാസ്സ് മുന്നോട്ട് കൊണ്ടുപോകുന്ന അധ്യാപകരെയാണിഷ്ടം | | | | |
| (b) | തമാശയിലൂടെ പാഠഭാഗങ്ങൾ നന്നായി കൈകാര്യം ചെയ്യുന്ന അധ്യാപകരോടാണിഷ്ടം | | | | |
| 15(a) | ക്ലാസ്സിലിരുന്ന് ബഹളം വെക്കാതെ താൽപര്യമില്ലാ ത്തവർക്ക് പുറത്ത് പോകാം എന്ന് അധ്യാപകർ പറഞ്ഞാൽ ഞാൻ വേഗം പുറത്ത് പോകാനൊരുങ്ങും. | | | | |
| (b) | ബഹളം വെക്കാതെ ക്ലാസ്സിൽ തന്നെയിരുന്ന് അധ്യാപകൻ എടുക്കുന്ന പാഠഭാഗം ശ്രദ്ധിക്കും. | | | | |
| 16(a) | സ്ക്കൂൾ കായികദിനത്തിൽ തന്നെ ട്യൂഷൻ ക്ലാസ്സിൽ ഒരു പ്രധാന പരീക്ഷ നടത്തുകയാണെങ്കിൽ പരീക്ഷ ഒഴിവാക്കി സ്ക്കൂൾ കായികദിനത്തിൽ പങ്കെടുക്കും. | | | | |

| Sl. No | പ്രസ്താവനകൾ | definitely Choose (a) തീർച്ചയായും (a) തിരഞ്ഞെടുക്കും | Probably Choose (a) ചിലപ്പോൾ (a) തിരഞ്ഞെടുക്കും | Probably Choose (b) ചിലപ്പോൾ (b) തിരഞ്ഞെടുക്കും | Definitely Choose (b) തീർച്ചയായും (b) തിരഞ്ഞെടുക്കും |
|---|---|---|---|---|---|
| (b) | ട്യൂഷൻ ക്ലാസ്സിൽ പറഞ്ഞ് പരീക്ഷ കുറച്ചു കൂടി നേരത്തെയാക്കി പരീക്ഷ എഴുതിയതിനുശേഷം സ്കൂൾ കായികദിനത്തിൽ പങ്കെടുക്കും. | | | | |
| 17(a) | ക്ലാസ്സ് നടക്കുന്ന വേളയിൽ തന്നെ ശാസ്ത്ര സാങ്കേതിക വിഭാഗം സംഘടിപ്പിക്കുന്ന പൊതുവിജ്ഞാന ക്വിസ് മത്സരം നടക്കുന്നുവെങ്കിൽ അതിൽ പങ്കെടുക്കുന്നതിനായിരിക്കും പ്രാധാന്യം കൊടുക്കുക. | | | | |
| (b) | ആദ്യം അക്കാദമിക കാര്യങ്ങൾക്കും പിന്നീട് പൊതുവിജ്ഞാന പരിപാടികൾക്കുമാണ് പ്രാധാന്യം നൽകുക. | | | | |
| 18(a) | സ്വന്തം ചേച്ചിയുടെയോ ചേട്ടന്റെയോ വിവാഹ തീയ്യതി ഉറപ്പിക്കുന്ന ദിവസം, ക്ലാസ്സില്ലാത്ത ദിവസമായിരിക്കണം എന്നു വീട്ടുകാരോടു കർശനമായി പറയും | | | | |
| (b) | സ്വന്തം ചേച്ചിയുടെയോ ചേട്ടന്റെയോ വിവാഹം ഏതു ദിവസം വെച്ചാലും യാതൊരു പ്രശ്നവുമില്ല, അതിൽ പങ്കെടുത്ത് ആഹ്ലാദിക്കാനാണ് ആഗ്രഹം. | | | | |
| 19(a) | മറ്റു കൂട്ടുകാരൊക്കെ കളിച്ച് ചിരിച്ച് കറങ്ങി നടക്കുന്നതു കാണുമ്പോൾ അവരുടെ കൂടെ കൂടാൻ തോന്നും. | | | | |
| (b) | പഠിക്കാനുള്ളതെല്ലാം പഠിച്ചു എന്നു ബോധ്യമായാൽ മാത്രമെ കറങ്ങി നടക്കുന്നതിൽ ആഹ്ലാദം കണ്ടെത്താൻ സാധിക്കുകയുള്ളൂ. | | | | |
| 20(a) | അഭിപ്രേരണ ക്ലാസ്സുകൾ കുട്ടികളിൽ അവനവനെ ക്കുറിച്ചുള്ള ബോധം ഉണർത്തുന്നതിന് വളരെ ഉത്തമമായതുകൊണ്ടുതന്നെ സ്കൂളിലെ ക്ലാസ്സ് ഒഴിവാക്കി അത്തരം ക്ലാസ്സുകൾക്ക് മുൻഗണന നൽകും | | | | |
| (b) | പഠന ക്ലാസ്സുകൾ ഒഴിവാക്കി അഭിപ്രേരണ ക്ലാസ്സുകൾക്ക് പോവുന്നതിനോട് തീരെ താൽപര്യമില്ല. | | | | |

**Appendix 6**

# FAROOK TRAINING COLLEGE, CALICUT
## Academic Delay of Gratification Scale
### (FINAL-2015)

**Dr. C. M. Bindhu**                               **Sindhu C M**
Associate Professor                            Research Scholar
Farook Training College                        Farook Training College

Personal Information
Name of the student          :
Name of the school           :
Type of School               :          Govt. /Private
Gender                       :          Male/ Female
Locality                     :          Rural/ Urban

## Instructions:

      The following statements are some of the decisions that you may have taken during your learning. And for each matter, two statements are given. Two kind of responses - Definitely Choose and Probably Choose are given for each statements. Put tick (√) mark in the appropriate columns after reading each statements carefully.

| Sl. No. | Statements | Definitely Choose(a) | Probably Choose(a) | Probably Choose(b) | Definitely Choose(b) |
|---|---|---|---|---|---|
| 1 (a) (b) | Most of my study leaves are spent for personal purposes. Study leaves are completely utilized for study purposes alone. | | | | |
| 2 (a) (b) | Though I am busy with school assignments, when my friends call me to visit beach I will accept. Even if only I have no academic matters to perform, I go to the beach with my friends. | | | | |
| 3(a) | Even in the rainy season, I do all my learning activities perfectly. | | | | |

| Sl. No. | Statements | Definitely Choose(a) | Probably Choose(a) | Probably Choose(b) | Definitely Choose(b) |
|---|---|---|---|---|---|
| (b) | I prefer to sleep than learning during rainy season. | | | | |
| 4(a) | I don't avoid any marriage celebrations, even though I have to complete a lot of academic task. | | | | |
| (b) | Without going for any parties, I used to sit and study. | | | | |
| 5(a) | I used to play or chat with my friends when there is no teacher in the class. | | | | |
| (b) | I used to write all home work and other things during free period. | | | | |
| 6(a) | Even in the previous day of examination, I show interest to go for parties | | | | |
| (b) | Stay back in the home itself and will study in the previous day of examination | | | | |
| 7 (a) | I don't show interest in participating in personality development classes during academic hours. | | | | |
| (b) | I usually give priority to other matters than academic classes. | | | | |
| 8 (a) | There is nothing wrong in going to exhibitions by avoiding academic hours in schools. | | | | |
| (b) | Only on holidays, I show interest to go for exhibitions | | | | |
| 9(a) | Rather than studying, it's better to make fun and joke with friends. | | | | |
| (b) | I concentrate in my studies rather than spending time in vain. | | | | |
| 10(a) | During my study leave, I spend my time with guests at home. | | | | |
| (b) | After a quick interaction, with everyone, I sit for learning. | | | | |

| Sl. No. | Statements | Definitely Choose(a) | Probably Choose(a) | Probably Choose(b) | Definitely Choose(b) |
|---|---|---|---|---|---|
| 11(a) | I don't give much importance to the examinations conducted in tuition centers. | | | | |
| (b) | Who conducts the examination, doesn't matter, whether it is exam, I give importance to it. | | | | |
| 12(a) | Difficult areas in learning are cleared with teachers even after the class. | | | | |
| (b) | Even if I don't understand the class, I wish to stop the class | | | | |
| 13 (a) | I engage most of the time in academic matters, rest of the time is spending for co-curricular activities. | | | | |
| (b) | Give more importance to co-curricular activities than curricular subjects | | | | |
| 14 (a) | I like the class of teachers whom saying more fun than academic subjects. | | | | |
| (b) | I like the classes of teachers whom taking the class through fun | | | | |
| 15 (a) | When teachers asked to go outside the class if not interested to sit in the class, I am ready to go outside. | | | | |
| (b) | Without making noise, I sit in the class and concentrate in my studies. | | | | |
| 16(a) | On the day of school sports, an important examination is conducting in tuition class, I avoid that exam and participate in sports. | | | | |
| (b) | Being informed in the tuition class, I write the examination a little earlier and afterwards I go to school to participate in sports. | | | | |

| Sl. No. | Statements | Definitely Choose(a) | Probably Choose(a) | Probably Choose(b) | Definitely Choose(b) |
|---|---|---|---|---|---|
| 17 (a) | I give more priority to the general awareness quiz competition conducted by 'Sastra-Sanketika Vibagam' at the time of daily class hours. | | | | |
| (b) | I give first priority to pure academic sessions, and then general awareness programme. | | | | |
| 18 (a) | Strictly I say, the day on which marriage of my sister / brother to be fixed should be a holiday. | | | | |
| (b) | I don't bother whether it is a holiday or a working day, am interested to participate in it and to seek pleasure. | | | | |
| 19 (a) | I wish to join with my friends when they rejoice among themselves. | | | | |
| (b) | I rejoice myself only when I realize all the things to be learned are finished. | | | | |
| 20 (a) | I give more importance to motivation classes rather than regular classes in schools. | | | | |
| (b) | Am not interested in attending motivation classes by skipping regular classes. | | | | |