A STUDY OF MULTIPLE INTELLIGENCE AND COGNITIVE SELF MANAGEMENT WITH RESPECT TO ACADEMIC ACHIEVEMENT OF HIGHER SECONDARY SCHOOL STUDENTS

A Dissertation

Submitted in partial fulfillment of requirement of

the degree of Master of education

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DECLARATION

I Annamma Samuel, hereby declare that the dissertation entitled "*A Study Of Multiple Intelligence And Cognitive Self Management With Respect To Academic Achievement Of Higher Secondary School Students* " conducted and submitted by me for the partial fulfillment of the M.Ed. programme at The Department of Education , Faculty of Education & Psychology ,The Maharaja Sayajirao University of Baroda, Vadodara , is my original work and has not been submitted earlier either to The Maharaja Sayajirao university of Baroda or to any other institution for any course requirement . I also declare that no chapter of this dissertation in whole or in part is taken from any earlier work done either by me or any other person.

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CERTIFICATE

This is to certify that the dissertation titled "*A Study Of Multiple Intelligence And Cognitive Self Management With Respect To Academic Achievement Of Higher Secondary School Students* " which is being submitted by Annamma Samuel towards the partial fulfillment of the requirement for the degree of Masters of Education (M.Ed.) through Department of Education, Faculty of Education and Psychology, the Maharaja Sayajirao University of Baroda, Vadodara is the students own work carried out under my continuous supervision and guidance and has completed it to my satisfaction.

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EXECUTIVE SUMMARY

"*A Study of Multiple Intelligence and Cognitive Self Management With Respect To Academic Achievement of Higher Secondary School Students*"

The research study was undertaken to investigate the Multiple Intelligence, Cognitive Self Management of Higher Secondary Students with respect to their Academic Achievement in Vadodara District. The present study was undertaken with the following objectives: 1. To study the level of multiple intelligence among higher secondary students.2. To study the level of cognitive self management among higher secondary students, 3. To study the level of academic achievement among higher secondary students. 4. To study the relationship between multiple intelligence and cognitive self management of higher secondary students, 5. To study the relationship between multiple intelligence and academic achievement of higher secondary students, 6.To study the relationship between cognitive self management and academic achievement of higher secondary students and 7. study the relationship of both multiple intelligence and cognitive self management on the academic achievement of higher secondary students. Survey method was used. The sample was selected following the stratified random sampling technique. The sample consists of 300 students from Vadodara District of Gujarat. The level of Multiple Intelligence was assessed with the help of Multiple Intelligence Scale developed by Dr Rekha V. 2017.This questionnaire have eight dimensions: (a) Verbal linguistic intelligence, (b) Logical/mathematical intelligence, (c) Visual/spatial intelligence, (d) Bodily/kinesthetic intelligence, (e) Musical/Rhythmic intelligence (d) Interpersonal intelligence (e) Intrapersonal intelligence (f) Naturalistic intelligence There are 80 items whose reliability is .7832 which is significant at .01 level. The level of Cognitive Self Management was assessed with the help of Cognitive Self Management Scale developed by Dr Usha T. Kumari, 2017.This questionnaire have four dimensions: (a) Positive focus, (b) Systematic problem solving and task efficacy, (c) Self blame, and (d) Reasonable goal setting. There are 25 items whose which is significant at .01 level. The data was analyzed using descriptive statistics like percentage, mean, standard deviation, percentile was used to test the hypothesis. The major findings of the study are: 1. Out of the 300 secondary school students 51% were found moderate, 33.33% were found low and 15.6 % were found high in their level of Multiple Intelligence Ability, 2. Out of the 300 secondary school students 91 % were found moderate, 4.66 % were found low and 4.33 % were found high in their level of Cognitive Self Management,. 3. The Multiple Intelligence and Cognitive Self Management had moderately significance influence on the Academic Achievement of secondary school students.

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CONCEPTUAL FRAMEWORK

1.1.0: INTRODUCTION

"*The function of education is to teach one to think intensively and to think critically. Intelligence plus character –that is the goal of true education*." - Martin Luther King, Jr.

Education is an excellent invention of human race. It is more important than any other inventions. Inventions or products of the human being like tools, machines, space craft, medicines, and weapons and even of language, all are the byproduct of Education. It is a process associated with the human being for the whole life; education begins at birth and ends at death. Hence, it is a lifelong process. Education can also be said to be "an attempt on the part of the adult members of the human society to shape the development of the coming generation in accordance with its own ideals of life". (Taneja, 2001)

Education in most societies has two principal roles: that of transfer of knowledge from one generation to the next and equipping people with skills that enable them to analyze and diagnose. Education is the thoughtful and organized influence exerted by the mature person on the immature through instruction and discipline. It means the harmonious development of all the powers of the human being physical, social, intellectual, emotional, aesthetic and spiritual. Education is a product of experience. It is the process by which and through which the knowledge, skills, and attitude are transmitted to the members of the community.

Education as per John Dewey (1916) is a social process – 'a process of living and not a preparation for future living'. The concept of Education is self-directed and self driven. It has passed through many stages in the process of evolution and at every age it had a different meaning according to the then, existing social term and conditions. Education is the structure that assists an individual's learning. It is the process of development of latent built-in capacities of a child to the fullest extent. It inculcates in child higher moral and social ideals together with spiritual values, so that he/she is able to form a strong character useful to his/her own self and the society of which he / she is an integral part.

From the time of Rig-Veda onwards, our ancient education system evolved over the period and focused on the holistic development of the individual by taking care of both the inner and the outer self. The system focused on the moral, physical, spiritual and intellectual aspects of life. It accentuates values such as humility, truthfulness, discipline, self-reliance and respect for all creations. Students were taught to acknowledge the balance between human beings and Nature.

Teaching and learning followed the tenets of Vedas and Upanishads fulfilling duties towards self, family, and society, thus enveloping all aspects of life. The education system focused both on learning and physical development. In other words, the emphasis was on a healthy mind and a healthy body. You can see that education in India has a heritage of being pragmatic, attainable, and integral to life.

Due to various changes such as modernization, industrialization, urbanization, privatization, globalization, as well as the influence of western culture, followed many problems and evils in Indian society that cause declining ethical values in the Indian education system. This system has definitely increased the literacy rate but that does not help in creating educated persons in the society and as a result, it does not produce ideal citizens in the country. The main objective of Indian students has remained how to take a degree, to earn money, and be professional without consideration of ethical values and national spirit in their life. Today the Indian society is bound to encounter current and perpetual problems. We see uncontrolled corruption and a decrease in ethical values, unlawful activities, inhuman behavior, Indiscipline, violation of rules, no self-realization, and immoral consumption, which is slowly breaking the structure of Indian society, nation, and the world. It is high time to identify the Aims of Education and major causes of declining Social, moral values, and spiritual strengthening in the Indian education system.

Rabindranath Tagore had judged it long back that the Indian education system needs to change. We live in a society where the child spends his parent’s earnings and still not getting the standard education and struggling to get the desired employment. The increased competition in the education sector sometimes crushes the creativity of millions of students and propels them to commit suicide. Education is treated as a means of the production of wealth. There is a need to engage in & reformulate our education system.

Education should aim at making human life better not only through the economic exhilaration of individuals but also through social, moral, and spiritual strengthening. This will not only improve human life but also realize the "higher truth" i.e. "Tamaso Ma Jyotirgamaya" from darkness to light. Thus education is not only a way of earning but it also helps to develop a human personality with skills, values, morals, and enrichment of different idiosyncrasies of man. So education is a vital means for the potentialities of a human being to emerge in a positive direction so that a man can live in a society full of dignity.

The insistence on body, heart, mind, and spirit in the educational process is the most visible one. As Cenkner quotes Gandhi—"Man is neither mere intellect, nor the gross animal body, nor the heart or soul alone. A legitimate and harmonious combination of all the three is required for the making of the whole man and constitutes the true economics of education". Gandhi also stressed the priority of the cultivation of the heart and refinement of human emotions and impulses. "True education is that which cultivates the soul or the spirit and leads ultimately to the full and complete development of man's body, mind, and spirit. Literacy then is not the primary goal of education: it is the advancement of character and the development of the spirit; it is the education of the heart, not the head.

It facilitates the child to develop refined character or patterns of behavior acceptable by societal norms. It also develops the intellectual and emotional powers so that he/she is able to meet the problems of life and solve them successfully. It also develops the social qualities of service, tolerance, co-operation, fellow feeling, and inspiring the child to be a valuable part of the society.
Education provides the ability to meet life's situation. It is a character-building process intensifying one's personality and making one rationale capable, responsive, and intelligently sovereign; it generates willpower to customize one's heart, head, and life. A sound and effective system of education results in the unfoldment of learner's potentialities, enlargement of their competencies, skills, and talents, and transformation of their interests, attitudes, and values.

Recognizing such an enormous potential of education, all progressive societies have committed themselves to the universalization of education with an explicit aim of providing 'Quality for All' which includes exceptional and special children also. The Education Commission (1964-66) has emphasized that education is the one and only instrument that can be used to bring about a change towards the social and economic betterment of our nation.

The present education system has been designed for developing normal children in our schools. The courses, methods, and techniques of teaching have been developed for dealing with normal and average children. But the exceptional children and below-average children lack many educational facilities to maximize their potentials and talents in society. Many of these children may be ending up in learning disability lapses and wasting time in regular classrooms, at least in part because nobody has been able to figure out how to make use of their talents in a formal school setting, (Armstrong, 1987). The report of the Parliamentary Standing Committee (1999) noted that there has been conscious erosion of values in our society.

The people who are endowed with extraordinary performance capability respond to the environment or demonstrate in solving problems or create product in any field are called gifted or intelligent people since time immemorial. Intelligence was regarded as a 'single fund of competence' or unitary factor by ancient psychologists. But Thurston and Guilford presented Intelligence as a group of factors. Gardener, in his Multiple Intelligence theory also holds the view that Intelligence includes a number of factors.

Psychologists for decades have relied on a singular form of intelligence in which intelligence was measured in isolation, without the context. Then came the era, where psychologists pluralized the notion of intelligence in which, few emphasized capacity and few on contexts. Howard Gardner posited a theory that balanced the capacity and context i.e. theory of multiple intelligences. Gardner's Multiple Intelligences Theory (MIT) is one such theory, which emphasizes not only on traditional intelligence (linguistic & logical-mathematical) but also on the other five non-traditional bits of intelligence (spatial, interpersonal, intrapersonal, bodily-kinesthetic, and naturalistic).

Multiple Intelligences Theory works as a creative approach to develop and implement a curriculum. Transactions made in early child development and learning has a positive impression on formal education by sustaining him/her in school for a longer period of time (Yadav, 2006). MIT is gaining eminence since the last decade in India, but many educational reformers had followed a similar kind of educational practice since the early 19th century, one of them is Maria Montessori. The school years are a time of significant growth and change for students as they confront new ideas and experiences that may challenge what they already know and believe, designing the curriculum and activities that meet students' needs and support their continued development.

Education is a process of empowering and enlightening individuals to materialize a better and higher quality of life. An effective system of education results in the unfolding of learners' potentialities, enlargement of their competencies, and transformation of their aptitudes, interests, attitudes, values, etc. In our classrooms children are multifaceted, having many abilities and teachers need to provide them with opportunities to strengthen and apply their abilities and talents throughout their life.

An understanding of individual differences is indispensable to design and provide learning opportunities to match an individual's learning strengths and weaknesses. Learning styles are different mechanisms of learning that involve various methods particular to an individual that is summarized to allow the learner to learn best. James and Gardner (1995) outlined learning vogue because of the "complex manner that during which within which} and conditions below which learners most effectively understand, process, store, and recall what they're trying to find out. It influences learners' considerations, tradition, cognition, internal method, and retention of recent and troublesome information"

Most educators would not only agree with this emphasis but also advocate a need to develop student ability to meet external expectations irrespective of the curriculum presented to the learner. Cognitive presence concerns the process of both reflection and discourse in the initiation, construction of meaningful learning outcomes. If deep and meaningful learning outcomes are the goal of an educational experience, then an understanding of cognitive presence is a priority.

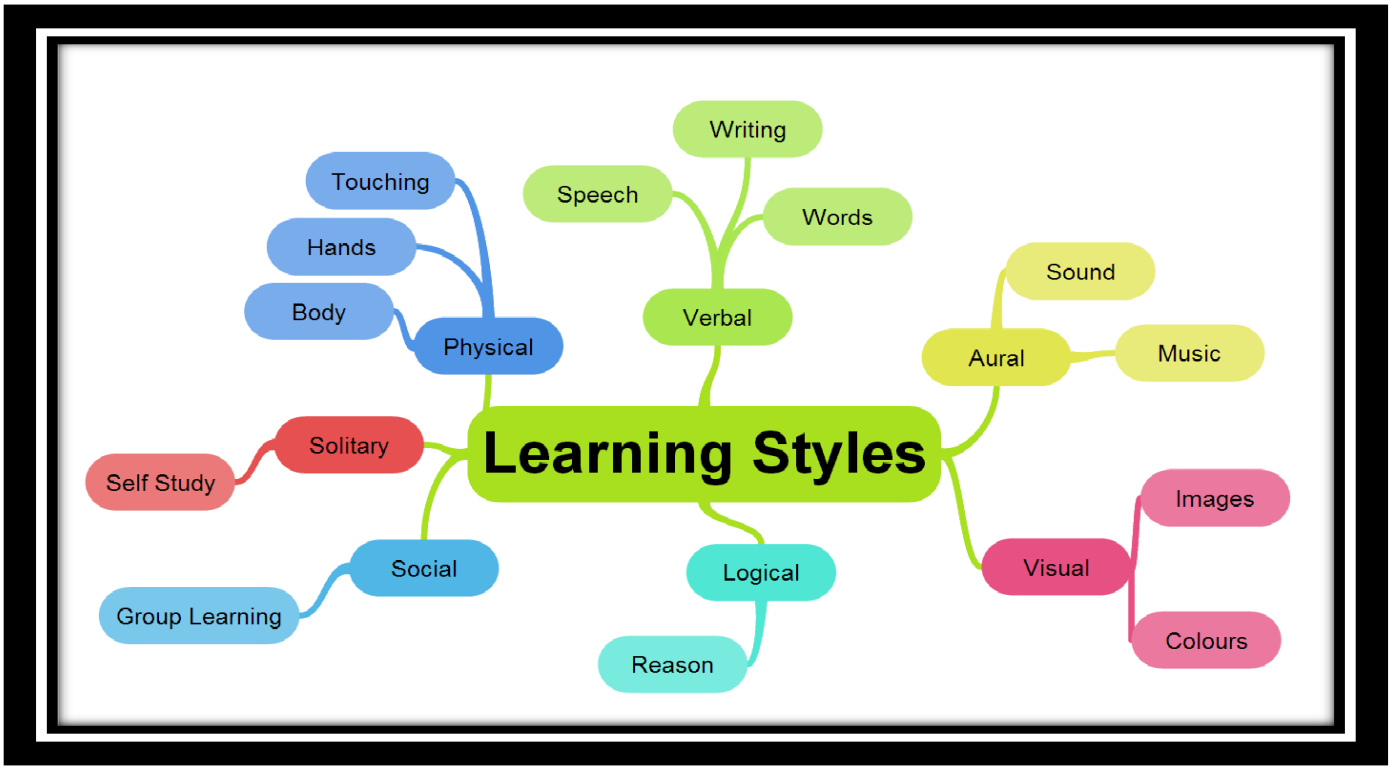
In a learning context, there are two properties- reflection and collaboration- that shape cognitive presence in a way unique to this medium. (Garrison, 2000) The nature of learning calls on learners to be self-directed and to take responsibility for their learning. That is, to assume greater control of monitoring and managing the cognitive and contextual aspects of an individual learning.

Taking responsibility and control of one's learning is core to reflective inquiry and self-directed learning as well as the development of meta-cognitive abilities that ultimately provide the foundation for continued learning. The emphasis of learning is on internal development and self-regulation. Knowing how to learn is more important than amassing a lot of knowledge. Self-management is the process undertaken by students and for themselves based on self- discipline, with the characteristics of students carry out the process of independence that is working on their own initiative and carry out planning activities.

Regular self evaluation is required in this process in order to be aware of inner dynamics and their external influences. This is the point where the importance of Cognitive self-management is felt. Cognitive self-management is the ability to think in abstract terms, the highest level of intellectual functioning. It is the way or the ability of a learner to control oneself in systematic problem-solving. Exploring this area could certainly bring notable changes in the learning environment, attitude, and achievement.

In the current academic scenario, a child must learn to go beyond the conventional way of rote learning. They should be taught to develop a mind of their own and through the flexible curriculum, curiosity is promoted. The child is to be discharged from the chains of mental blocks and lets his/her artistry run its course. The eminence of imagination is stressed extensively, play enactions and an encircling curriculum leads to a well-developed cognitive system.

Fig 1.1: LEARNING STYLES



Formal education starts with pre-school, through primary and secondary education, and ends at higher education. Pre-school and primary schooling prepares the base for the learning and the real education for the personal, social and vocational development is provided at the secondary education and higher secondary levels. Hence, secondary education is considered as one of the very important phases of education for the holistic development of the child. As per the Secondary Education

Commission (1952-53), the objectives of secondary education are the development of democratic citizenship, the development of qualities for leadership, and the development of personalities among children to create future citizens with democratic values and to make them fit for higher education or vocational education. Secondary education becomes necessary to study in-depth and details what was learned in primary education. It is very essential for every child to be successful in secondary education and academic achievement is one of the very important indicators for success.

Even the academic achievement at the secondary stage determines the future education and career of a child. Along with teaching-learning at school, there are many personal and social factors that contribute to the success in the academic achievement of any child at the secondary level. From among these factors, multiple intelligence and cognitive self-management of secondary school children have some role in determines their academic achievement to some extent.

Multiple intelligence helps students to build up skills or unravel problems as it is a process of functioning several intelligences at the same time in a balanced manner for performing a task. Similarly, cognitive self-management is a higher-order intellectual ability that helps secondary school children to control themselves for solving problems in a systematic and optimistic way. Hence, the present study is an attempt to measure these components and also to study the influence of these components on the academic achievement of the student's teachers. The proceeding paragraphs will discuss these components and their effect on academic achievement in higher secondary students.

1.2.0: INTELLIGENCE

“Intelligence is the capacity to understand the world, think rationally and use resources effectively when faced with challenges” Wechsler (1975) Intelligence is a sort of mental energy, in the form of mental or cognitive abilities and available with an individual which enables him to handle his environment in terms of adaptation to face novel situations as effectively as possible. “In the heyday of the psychometric and behaviourist eras, it was generally believed that intelligence was a single entity that was inherited; and that human beings – initially a blank slate – could be trained to learn anything, provided that it was presented in an appropriate way. The distribution of intelligence is not equal among all human beings.

1.2.1: Characteristics of "Intelligence" :-

- A property of all human beings
- A dimension on which human beings differ (no two people possess exactly the same profile of intelligences) even identical twins possess not exactly the same profile of intelligences)
- The way in which one carries out a task in virtue of one's goals.

1.2.2: MULTIPLE INTELLIGENCE

"Nowadays an increasing number of researchers believe precisely the opposite; that there exists a multitude of intelligences, quite independent of each other; that each intelligence has its own strengths and constraints; that the mind is far from unencumbered at birth; and that it is unexpectedly difficult to teach things that go against early 'naive' theories of that challenge the natural lines of force within an intelligence and its matching domains." (Gardner 1993: xxiii)

Howard Gardner viewed intelligence as 'the capacity to solve problems or to fashion products that are valued in one or more cultural setting' (Gardner & Hatch, 1989). In essence Howard Gardner argued that he was making two essential claims about multiple intelligences that, the theory is an account of human cognition in its fullness. The intelligences provided 'a new definition of human nature, cognitively speaking' (Gardner 1999: 44). Human beings are organisms who possess a basic set of intelligences. People have a unique blend of intelligences. Howard Gardner argues that the big challenge facing the deployment of human resources 'is how to best take advantage of the uniqueness conferred on us as a species exhibiting several intelligences' (*ibid.*: 45).

According to Gardner (1999), all human beings have multiple intelligences in varying amounts and these intelligences are located in the different areas of the brain and work either work independently or together.

1.2.3: PRINCIPLES OF MULTIPLE INTELLIGENCE

Gardner defined intelligence as "the ability to solve problems or to create products that are valued within one or more cultural setting". This is the definition which is given in the 1983 book 'Frames

of Mind: The Theory of Multiple Intelligences'. The Multiple Intelligence theory welcomes psychometric testing for specific scientific study." (Frames of Mind: The Theory of Multiple Intelligences, Howard Gardner).

There are three fundamental principles of Gardner's theory and they are as follows:

- **FIRST PRINCIPLE** is whether viewed unitarily or as comprising multiple abilities. There exist Multiple Intelligences; rather distinct from the others. Gardner's view treat

  each set of intelligences is a system in its own right, rather than merely one aspect of a larger system, namely what we traditionally call 'intelligence'.

- **SECOND PRINCIPLE** is that these Intelligences are independent of each other. Gardner believes that, it is justifiable by what we know about the mind.

- **THIRD PRINCIPLE** is that Intelligences interact. In such an instance; a mathematical word problem requiring; the application of both Linguistic and Logical-

  Mathematical intelligence would be insoluble. Rather, on Gardner's view, the two Intelligences work together to produce a solution to the problem.

He recapitulated the theory of intelligence using eight criteria. According to Gardner, "there are biological and cultural bases for intelligences. Neurobiological research indicates that learning is an outcome of the modifications in the form of connections between cells. Primary elements of different types of learning are found in particular areas of the brain. The corresponding transformations occurring there." (Gardner, 2004). He reviewed the literature using eight criteria or 'signs' of an intelligence.

1.2.4: CRITERIA/ SIGNS OF INTELLIGENCE

Gardner defined "intelligence as a bio-psychological potential". This is used to handle information. This potential can be activated in different cultural settings to solve problems. This indicates that these intelligences are not simple abilities that can be seen or counted. These are potentials that will or will not be activated. Gardner used eight different criteria to understand it. Gardner (1999) made different groups in terms of their disciplinary roots. Gardner reviewed the studies using eight criteria or eight signs of Intelligence: (Frames of Mind: The Theory of Multiple Intelligences, Howard Gardner):

1. Potential isolation by brain damage:-

   The intelligence of an individual will not be same as another individual. “If a particular faculty of the brain is damaged or spared in isolation, the behaviour of individual is same as those others who have the same problem.”

2. An evolutionary history and an evolutionary plausibility : -

   “All human beings display areas of intelligence and ignorance. Our current intelligence has its root from millions of years back in the history of species. Studies give new possibility to evolutionary accounts of such faculties as the intelligence. This scrutinizes the world of plants and animals”

3. An identifiable core operation or set of operations:-

   “The existence of one or more basic operations is assumed to be the basis for human intelligence.” “There is an identifiable set of procedures and practices which are unique to each true intelligence. For instance linguistic intelligence includes core operation of phonemic discriminations command of syntax, sensivity to the pragmatic uses of language, and acquisition of word meanings.”

4. Susceptibility to encoding from a symbol system: -

   “Our representation of knowledge and communication are through different symbol system.”

5. Intelligence does not develop in isolation:-

   “There are situations in which intelligence has major roles. The level of expertise in the development of intelligence is ranging from talent at the time of universal beginning to high levels of competences in the modern world.”

6. The existence of idiot, savants, prodigies and other exceptional people:-

   “Nature provides one other bounty to the student of multiple intelligences. People who, without any documented signs of brain injury, have unusual profiles of intelligence.”

7. Support of experimental and Psychological task :-

   "Psychologists can identify a relative autonomy of intelligence. Also one can test the effect of one intelligence on another set of tasks for different domains of human behaviour. A true intelligence can be identified by specific tasks which can be carried out, observed and measured"

8. Support from Psychometric findings:-

   "The use of psychometric instruments to measure intelligence has traditionally been used to measure only specific types of ability. However, these tests can be designed and used to identify and quantify true unique intelligences.

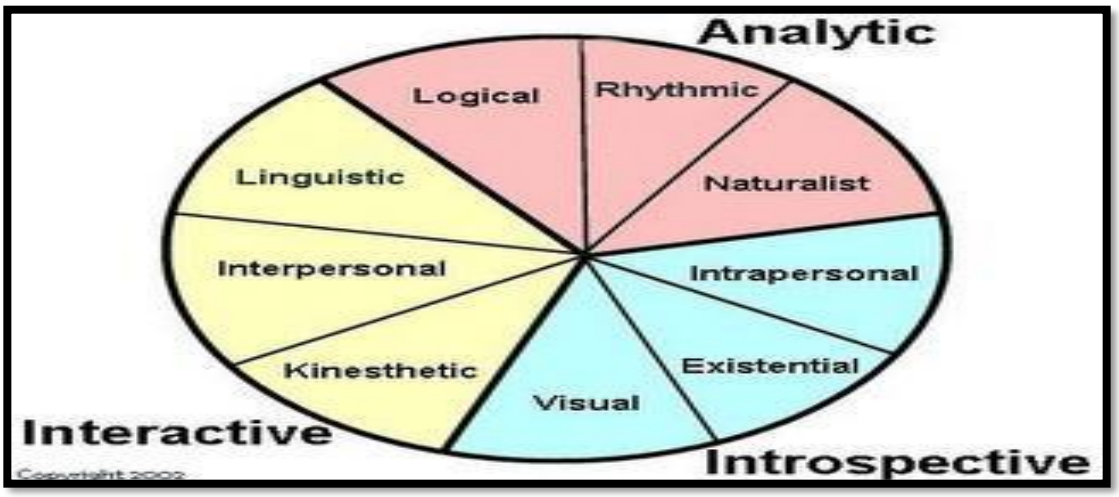
In '*Frames of Mind'* Howard Gardner treated the personal intelligences 'as a piece', because of their close relationship inside most cultures, they are often linked together. The *Theory of Multiple Intelligences* is an idea proposed by Howard Gardner. In 1983 he published a book by name 'Frames of Mind.'

In that it is said that all individuals have seven independent intelligences. Gardner claimed that the seven intelligences rarely function autonomously. They are used at the same time and tend to balance each other as people build up skills or unravel problems. The human cognitive competences can be better described in terms of a set of abilities, talents or mental skills which he calls *Intelligences,* and most people can develop the eight intelligences and many ways to be smart within each individual.

1.2.5: DIMENSIONS OF MULTIPLE INTELLIGENCE

At first Howard Gardner formulated a list of seven components of intelligences. It was only a provisional list. The first two components of intelligences have been typically valued in schools; the next three are associated with the arts. Gardner recently has added three new intelligences, Naturalistic intelligence, Humanistic and Moral Intelligence. Gardner identified these intelligences through a study on the development of cognitive skills of normal children, stroke patients and other brain damaged ones. (Gogabakan, 2003).

Fig 1.2: DIMENSIONS OF MULTIPLE INTELLIGENCE



It was suggested further that intelligence comprises of ten distinct multiple intelligences - they are explained in detail as follows:

❖ VERBAL/LINGUISTIC INTELLIGENCE

According to Howard Gardner, "Writers, poets, lawyers and speakers show high linguistic intelligence. Students who possess linguistic intelligence show good auditory abilities. They are usually showing interest in reading, writing, playing word games. They also are good at remembering names, dates, places and doing word processing on a computer. They may have a developed vocabulary. They can speak fluently, accurately and phonetically" (Gardner, 1999). This Intelligence matches the traditional ways of teaching as this is the most sought after intelligences in the classroom.

❖ LOGICAL / MATHEMATICAL INTELLIGENCE

In Howard Gardner's words, "The Logical-mathematical intelligence is the ability to analyze problems logically, ability to carry out mathematical operations, ability to investigate issues scientifically. It entails the ability to detect patterns, reason deductively and think logically. This intelligence is most often associated with scientific and mathematical thinking." (Gardner, 1999).It is the intelligence of logic and reasoning allowing an individual to be problem solvers. In a traditional classroom environment students are asked to conform to teacher's instructions and this intelligence helps to conform.

❖ **VISUAL/ SPATIAL IINTELLIGENCE**

"Spatial intelligence is the ability to recognize and use the patterns of wide space and more confined areas" (Gardner, 1999). " The ability to calculate adequate space for moving his own body, his car, his bus when driving, between two things or along the road, reading maps, charts and diagrams, thinking in images and pictures are the favorites of the students who have spatial intelligence"

❖ **BODILY / KINESTHETIC INTELLIGENCE**

"Bodily-kinesthetic intelligence involves the ability of using one's whole body or parts of the body effectively. It is the ability to use mental capacities to coordinate bodily movements. Howard Gardner considers mental and physical activity as related" (Gardner, 1999). The learners with strong kinesthetic skills will be usually "overactive" in the classroom but bloom in learning environments.

❖ **MUSICAL / RHYTHMIC INTELLIGENCE**

"Those who possess musical intelligence may have composition, and appreciation of musical patterns. It covers the capacity to recognize and compose musical tones, pitches and rhythms. According to Howard Gardner, musical intelligence runs in an almost structural parallel to linguistic intelligence" (Gardner, 1999).

❖ **INTERPERSONAL INTELLIGENCE**

"Interpersonal intelligence is dealt with the capacity to understand the feelings, mind and desires of other people. It involves the ability of the people to work effectively with others. Educators, salespeople, religious and political leaders and counselors all must have a well- developed interpersonal intelligence" (Gardner, 1999).

❖ **INTRAPERSONAL INTELLIGENCE**

"Intrapersonal intelligence includes the capacity to understand oneself, to appreciate one's feelings, fears and motivations. In Howard Gardner's view 'it involves having an effective working model of ourselves, and to be able to use such information to regulate our lives" (Gardner, 1999).

❖ **NATURALISTIC INTELLIGENCE**

The 8th intelligence named, the Naturalistic Intelligence was introduced by Gardner (1996 as cited Teele, 2000). "A student with this kind of intelligence, he claims, has the skills to notice, group, classify flora and fauna and is able to listen and hear the environmental sounds. He adds that this group of students lives in harmony with nature. The naturalist can feel the differences between plants and animals. They also can find out the relationship between nature and civilization. People with jobs such as farming, hunting, gardening and also biologists have this kind of intelligence" (Teele, 2000).

❖ **EXISTENTIAL INTELLIGENCE**

"Existential intelligence composed of person's ability to perceive and make vision about the world in a different way. People having this intelligence may become good leaders, philosophers etc". (Tupper, 2002)

❖ **MORAL/ SPIRITUAL INTELLIGENCE**

Moral intelligence comprised of the ability in the preservation and transmission of moral or spiritual values. Persons having this intelligence may become priests, saints etc. (Wikipedia June 2010 steps to build a moral intelligence)

1.2.6: INTERACTION AMONG THE COMPONENTS OF INTELLIGENCE

"***It's not how smart you are that matters, what really count are how you are smart***." (Gardner, 1983) As Gardner states that all individuals are bestowed with all of the components of the intelligences. The potential may or may not be activated depends on the respective cultural settings of each individual. He further states that the individual with excellent ability in one component of intelligence can use it in variety of ways/means. A person with excellent spatial intelligence can be an Architect or an artist, will be able to develop his intrapersonal intelligence which help to understand oneself and there by the interpersonal intelligence can be enhanced which also may result in developing his kinesthetic intelligence also.

In case of a lawyer he will be an individual having outstanding linguistic intelligence like writing of briefs, convincing arguments and a sound recall of facts from hundreds of cases. But as a lawyer in court room he must have extremely developed interpersonal intelligence, ability to speak fluently in the court room, proficiently interview witness and execute the judges with his strong arguments.
Also he should have the logical ability to analyze the situation and follow chain of reasoning to reach ultimate conclusion. Thus the components can be developed with the help of the appropriate cultural settings.

A skilled politician uses linguistic intelligence and interpersonal intelligence in a high degree but little use of logical and kinesthetic intelligence. A director of a film must have developed linguistic and interpersonal intelligence. An individual endowed with both verbal and interpersonal intelligence will be a good administrator. So as new roles are assumed by individuals it demands the need for particular combinations of intelligence.

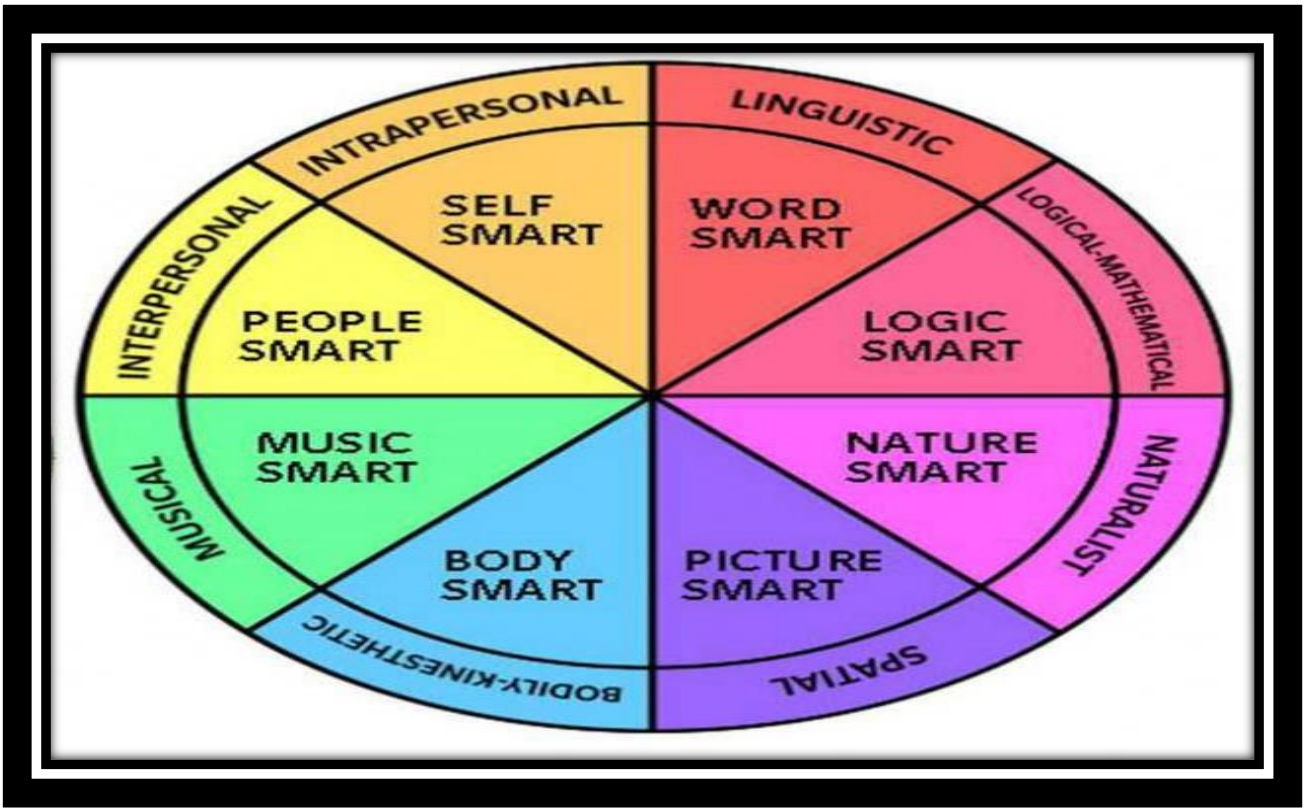
Fig 1.3: LEARNING STYLES OF MULTIPLE INTELLIGENCE IN CHILDREN

Children who are strongly:	Think	Love	Need
Linguistic	in words	reading, writing, telling stories, playing word games, etc.	books, tapes, writing tools paper diaries, dialogues, discussion, debate stories
Logical-Mathematical	by reasoning	experimenting, questioning, figuring out puzzles, calculating, etc.	things to explore and think about, science materials, manipulatives, trips to the planetarium and science museum
Spatial	in images and pictures	designing, drawing, visualizing, doodling, etc.	art, LEGOs, video, movies, slides, imagination games, mazes, puzzles, illustrated books, trips to art museums
Bodily-Kinesthetic	through somatic sensations	dancing, running, jumping, building, touching, gesturing, etc.	role play, drama, movement, things to build, sports and physical games, tactile experiences, hands-on learning
Musical	via rhythms and melodies	singing, whistling, humming, tapping feet and hands, listening, etc..	sing-along time, trips to concerts, music playing at home and school, musical instruments
Naturalist* **	in connection with natural world and animals	nuturing, growing things, caring for animals	classification, categories and hierarchies related to natural world or animals; often compare themselves to nature or animals; need a connection to environment, natural world, outdoors.
Interpersonal	by bouncing ideas off other people	leading, organizing, relating, manipulating, mediating, partying, etc.	friends, group games, social gatherings, community events, clubs, mentors/ apprenticeships
Intrapersonal	deeply inside themselves	setting goals, meditating, dreaming, being quiet,	secret places, time alone, self-paced projects, choices

March 3, 2017 by Montserrat

Various training and education of intelligence is a necessity for the development of students. The training and education should lead to a revolution in the cognitive abilities of an individual and the management of the abilities or in other words the ability to develop a balance between the cognitive and intelligence.

Fig 1.4: GARDNER PROPOSED RANGE OF HUMAN POTENTIAL



Armstrong (2000) demonstrated how a multiple-intelligences approach can take place informally in a traditional style class, where the teacher lectures with rhythmic emphasis (musical), draws a picture on the board to illustrate points (spatial), makes rhythmic gestures as he talks (bodily-kinesthetic), pauses to give students time to reflect (intrapersonal), asks questions that invite spirited interaction (interpersonal) and includes references to nature in his lectures (naturalist). Further, he also suggested musical techniques that lead to a higher order of thinking skills and to increase understanding of the learning material. He advocated the use of musical concepts, for example, conflicting rhythms to denote conflict and quiet rhythms to signify harmony. He opined that using the musical, visual, intrapersonal, interpersonal and all the other intelligence for teaching is essentially encompasses.

Learning that involves various methods particular to an individual that is presumed to allow the learner to learn best. It is the characteristic cognitive, affective, social and physiological behaviors of stable indicators which determine one's perception, interaction and response to the learning environments (Mackeracher, 2004)

James and Gardner (1995) defined learning style as the "complex manner in which and conditions under which learners most effectively perceive, process, store and recall what they are attempting to learn. It influences learners' concern, tradition, mental process, internal process and retention of new and difficult information".

Every individual learner is different and unique. In order to ensure deep learning, understanding, and development of critical thinking skills in students is the core of the teaching-learning process. The ability to understand oneself regarding one's abilities and inabilities is the first step to a systematic process of deep learning. The ability of an individual to control the self is a systematic problem-solving in perceiving the problem in an optimistic way (Aiming Wang 2003) designed to tap the feelings of effectiveness when approaching new tasks.

The ongoing process of observing one's own behavior and of events relevant to assess that behavior is called self-monitoring. And the next stage to self- monitoring is Self-evaluation which involves the comparisons of one's behavior with internally or externally derived standards. This leads to the delivery of tangible or covert consequences (rewarding or punishing), contingent upon the results of self-evaluation. Self-evaluation is the meaningful evaluation of a students' work. The emphasis here is on internal development and self regulation.

1.3.0: COGNITIVE

Learning is the central theme of education and educational psychology and is the pivot around which the system of education revolves. The term 'Cognition' encompasses a broad range of intellectual abilities and activities. It has do with how to procure, retain, use and communicate information. Much of the information we acquire from the world initially arrives through one of your senses.

The channels of inputs may be any of the five senses of an individual to bring us the wealth of information. Depend on the modality being used; the nature of the information differs. It is a

cognitive process of learning how to apply strategies to increase learning. The ultimate goal is for the student to eventually reach a point where these strategies are self-generated.

According to Berk (2007) cognition refers to the inner processes and products of the mind that lead to 'knowing'. Cognitive development refers to the ways children learn to reason or think, develop language, solve problems and gain knowledge. Identifying colours, completing a puzzle, knowing the difference between one and many and knowing how things are similar are all examples of cognitive tasks. Children learn through their sense organs mainly and through their interactions with people and things in the world.

They interact with the world through seeing, hearing, touching, smelling and tasting and construct meaning and understanding of the world. Ruffin (2009) stated that the children gain understanding and meaning of the world through their observation, the ways they play, the language they hear, interaction with others and experiences with various objects and materials.

One of the influential theories of cognitive development was formulated by French psychologist Jean Piaget (1896–1980). According to Piaget, cognitive development involves an ongoing attempt to achieve a balance between assimilation and accommodation that he termed equilibration.

Cognitive concerns the process of reflection and dialogue in the initiation, structure and corroboration of meaningful learning outcomes. If deep and meaningful learning outcomes are the goal of an educational experience, then an understanding of cognitive presence is a priority. (Garrison, 2003)

1.3.1: Aspects of Cognitive development:

- **Sensation and Perception:**

  Both sensation and perception are considered significant aspects of one's mental growth. Sensations are basic impressions gathered by sense organs. When these impressions are interpreted and some specific meanings are attached to them, they acquire the form of perception.

- **Concept Formation:**

  A concept is the general meaning that is attached to an object or idea. It is the result of one's perceptual experiences and involves both prejudice and generalization.

- **Development of Language:**

  The development of language adds to the mental growth and development of an individual. The growth and development in speech, vocabulary, interaction, and response are some of the important aspects of language development.

- **Development of Memory:**

  The memory which the child possesses at his young age is generally a rote memory. During later childhood and adolescence, the memory tends to function more rationally and an assortment process of remembering and

  forgetting begins to operate.

- **Development of Problem Solving Ability:**

  Problem-solving ability is an important constituent of mental development. An individual needs this type of ability in discovering the solution for the problems.

1.4.0: SELF MANAGEMENT

Managing one's own self in various aspects is called self management. It consists of planning, feeding, and evaluating one's own personal work. Planning controls one's schedule. While doing the work the individual reveals his own ability and potentiality. Self-evaluation is the meaningful evaluation, emphasizing on internal development and self-regulation.

There are few steps to guide the teacher of ways to develop self management in learners, they are as follows:

- ► Allowing the learner to have a choice in the selection of tasks and activities.

- Helping the learner to learn to set realistic goals.
- Have students participate in group work especially cooperative learning, in order to develop social and affective skills.
- Act as a facilitator for group discussion when appropriate.
- Being a role model for attitudes, beliefs, and habits the teacher wishes to foster.
- Constantly working on oneself and sharing with the learners.
- Agreements or contracts created or co-created with students can be a great tool to help them own their challenges when it comes to self-management.
- Using time management logs, students document how long they spend on specific tasks, assignments, or collaborative work.
- The act of checking boxes on a to-do list can be exciting for students.
- Behaviour Report Cards should have a place for both students and teachers to grade their behaviour

1.4.1: COGNITIVE SELF MANAGEMENT

During the progressive years, age one to five, children develop a sense of oneself in relation to family and community; they reconnoitre the world through play and seemingly endless questions, which require caregivers validating responses; and they are ready to learn a healthy lifestyle from the powerful adult role models with whom they identify strongly.

The quality of nurturing and stimulation that a child receives in the first few years of life can have effects on development that lasts a lifetime. Initial childhood experiences have dominant effects on the progress of children in physical and emotional abilities and impact their intellectual development in many areas. The brain evolves according to the quantity and quality of the stimuli it receives.

Each individual has his own way of learning. The mainframe of learning style consists of one's way of perceiving, thinking, decision making, and problem-solving can be attributed as cognitive management style. This is similar to self regulated learning. Schunk and Zimmerman(1998) define self-regulated learning as learning that occurs largely from the influence of a student's self generated thoughts, feeling, strategies, and behaviours, which are oriented toward the attainment of goals.

Cognitive management is a metaphysical ability of an individual. It is according to the APA Dictionary of Psychology defines "Cognitive self management is the use of self-talk, imagery, or both to direct one's behaviour in demanding or stressful situations". Cognitive self-management is the ability to regulate ones, cognitive faculty.

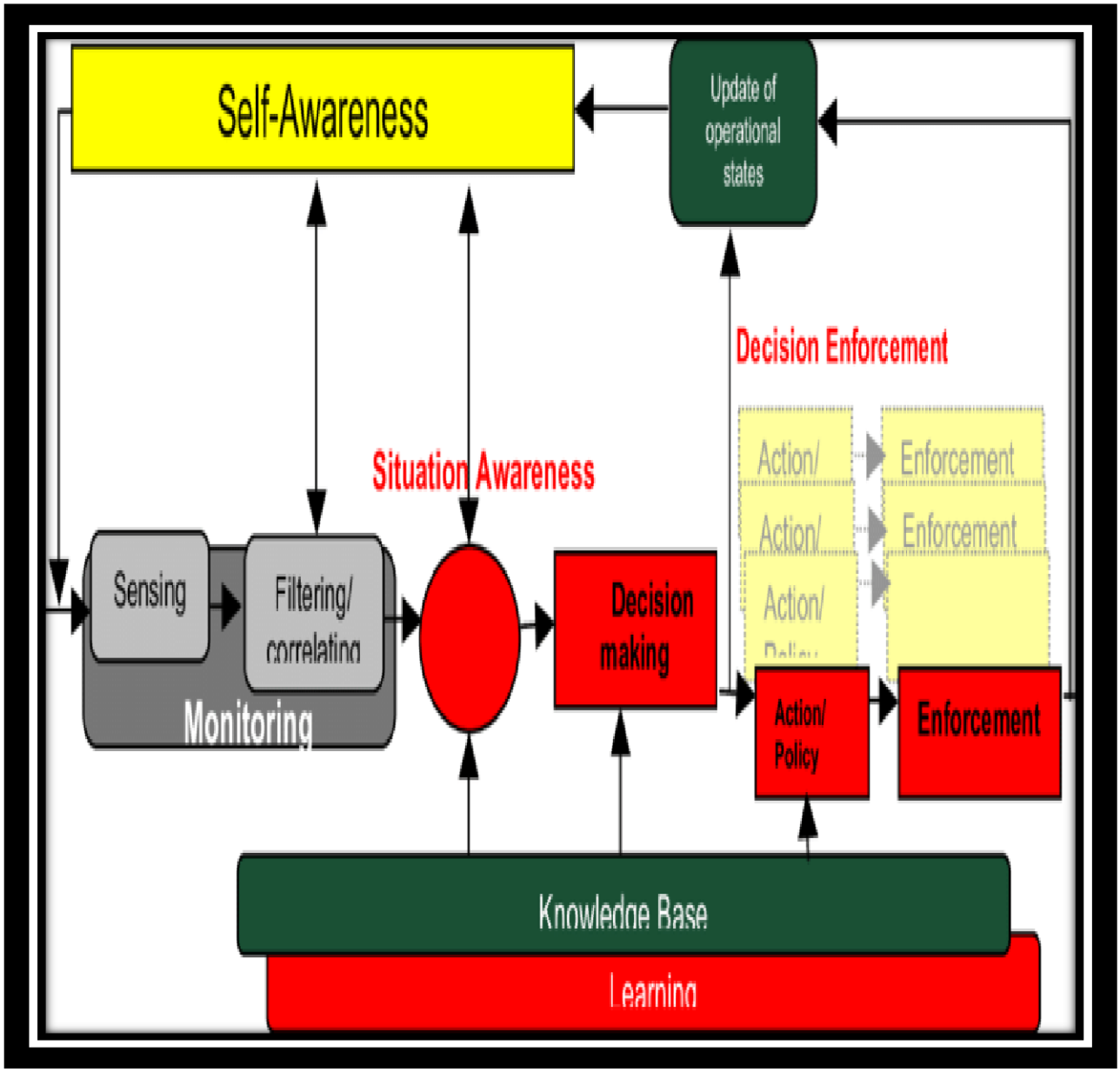
Children's physical development encompasses learning large muscle skills like jumping, running, throwing and small muscle skills like cutting, pasting, and drawing. Cognitive development engages children's expanding ability to think and solve problems, adopting such toys as puzzles, number and matching games, and blocks. Social/emotional development is around the learning to experience, identify, express, and control feelings; and about how to experience with others through dramatic play, co-operative games, and helping Cognitive self management is a higher order stage of intellectual performance.

For several years, students‟ ability, motivation, and quality of instructions have been investigated as important variables, related to student's achievement (Damron, 2015). In generic, students can be described as self regulated to the extent they are metacognitive, motivational, and behaviourally active participants in their own learning process. (Zimmerman, 1986, 1989)This also assumes three elements: students'‟ self regulated learning strategies, self efficacy, perception of performance skill and commitment to academic goals. (Zimmerman &Martinez- Pons, 1986)

Knowing how to learn is paramount to acquiring a lot of knowledge. One has to manage one's process of getting knowledge. Regular self evaluation is required in this process in order to be aware of inner dynamics and their external influences. The highlight here is on internal development and self-regulation.

Student plans organize and monitor cognitive development after combining all his skills along with external expectations. Kanfer explains self control, as an ability of an individual to control self is systematic problem-solving in perceiving the problem in an optimistic way (Aiming Wang et.al. 2003)

Fig 1.5: LOGICAL ARCHITECTURE OF THE COGNITIVE CYCLE FOR SELF MANAGEMENT



Stephanie rude (2005) decided to tap the feelings of effectiveness when approaching new tasks one does prior to approaching new situations is supportive or disparaging .It is the way of controlling oneself in a systematic way for problem solving.

The availability of knowledge, acquiring of knowledge, is all available in the teaching process but the most significant part knows how to learn. It is an ability to think in abstract terms, the highest

stage of intellectual functioning. It is the way of controlling one's self or the ability of an individual to control one's self in systematic problem solving.

Here the importance of self evaluation becomes an integral part of the teaching-learning process. It is through the internal development of a learner that led to external expectations. The observations of one's activities and behaviour are called self-monitoring which leads to self control of unwanted and unacceptable activities.

The availability of knowledge, acquiring of knowledge, is all available in the teaching process but the most significant part knows how to learn. It is an ability to think in abstract terms, the highest stage of intellectual functioning. It is the way of controlling one's self or the ability of an individual to control one's self in systematic problem solving.

Here the importance of self evaluation becomes an integral part of the teaching-learning process. It is through the internal development of a learner that led to external expectations. The observations of one's activities and behaviour are called self-monitoring which leads to self control of unwanted and unacceptable activities.

The next stage to self control is self-evaluation, the comparisons of one's behaviour with internally and externally derived goals. The next stage is the self –reinforcement of the covert consequences, the next stage is the self –reinforcement of the covert consequences, contingent upon the results of self evaluation.

It is the way of controlling oneself in a systematic way for problem solving. The availability of knowledge, acquiring of knowledge, is all available in the teaching process but the most significant part knows how to learn. It is an ability to think in abstract terms, the highest stage of intellectual functioning. It is the way of controlling one's self or the ability of individual to control one's self in a systematic problem solving.

It includes different dimensions like:

- **POSITIVE FOCUS:** It means a way of perceiving problem in an optimistic way in self-monitoring.

- **SYSTEMATIC PROBLEM SOLVING**: It is the planned action and a systematic approach to everything. Time Management, effort management and volitional monitoring management problem solving skills related to social adjustment.

- **TASK-EFFICACY:** It refers to carry out the able task with greater motivation whether one could complete it effectively. It involves strategies as:
  - The attention on the specific details
  - Comparative of the prominent characteristics
  - Differentiate between relevant from irrelevant

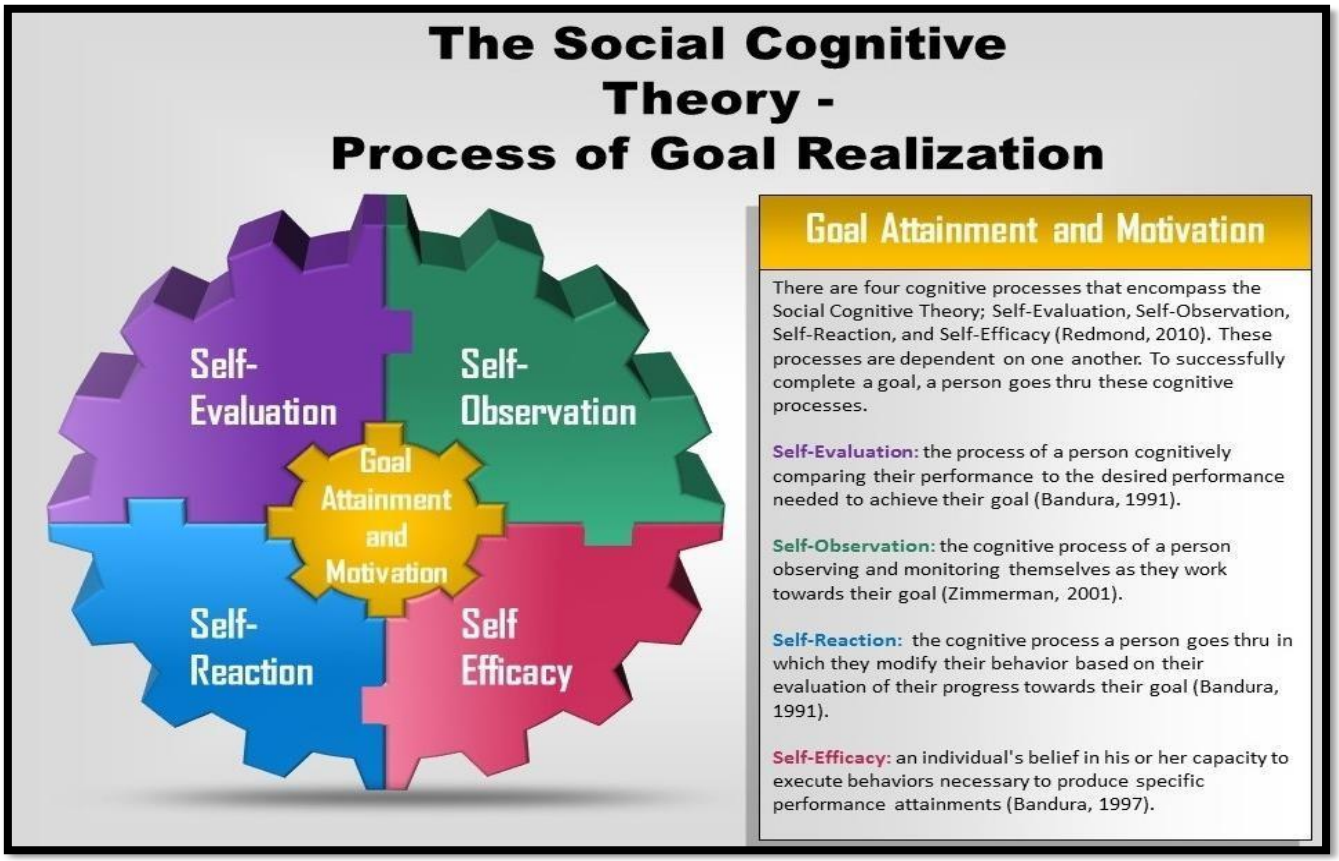
- **SELF BLAME:** Self reward or self blame reinforces the individual to control and to maintain behavior in the absence of external contingents. The delivery of tangible or covert consequences (rewarding or punishing), contingent upon the results of self evaluation. Setting unrealistically high goals and not able achieve will lead to depressive mood. Hence, it is very necessary to set achievable goals for the success of proper self management process.

- **REASONABLE GOAL SETTING:** Setting the target which is easily attainable with minimum efforts. Tasks should be challenging but achievable and defined in terms of specific.(Usha,2017)

Self-management or self-regulation has been referred by a number of terms including mnemonic training, meta-cognition, cognitive strategy and strategy instruction. (Danoff, Harris, & Graham, 1993; Graham, Harris, & Sawyer, 1987; Hallenbeck, 1996; Peterson & Swing, 1882; Scanlon, Deshler, & Schumaker, 1996)

The role of teachers, parents is to provide the supportive climate which motivates self management. The concepts of cognitive modifiability and self-efficacy are in relation to the concepts of motivation, academic achievement and their influence on the use of self-regulated learning strategies. It is a cognitive process of learning to apply strategies to increase learning. The eventual goal is, the student to eventually reach a point where these strategies are self-generated.

Fig 1.6: PROCESS OF GOAL REALIZATION



Cognitive self-management plays a vital role in every student's learning process. The true accomplishment of education mainly depends upon the minds of the learners with infinite powers. The individual differences in the intelligences need to be developed to the highest stage of intellectual functioning whereby an individual is able to manage his multiple intelligences and cognitive ability to the achievement of learning.

Self evaluation is the solitary significant evaluation of a students' work. The emphasis here is on internal growth and self regulation. Most educators would not only agree with this emphasis, but also advocate a need to develop student ability to meet external expectations.

Multiple Intelligence and Cognitive self management refers to the characteristic way in which an individual conceptualizes the environment. It reflects the different aspects of an individual personality. Although, they function to control and regulate the course of information processing and typically measured as response to the cognitive tasks. It has been seen through various studies conducted the correlation of multiple intelligence and Cognitive self management to be a good predictor of academic achievement in the teaching learning process.

1.5.0: ACADEMIC ACHIEVEMENT

Each student joins an educational institution with his own experiences which can't be battered away easily. But with the right cultural settings the individual is able to modify his experiences and strengthen his skills which ultimately reflect in the effectiveness of the student in the cultural settings. Education is expected to bring about changes in the cognitive behavioral and attitudinal dimensions of personality. Through traditional tests and examinations we generally assess only the cognitive aspect of personality.

Education is the process of bringing out the talents and potentialities of a learner and to unfurl the natural abilities and interest before the society. It proceeds from nativity to demise and schools exert greater influence in educating the child and promoting academic achievement. Achievement is considered as a key factor for personal progress. The whole system of education revolves around academic achievement.

Therefore, the level of academic achievement of a child at any stage depends on the extent to which the innate potentialities have been developed. Academic achievement is considered to be the core of the entire educational journey. Academic achievement depends on a number of variables. Academic achievement is the result of the instruction provided to the children in schools which is determined by the grades, or marks procured by the students in the examination.

Achievement refers to the scholastic achievement of the pupils at the end of an educational programme or the competence they actually demonstrate in the school subjects. Achievement is the accomplishment or acquired skill in the performance of an individual with respect to a given knowledge or skill.

Stagner (1962) defined achievement as a degree of proficiency or progress made by pupils in the mastery of school subjects.

According to Crow and Crow (1969) achievements refers to the extent to which a learner gets profit from instructions in a given area of learning i.e. achievement is reflected by the extent to which knowledge or skill has been acquired by a person from the training imparted to him.

Saxena and Dwivedi (1979) consider that the term scholastic achievement refers to the attainment or accomplishment in the field where a subject receives some instruction or training.

According to Clifford et al. (1986), achievement is the task oriented behaviour that allows the individual‟s performance to be evaluated according to some internally and externally imposed criterion.

According to Rao (1980) achievements is concerned to a great extent with the development of knowledge, understanding and acquisition of skills.

In the words of Verma and Upadhyay (1981) achievement is the attainment or accomplishment of an individual in some or particular branch of knowledge after a certain period of training.

"Academic achievement refers to acquired knowledge or competencies developed in the academic subjects usually designated by the test results or by the marks awarded by the teacher or by both" (Good, 1959).

Achievement, according to Aggarwal (1980), is the inclination of an individual to be concerned with, to plan and to Endeavour, for the successful acquisition of some standard of excellence in circumstances 'where the achievement has to be appraised positively or negatively. Achievement is the record of things that have been accomplished (test I examination scores etc.) and conceptualized as being the function of an individual's competence.

Thus, academic achievement is the combination of ability and effort. Presumable ability being equal, that higher motivation, expertness and more effort will achieve higher grade. The need for achievement is a learned motive to compete and to strive for success. There are wide differences among individuals, their past experiences and in their motivation that is learned, which account for the need for achievement.

It is also possible the other way, a student with high Intelligence Quotient may score below average in academic achievement. This is because of the individual differences in intelligence with knowledge of the subject. Vamadevappa (2002) states that while discussing the achievement of students, the Education Commission (1964-66) observes that the problem of academic underachievement is of great concern to a developing country like India. Extraordinary talent

unidentified, undeveloped and unexplored is a tremendous waste. The commission has also mentioned the need for diagnosing the causes of low achievement, which hinders the underachievers in coming up to the level of their full potential abilities and then to provide remedial treatment.

Multiple Intelligence is defined and elucidate as the mental capacity and potential that enable an individual to adapt himself to his environment and the more important part of it is the ability of the individual to adapt the environment to fulfill his needs such as psychological, social, emotional and spiritual. Without such two pronged adaptation, an individual cannot carry himself as an efficient one in his life. Hence multiple intelligence poses itself as an imperative factor in an individual's life right from the infancy to adult hood.

Learning as a process of acquiring change in the behaviour through intellectual and emotional attempts, depends much on multiple intelligence and its various dimensions. If learning is to lead to achievement, multiple intelligence has to play its significant role in leading the change of behaviour towards a desirable and expected role.

The cognitive self management is the process which helps through the process of self evaluation by a learner to develop his multiple intelligences and correlate the components of intelligences in order to achieve a holistic learning experience which reflects in every aspects of the student life especially the academic achievement of the learner. According to Gardner‘s theory, paying equal attention to each type of intelligence will help the recognition of sources of strengths, weaknesses and divergent abilities of each individual.

In addition to developing instruction to respond to their uniqueness (Javanmard, 2012), his theory also raised awareness of some important points including the following: all of the eight intelligences are evident in all human beings in varying amount; each intelligence can be taught and improved in most people, all of the intelligences work together and are changing throughout life; and learning performance can be improved by addressing learners‘ multiple intelligences (Razmjoo, 2008, Bilgin 2006)

Thus, when education concentrates on the two specific area of cognitive self management and multiple intelligence then only prominent changes can be seen. Intelligence is the ability to see a situation/problem and solve the problem with accurate use of skills and competency. Education is the cultural settings which help the students to improve their multiple intelligences with the help of

self management/ self evaluation opening to a broad range of activities to develop their neglected intelligences, activate the underdeveloped or paralyzed intelligences and bring well developed intelligences. Thus, there is close association of multiple intelligences, cognitive self management and academic achievement as the proper balance between the multiple intelligence and cognitive self management will reflect on the academic achievement of the learner.

1.6.0: RATIONALE OF THE STUDY

Learning is a never-ending process for the acquisition of knowledge, skills, values, beliefs, and habits. Education is the potent instrument of the learning process in which the knowledge, skills, values, beliefs, and habits of the children are shaped as per the required need of the society in a phased manner from the primary to higher secondary level. The formal system of education is created by society to provide education through the best learning system for the holistic development of each and every child considering their own abilities.

But in recent years, there has been a serious downfall in learning outcomes as shown in the reports of ASER (Annual Status of Education Report, 2018) survey which is a nationwide survey that was convened as a survey in 596 districts of India to evaluate the learning outcomes. The legacy of learning deficit visible so far in elementary school children is now being reflected among young adults too. The survey states -57% of 14-18year olds can't do a simple division;40% of 18year olds can't read a simple sentence in English;76% of them can't count money; 25% in age group 14-18 can't read basic text in their own language ; this statistics is of students who have these years of schooling.

It is seen the quality of learning outcomes is not been concentrated which resulted in a gradual decline in learning outcomes is evident. This survey was conducted in especially for secondary, higher secondary stages. The secondary stage, it is a crucial point, as the learner is in the transition period between elementary and higher education. The education imparted to the students of this stage should be able to develop a scientific attitude of mind to think objectivity. The teaching learning process should be inclusive by accepting the individual differences and mould students to have an intellectual integrity to shift to the truth from falsehood, be able to reject fanaticism and prejudice. Learning is the most important constituent in the education system. In learning each individual learner has a personal and unique style. They learn better in this way and that they have different learning styles that work best for them (Cuaresma, 2008; Ornstein and Lasely, 2000).

The word of Gardner becomes relevant here – students display very different cognitive profiles and which puts forth the urgency of implementation of multiple intelligence theory- oriented instructional strategies in the schools. Gardner also proposes eight different potential pathways to learning. The theory of Multiple Intelligence proposes a major transformation of the existing education system. It has proved by the various research studies conducted that the implementation of the theory showed significant changes in the academic achievement of the learners. (Jones 1996, Hamze 2013)

The first dimension Verbal/Linguistic intelligence enables the learners to understand a particular structure, concepts, process, relationship and function of an organism in an accurate and precise model. The second dimension Logical/Mathematical intelligence supports the acquisition of the right concept of patterns, rules, and theories involved in nature and formulation of generalizations in the form of principles and theories. the skill of observation, objective thinking, drawing conclusion, the skill of inquiry and experimentation are strengthened and enhanced by this dimension. The third dimension Visual / Spatial intelligence promotes the development of talents and skills involved in spatial perception. he fourth dimension Musical / Rhythmic intelligence develops an appreciation for nature which comprises flora and fauna, sounds in nature, hidden rhythms in the flow of waters, the blow of winds and the individual develops a biological sense of life. It shows the significance of multiple intelligence developed in learner acts as an instrument to acquire the foundation's skills of knowledge. The curriculum thus should be designed which takes into account individual multiple intelligences, differences of the learner. It has time and again proved that intelligence is inherent in an individual which is trainable and it can be achieved by increasing the cognitive ability by training on tasks in a procedural format.

The investigator came across few studies conducted in the field of multiple intelligence teaching and learning strategies in India but in abroad many studies have been conducted and have been implemented in the curriculum. In India, there are counted few schools which have tried to implement it. Despite the recent rise in implementation of the Theory of multiple intelligence it continues to be evolving and isn’t quite established.

The work of Gardner and Lambert (1959) has demonstrated that a casual relationship between attitude and the learning of a single subject would seem reasonable to expect attitudes to school to affect the total school performance. Education is expected to bring about changes in the cognitive behavioral and attitudinal dimensions of personality. Through traditional tests and examinations, we

generally assess only the cognitive aspect of personality. In learning, achievement has paramount importance. Each and every child follows its own unique way to learn and process information and the existence of different styles is due to the different composition of multiple intelligence developed in an individual which gets reflected in the academic achievement of the learner. Studies of Kailash (2017), Bas (2010) showed the correlation of multiple intelligence in academic achievement. The learning outcomes should be able to bring in a revolution in the cognitive abilities of an individual and a developed aptitude for management of the abilities.

It is worth understanding that a socially matured adolescent has some independence in taking or making decision. The instilling cognitive self management gives the direction to the individual to process of developing and managing the abilities and intelligences. Educators and research workers have found that cognitive self-management is an important factor in influencing achievement. One of the determinants of the academic success of students is the ability of self-management. Cognitive Self-management deals with awareness and skills to regulate the surroundings that affect individual behavior. The investigator also feels that the development of cognitive self-management among learners will also help them to develop an intellectual functioning by a systematic procedure. It can be used for the development of mastery of several skills.

From the review of related literature, very few studies have been conducted to find out the relationship between cognitive self management and achievement. A major part of studies was conducted in cognitive self-management was in the medical field for persons with different disabilities and in India, there have been hardly a few studies conducted related to school education. The investigator here feels that if a learner's cognitive self-management is developed it will help the learner to identify one's own multiple intelligences and be able to work on the learner to improve and increase his learning outcomes, and in changing his outlook for life. The true success of learning largely depends upon the minds of the learners with endless powers. The natural philosophers like Rousseau and Tagore advocate the development of the spirit of independence among the learners. True learning acquires only in an autonomous environment. The personality of the learners is fulfilled when the spirit of independence is developed. Hence, factors like multiple intelligence and cognitive self-management should be studies in different dimensions to enhance the achievement of students in different subjects. Saroja (2014)

The investigator didn't come across any researches conducted to study the correlation of multiple intelligence and cognitive self-management with respect to its influence on academic achievement. Among the 50 studies only one study was conducted in India on cognitive style and multiple intelligence with respect to academic achievement. This thought prompted the investigator to take these variables and study their correlation with their effects on academic achievement.

1.7.0: STATEMENT OF THE PROBLEM

Study of Multiple Intelligence and Cognitive self Management with respect to academic achievement of Higher Secondary Students.

1.8.0: OBJECTIVES OF THE STUDY

1. To study the level of multiple intelligence among higher secondary students.
2. To study the level of cognitive self management among higher secondary students.
3. To study the level of academic achievement among higher secondary students.
4. To study the relationship between multiple intelligence and cognitive self management of higher secondary students.
5. To study the relationship between multiple intelligence and academic achievement of higher secondary students.
6. To study the relationship between cognitive self management and academic achievement of higher secondary students.
7. To study the relationship of both multiple intelligence and cognitive self management on the academic achievement of higher secondary students.

1.9.0: HYPOTHESES OF THE STUDY

The following null hypotheses will be formulated and tested at 0.01 level of significance.

1. There will be no significant relationship between multiple intelligence and Cognitive self management of higher secondary students.

2. There will be no significant relationship between Multiple Intelligence and academic achievement of higher secondary students.

3. There will be no significant relationship between Cognitive Self management and academic achievement of higher secondary students.

4. There is no significant relationship in the multiple correlation taking Academic achievement, Multiple Intelligence and Cognitive self management.

1.10.0: OPERATIONAL DEFINATIONS

Multiple Intelligence: It is score secured by the students using the Multiple Intelligence Inventory prepared by Armstrong (1998).

Academic Achievement: The percentage of marks in the secondary school examination will be considered as the academic achievement of the students.

Cognitive self management: It the score secured by students using cognitive self management scale prepared by Rude (1980).

1.11.0: DELIMITATIONS OF THE STUDY

The proposed study will be delimited to the higher Secondary English medium students of standard XI of Vadodara district.

1.12.0: SCHEME OF CHAPTERIZATION

The present study follows the listed scheme of chapterization.

Chapter I details the introduction of the present study along with the taken variables. The chapter helps to build the rationale for the present study. The appropriateness of the study and the reason to conduct the study is presented in this chapter. The chapter also presents the details of the objectives of the study, the hypothesis, operational definition of terms and delimitations of the present study.

Chapter II gives a detail of the reviewed literature in the field of Multiple Intelligence, Cognitive Self Management and academic achievement. This helped the investigator to prepare the implications of the review of related literature for the present study. It also helped the researcher to consider methodological aspects for the present study.

Chapter III details with the methodology adopted in the present study. This chapter details about the design of the study, the population and sample, the procedure followed to develop and select the tools used for data collection and procedure of the data analysis adopted

Chapter IV provides detail of the analysis and interpretation of collected data. The chapter also provides the findings of the present study and implication of the same.

Chapter V presents the whole study in a nutshell along with the major findings of the present study, the discussion on the results arrived at after the analysis, implications drawn from the present study and suggestions. This chapter is followed by the Bibliography and Appendices.

CHAPTER: 2

REVIEW OF RELATED LITERATURE

CHAPTER II

REVIEW OF RELATED LITERATURE

2.1.0: INTRODUCTION

The present chapter includes the review of research journals, dissertations, thesis and other sources of information related to the problem selected for investigation "A study of multiple intelligence and cognitive self management with effect to academic achievement of higher secondary school students". Through reviewing of related literature, the researcher came to know about the recommendations of the previous researches. Researcher takes an advantage of the knowledge, which has been already accumulated from the constant human endeavor in the form of past researches.

It plays a crucial role in planning of the study. To quote Adiseshiah and Sulochana Seker (1977), "The survey approach is for the collection of information relevant to the problem of investigator". This helps the researcher to gather up-to date information about what has been done in the particular area on which she intends to study. Review of related literature allows the researcher to acquaint himself with current knowledge in the field or area in which he is going to conduct his research.

In the words of John W. Best (1999), "A brief summary of previous research and the writings of recognized experts provide evidence that the researcher is familiar with what is still unknown and untested. Since effective research must be based upon past knowledge, this step helps to eliminate the duplication of what has been done and provides useful hypotheses and helpful suggestions for significant investigations".

It provides the opportunity of giving an insight into the methods, measures and various other parameters adopted by others, which would lead to the improvement of the research design significantly. Aggarwal J.C. (1986) states that the state of related literature implies locating, reading and evaluating reports of research as well as reports of casual observations and opinions that are related to the individual's planned research report. The review of related literature enables the researcher to define the units in the field. It helps the researcher to delimit and define his problem.

Review of earlier research findings provided an empirical framework to carry out further research study. For any investigator, review forms the basis for the problem under investigation and helps researcher to arrive at the proper perspective of the study. An attempt is made here to review the related literature from India and abroad related to the areas of multiple intelligence, cognitive self management and academic achievement

2.1.1: IMPORTANCE OF THE RELATED STUDIES

Study of related literature serves the following:

1. A review of the related literature studies makes the investigator familiar with what is already known and with what is unknown and unproved.
2. The review of the related literature enables the researcher to define the limits of his field; it helps the researcher to delimit and defines the stated problem.
3. It brings the researcher up to date on the work.
4. It helps to avoid unrelated areas.
5. It helps to avoid duplication of well established findings.
6. It gives the researcher to have good undertaking of the research methodology.
7. It helps to know about the tools and instruments which proved to be useful and promising in the previous studies.
8. To know about the recommendations of previous researches listed in their studies for further research.

The review of related literature is a powerful tool/ instrument in the hands of an investigator for the successful start and completion of the research work.

2.2.0: CLASSIFICATION OF RELATED LITERATURE:

According to Lokesh Koul (1984), the knowledge of related literature, brings the researcher up to date on the work which others have done and thus to stage the objectives clearly and concisely. The related literature is classified into two categories for better understanding.

They are as:-

1. Studies on Multiple Intelligence
    i. Studies conducted abroad
    ii. Studies conducted in India

2. Studies on Cognitive Self Management
    i. Studies conducted abroad
    ii. Studies conducted in India

2.2.1: STUDIES CONDUCTED ABROAD ON MULTIPLE INTELLIGENCE

- **Jones (1996)** conducted *a study on exploring the theory of multiple intelligences in inclusive elementary classrooms*. The purpose of this study is to examine a multiple intelligences curriculum implementation in elementary education settings where students with disabilities are being included. The sample included twenty-three teachers from five elementary schools in St. Louis County, Missouri. The teachers included in the study identified themselves as teaching in inclusive classrooms and using the theory of multiple intelligences as a framework for instruction. A questionnaire was developed based on the nine major research questions. This qualitative research was conducted using a questionnaire specifically developed for this investigation. The questionnaire was qualitative in nature as it was constructed with the use of checklists and open-ended questions. The results of the study concluded with any stated multiple intelligences helped them meet the needs of all of the students in their classrooms and two felt that multiple intelligences could be beneficial if teachers received proper training.

- **Chisholm (1998)** conducted a study *Developing Multiple Intelligence in the Classroom* The statistical study was completed in two parts. The first part included 20 teachers, and a comparative analysis was done on their scores on three tests (self-assessment, Gardner's inventory of multiple intelligences and Teele's (TIMI) inventory of multiple intelligences. The second part involved 495 students and was divided into two sections. The first section assessed the students' intelligence on individual grade I from primary to grade twelve.The second section grouped the students' scores into grade levels (primary grades 0-2, lower grades 3-5, middle grades 6-8, and high school grades 9-12). Based on the results of the study we can conclude that

males score much higher than females in logical-mathematical intelligence. Boys scored higher at every grade level over the girls and their average mean was 4.43 to 3.26 for the girls. This does not mean that girls do not have the same capacity to let that boys do nor does it means that boys will do better academy than girls. On the other hand, the low correlations of both personal intelligences suggest some ambiguity in those areas for the respondents in the experiment.

- **Gurçay (2003)** conducted a study on *The Effect of Multiple Intelligences Based Instruction on Students ' Physics Achievement* The study was conducted with 268 ninth grade public high school students in Sincan district in the spring semester 2002-2003. There were two teachers and their eight classes in this study. MI inventory, Attitude Toward the Content "Coulomb's Law", and Multiple Choice Physics Achievement test were administered as pretest to both experimental and control groups. The main purpose of this study is to compare the effects of the Multiple Intelligences based instruction versus traditional instruction on ninth grade students' physics achievement. MI inventory, Attitude Scale toward the Content "Coulomb's Law", Multiple Choice Physics Achievement test on the content "Coulomb's Law", and MI based Physics Achievement rubric were used as measuring tools. The target population consists of all ninth grade public high school students in Ankara. The accessible population is all ninth grade public high school students in Sincan, Ankara, Turkey. This is the population for which the results of the study will be generalized. There are four secondary public high schools in Sincan district. Moreover, there are a total of 65 ninth grade classrooms in those schools. Total number of ninth graders in public high schools in Sincan district is almost 2640. For this study, convenience sampling was used because it was extremely difficult to select a random sample of individual. Two physics teachers were involved in this study. They were agreed to use the MI based lesson plans that the researcher developed in their physics classes and allowed the researcher to observe their physics classes. results showed apparently that MI based instruction made significant effect on students' physics achievement but MI based instruction made no significant effects on students' attitude towards physics

- **Palaniappan et al. (2006)** conducted *a study on the multiple Intelligences and academic performance among Malaysian undergraduate dental students.* The study was conducted to find the correlation between multiple intelligence and academic performance. Objectives: To

  identify the nature of multiple intelligences among dental students and investigate the relationship between these intelligences and performance in the various skill areas of dentistry.

The study was conducted on experimental method and was administered on Sixty-one final year dental students at the Faculty of Dentistry, University of Malaya in Malaysia. The instruments used were: a)Multiple Intelligence Inventory [(MII), David Larear, 1991) b)Six academic performance scores were taken. There appeared no significant correlations between the various types of multiple intelligences and achievement in dentistry except the correlations between Composite scores and Intrapersonal and Body Kinesthetic Intelligence. Generally, there were no significant multiple intelligence differences among high and low performers.

- **Bakić-Mirić (2010)** conducted a research with a objective *To determine the importance of implementation of the theory of multiple intelligences in the English language course syllabus at the University of Nis Medical School.* The objective of this study has been to determine the importance of implementation of the theory of multiple intelligences in the English language course syllabus at the University of Nis Medical School. Methods used by which the theory of multiple intelligences has been implemented in the English language course syllabus particularly in one lecture for junior year students of pharmacy in the University of Nis Medical School. In order to gain a better understanding about how MI theory applies to lecture hall teaching, a lecture plan for the first year students of pharmacy at the University of Niš Medical School is displayed on the topic OTC Counseling and a part dealing with OTC core competencies. Time Limitation: 3 consecutive periods freshmen of the Department of Pharmacy at the University of Niš Medical School Class Size: 80 students. Teaching Method(s): Whole language learning & task-based learning. Evaluation procedure experts say that there are two ways of evaluating students after the completion of a course: testing and assessing. Whereas, on the one hand, testing represents a singular act that is characteristic of teacher centered classrooms, assessment, on the other hand, is defined of as a complex process distinctive of student-centered classrooms. Wherefore, testing is intended to determine what students have learned forcing them to memorize facts without really understanding the context and subject matter, assessment, nevertheless, is integrated with learning and instruction and is intended to stimulate further learning. The findings of the study forth the English language final exam results from February 2009 when compared with the final exam results from June 2007 prior to the implementation of MI theory showed the following: out of 80 junior year students of pharmacy, 40 obtained grade 10 (outstanding), 16 obtained grade 9 (excellent), 11 obtained grade 8 (very good), 4 obtained grade 7 (good) and 9 obtained grade 6 (pass). No student failed. The implementation of the theory of multiple intelligences in the English language course

syllabus at the University of Nis Medical School has had a positive impact on learning the English language and has increased students' interest in language learning.

- **Glenn (2010)** conducted a study on *The Use of Multiple Intelligence Concepts with Middle School Students and Future Academic Achievement.* This quantitative quasi-experimental study examined the variables of student's grade point averages when Multiple Intelligences were introduced and implemented. This research study has a limited population s drawn from the records of one educator's eighth grade classes from a small southeastern state and consists of 94 students who have completed the objectives according to the state of Mississippi Department of Education. This study was conducted at an urban public school in the South and was limited to six eighth grade U.S. History classes. The final limitation within this study was the number of students present for a short amount of time due to military re-location, as a military base is in close proximity to the school in which the study was conducted. This quasi-experimental longitudinal study was conducted to determine if teaching students the definition of Multiple Intelligences and offer ways to implement them in an academic setting would predict academic achievement, thus exploring causality. The purpose of this study was to determine if Multiple Intelligences had any effect on academic achievement. The participants involved were comprised of male and female students between 14 and 16 years of age. The total sample was comprised of 115 students of various ethnicity, gender, and socioeconomic backgrounds. The socioeconomic levels of all participants' parents/guardians ranged from low to high. The survey was 20 question surveys based on a 5-point Likert scale with answers ranging from strongly disagree to strongly agree. The researcher findings are that by utilizing Multiple Intelligences in the classroom, students may become more productive learners, not only for the school year, but in life as well. Data compiled in this study could possibly provide a solid learning base for future educational decisions with regards to the curriculum and how educators teach. The significant increase in GPAs could influence future research and Multiple Intelligences, as utilized in this study, may provide possibilities for increased academic achievement. Opportunities for districts, legislators, representatives and presidents to become more active in education reform and provide endless possibilities for students to be successful are now a closer goal to achieve because of this study.

- **Ahmadyan et al. (2013)** conducted a study on *The Effect of Teaching Strategy Based on Multiple Intelligences on Students' Academic Achievement in Science Course*. This research

was a quasi-experimental study with non-equivalent groups, which includes pre and post-test design with the control group A total of 40 students from two different classes (Experimental N=20 and Control N= 20) participated in the study. The fifth grade of the elementary school has opted through multi-stage clustered sampling. The Academic Achievement Test was administered to both groups as pre-test and post-test. The group which was taken as experimental group and was instructed through Teaching Strategy based on Multiple Intelligences on the other hand, the other group was traditionally instructed. To verify the efficiency of Teaching Strategy based on Multiple Intelligences over common teaching method (traditional instruction), an achievement test about science which consisted of 30 items was administered. For the statistical analysis, Analysis of Covariance (ANCOVA) was administered. The results showed that there is a significant difference in the means score of students taught sciences education using multiple intelligence teaching strategy and those taught using conventional approach. .The students educated by Strategy based on Multiple Intelligences became more successful than the students educated by the traditional teaching methods. The students who have been educated by Strategy based on Multiple Intelligences have become more successful than the students who have been educated by the traditional teaching methods.

- **Pérez et al. (2014)** conducted a study on *Relationships among multiple intelligences, motor performance and academic in secondary school children.* This study examines the associations between multiple intelligences, academic achievement and motor performance in secondary school children. Four research questions have been raised in this study: How is the MI profile between male and female?; Is there any relationship between academic achievement and MI?; Is there any relationship between motor competence and MI? and Are there any relationships among motor competence, academic achievement and multiple intelligences?.A group of secondary school children of four hundred and eighty school children participated in the study(171 female and 309 male) with an average age of 13.33 years (SD: 1.41). The revised self-efficacy Inventory for Multiple Intelligences (IAIM-R) and the motor test Sport comp were applied, and the average results of the academic year they had made were obtained. The investigation of the results showed how female scored significantly higher on the Linguistic, Spatial and Interpersonal intelligences, and older pupils scored significantly higher on the linguistic and naturalistic intelligences. It was the logical- mathematical intelligence was significant relations with academic performance and it was the intelligence that better predicted the achievement. In the next it showed the bodily-kinesthetic intelligence was notably related to motor competence and the best intelligence that predicted its achievement. Finally, it signifies

that school children with better scores in the motor test were those who scored higher in both academic achievement and all the multiple intelligences, with the exemption of musical intelligence.

- **Koura et al. (2014)** conducted a study on *The Relationship between Multiple Intelligences, Self Efficacy and Academic Achievement of Saudi Gifted and Regular Intermediate Students.* The study to describe the multiple intelligences and self- efficacy profiles that characterize Saudi female (gifted / regular) third intermediate students and their association to the achievement of EFL language skills and aspects. The sample consisted of 85 Saudi female third intermediate grade students, 43 were identified as gifted, and 42 were regular students. The gifted group was nominated by King Abdul-Aziz and his Companion Foundation for Giftedness and Creativity. Three tools were used: (a) the Multiple Intelligence Inventory, b)The Self-efficacy Scale and c) A Language Achievement Test. The results revealed that Interpersonal Intelligence was the most preferred intelligence among gifted and regular participants. Musical intelligence was the least preferred intelligence among both groups. The study revealed there was significant correlation between multiple intelligences and achievement in specific language skills and language aspects. Self-efficacy did not correlate to language achievement but it was a good predictor of success. The study recommended EFL teachers to act in response to different potentials of their students, develop activities that sustain students 'strongest intelligences as well as improving the weaker and pay more attention to creating a motivating classroom environment. The main objective of this study was to investigate and describe the multiple intelligences and self-efficacy profiles that characterize Saudi female (gifted / regular) third intermediate grade students and their correlations to the achievement in EFL in general, and specific language skills in particular. The findings of the research first question revealed that Interpersonal intelligence was the leading intelligence type that characterized gifted students, followed by Logical-Mathematical intelligence. Musical intelligence was the least common among gifted students.

- **Bas (2016)** conducted a study on *The Effect of Multiple Intelligences Theory-Based Education on Academic Achievement* In this research, the meta-analytic method was adopted to determine this effect, and studies related to this subject carried out in Turkey. In this study, the meta-analytic model proposed by Glass, Mc Gaw, and Smith (1981) is used in order to calculate the effect size of MIT-based instruction on students' academic achievement. In order to determine

the effect of MIT-based instruction on students' academic achievement, quantitative studies (master's theses and doctoral dissertations) carried out on MIT between 1998 and 2014 were examined. In the study, 75 studies as research samples were included in the analysis, and the pretest and posttest mean scores and standard deviation values for the experimental and control groups were gathered in a data pool formed in Microsoft Excel 2007. The findings of the current research, the data of a total of 75 studies that met the inclusion criteria were examined under the meta-analysis; the overall effect size obtained in accordance with the analysis made using the fixed effects model was found to be d = 0.946. Research literature shows that MIT-based instruction has a positive effect on students' academic achievement levels. Therefore, the findings obtained from the current research are seen to be consistent with individual studies conducted in the national and international literature. In this meta-analytic research, the effect of MIT-based instruction on students' academic achievement was examined, and other variables on which MIT-based instruction had an effect were excluded from the study. Therefore, further meta-analytic studies can be conducted regarding the effect of MIT-based instruction on various variables such as motivation, attitudes towards course, locus of control, and so on.

- **Hossein (2016) conducted a study on** *The correlation of multiple intelligences for the achievements of secondary students*. This current study explored this relationship using public high school students as participants from Bandar Abbas, the Southern City of Iran. This was a descriptive correlation study. Participants of this study were 270 students randomly selected from among public and private high schools students in Bandar Abbas. Douglas and Harm's questionnaire of multiple intelligences consisting of 80 statements was used as data collection instrument. This inventory is a standardized inventory, describing Gardner's eight multiple intelligences. Each intelligence was measured through ten statements. The composite inventory was translated into Persian with the help of research language expert in order to make it understandable for students. In order to find out the reliability, the inventory was distributed among 182 public high school students of Tehran, as a pilot test. For analysis of collected data, descriptive statistics including Mean, Standard Deviation, Pearson coefficient correlation and regression were used. Findings of this study revealed that moderate inter-correlation exists between verbal-linguistic and visual-spatial intelligences and academic performance achievement. It became clear that multiple intelligences like visual-spatial, verbal-linguistic and interpersonal statistically significant and were able to predict academic performance achievement ($p<05$), whereas musical intelligence was a tunable negative predicator for academic performance achievement of students.

- **Erkus (2017)** conducted a study on *The Effect of Mathematical Worksheets Based on Multiple Intelligences Theory on the Academic Achievement of the Students in the 4th Grade Primary School.* The aim of this research is to examine the effect of Math worksheets based on the Multiple Intelligences Theory on the academic achievement of students in the 4th grade primary school. In this study, semi-experimental method was used. The sample of the study consisted of 64 students who are studying in the 4th grade Experimental design with pre-test and post-test control group was administered. The study was administered in two stages: a)In the first phase of the study, a mathematical worksheet based on the Theory of Multiple Intelligences was prepared by the direction of expert. b)In the second phase of the study an "achievement test" consisting of 20 multiple-choice questions. The obtained pre-test and post-test data were scrutinized with the help of SPSS 22.00 package program. Content analysis of interview data was conducted. According to the results of the research, it is shown that math worksheets prepared on the basis of the Multiple Intelligences Theory has increased the academic achievements of the students in general. According to the results, it can be said that the preparation of math worksheets according to the students' different intelligence fields positively influenced the academic achievement of the students.

- **Neupane et al. (2018)** conducted *a comparative study of multiple intelligence levels of secondary school students with reference to grade*. This study was to identify the types of multiple intelligences among secondary level students from Kailali, Nepal in light of Gardner's theory. This research is a quantitative research. This research was conducted at public and private owned schools, Kailali. For the research the data were collected from girls and boys studying in Grade 9, 10, 11 and 12 with English and Nepali as a medium of instruction from four schools situated in Dhangadhi, Kailali. The study was 300 Secondary Level School students from the study area as sample. The research shows that naturalistic intelligence has first rank and linguistic intelligence has eighth ranked among eight multiple intelligences of the students from Dhangadhi, Kailali. The following are the areas in which further studies can be conducted: the study of basic level students' multiple intelligences in relation to gender, a study of students' multiple intelligences in relation to achievement motivation and parent-child relationship, a study of the association between multiple intelligences, home environment and academic achievement of school students, a comparative study of students' multiple intelligences with respect to their parental qualification and socio economic status.

2.2.2: STUDIES CONDUCTED IN INDIA ON MULTIPLE INTELLIGENCE

- **Bara (2005)** conducted a study on A *study of the development and implementation of an instructional strategy incorporating the theory of multiple intelligences.* The objectives of the study were: To map the Multiple Intelligences Profiles, (MIP), of teachers as well as those of the students. 2. To enable teachers carry out instructions using the MI instructional strategy. 3. To assess the achievement of the students following instructions in the Multiple Intelligence way. 4. To assess the Teachers' instructional behaviour as the result of the training in the theory of Multiple Intelligences. The present study is a Qualitative Study and its design is Quasi-Experimental. The sample of the study consisted of two parts: the teaching staff and the students. the teaching staff, (twenty one of them), of a secondary school at Namchi (New Light Academy, Namchi), south Sikkim was purposively chosen For the second part of the sample, that is, the students, all the students of class VIII, (sixteen of them) were taken. Apart from the teacher made achievement tests and the Cumulative Record Cards of the students, the researcher made use of the following tools for the study: Participative Observation, Unstructured Interviews, Anecdotal records, Motivation scale, the Multiple Intelligence Inventory and the Teacher made Posttest which incorporated the theory of Multiple Intelligences. The unstructured interviews of the teachers as well as the students were conducted. The teachers constituting the sample were introduced to the theory of Multiple Intelligences and the process of developing an instructional strategy incorporating the theory of Multiple Intelligences. Then, assisted by the researcher, they went on to develop the instructional strategy , that is, to remodel the lesson plans as well as construct the teacher-made achievement tests according to the theory of Multiple intelligences. the introduction of the instructional strategy incorporating the theory MI, it was found that the self perception and the level of motivation of both, the students as well as the teachers improved appreciably. The lessons were transacted better. Consequently, the academic achievements of the students too improved. And on the whole the atmosphere in the school improved.

- **Cynthia (2009)** studied on *the relationship between nine areas of Multiple Intelligence and teacher effectiveness of Secondary School teachers*. The aim of the study was to draw up a Multiple Intelligences based profile for effective teachers. The sample consisted of 300 Secondary School teachers; all minimum graduates and professionally trained. The main objective of the study was to find the relationship between nine areas of Multiple Intelligence and teacher effectiveness of Secondary School teachers. The study also aimed at drawing up a

Multiple Intelligences based profile for effective teachers They were from Marathi and English medium schools. Teachers teaching Languages, Social Sciences, Science and Mathematics were part of the sample. It was found that: • Effective Teachers display high scores in all areas of Multiple Intelligence as compared to their Average or Low Effectiveness counterparts. The mean Inter Personal Intelligence for Teachers with Low Effectiveness was higher than the overall mean Inter Personal Intelligence. Effectiveness show higher Multiple Intelligences in all areas. • Teachers with High Inter Personal, Existential and Logical Intelligences were more effective than those who were Low in the above mentioned Intelligences. • Effectiveness showed significant difference in means for all areas of Multiple Intelligences when compared to their counterparts with Low Presage Effectiveness. 47 • It was seen that Teachers displaying Low Effectiveness use Lecture Method to a significantly greater extent as compared to teachers with High Effectiveness.

- **Partani (2011)** conducted a study on *Developing multiple intelligences training module for preschool teachers and its effect on multiple intelligences of preschool children 3_4 years.* Sample size of teachers was 100, in which 46 teachers were in the experimental group and 54 were in the control group. Teachers observed 364 children using a rating scale and the researcher observed 460 children using a time sampling method. A pre-post intervention trial along with a control group has been undertaken. The tools used for data collection were a questionnaire, rating scales and an observation schedule. The objectives of the study was: - i) To find out the level of knowledge and preferences of multiple intelligences among preschool teachers .ii) To compare the level of knowledge on multiple intelligences from pre to post among preschool teachers of experimental and control group.iii) To compare the multiple intelligences of the preschool children from pre to post observation among experimental and control group. iv)To examine the level of knowledge and preferences of multiple intelligences from pre to post in experimental group of preschool teachers. v) To find out the effect of variables on the level of knowledge and preferences of multiple intelligences in preschool teachers. The findings portrayed that teachers in the experimental group revealed significant changes from pre to post as compare to control group for all intelligences. For the MI preferences of teachers in the treatment group, significant differences existed only for bodily-kinesthetic and naturalistic intelligences. For the MI preferences of teachers in the treatment group, significant differences existed only for bodily-kinesthetic and naturalistic intelligences. Total level of knowledge comprised of knowledge of multiple intelligences and multiple intelligences activities. Observation of preschool children revealed that children employed

bodily kinesthetic intelligence the most and naturalistic intelligence was least employed. Children in the experimental group outperformed those in the control group. Over all, it is concluded that an intervention programme for teachers had an effect on the multiple intelligences of preschool children

- **Achamma (2012)** conducted a study on *Multiple intelligence approach to curriculum transaction and achievement of educational objectives at secondary school level.* The objectives of the study were: - i) study the effectiveness of Multiple Intelligence Approach to curriculum transaction among secondary school students in realizing the educational objectives as given by Revised Bloom's Taxonomy. ii) study the attitude of secondary school students towards Multiple Intelligence Approach to curriculum transaction.iii) study the main effect as well as the interaction effects of the Traditional and Multiple Intelligence Approach to curriculum transaction. The sample for the study was delimited to only 8 English medium schools: two schools each of the following: SSC, CBSE, CISCE, CIE schools of 6th standard students studying in the schools located in Mumbai. The tool for assessing the impact of the MI approach was delimited to a post test only. The Instructional module consisted of activities planned across the eight multiple intelligences as proposed by H. Gardner and the levels of educational objectives as given by Revised Bloom's Taxonomy. The researcher made use of stratified random sampling technique in order to select the experimental groups for the study. The researcher will make use of the following tools to collect data: a) Personal Data Sheet; b) Multiple Intelligence Test; c) MI/ RBT Grid; d) Instructional Module; e) Field notes; f) School Records; g) Criterion Referenced Post- test. This implies that the Multiple Intelligence Approach to curriculum transaction may have boosted student achievement as compared to the Traditional approach. The activities seemed to help the participants to hone their skills related to each type of intelligence, learning style and constructivist approach and group learning also fostered the achievement of higher level.

- **Mogera (2013)** conducted a study on *Development of Instructional Strategy for Teaching Science at Standard V Based on the Theory of Multiple Intelligences.* The quasi-experimental-pretest-posttest design was adopted for the study All the English medium private schools having standard 1 to 7 of Surat city constituted as population for the present study. There were total 91 English medium schools which have Standard 1 to 7. One school was selected randomly. There were four divisions for the Standard V in the school. Out of these four divisions, one division of standard-V was assigned randomly as an experimental group while one division of standard V

was also assigned in the same way as a control group. The researcher constructed pre test and post test, opinionnaires and focus group interview for the study. The Teele Inventory of Multiple Intelligences (TIMI) (2002) was adopted to know the MI profiles of the students. The researcher maintained the researcher's diary to keep record of the students' learning. The objectives of the study :(1) To design and implement instructional strategy based on the theory of Multiple Intelligences for teaching science at standard-V. (2) To study the effectiveness of instructional strategy based on the theory of Multiple Intelligences for teaching science at standard-V in terms of academic achievement. (3) To study the process of learning science among the standard V experimental group students in relation to process skills. (4) To study the opinion of experimental group students for implemented instructional strategy for learning science based on the theory of Multiple Intelligences. (5) To study the Multiple Intelligences profile of standard V students of experimental group with respect to academic achievement of students in science subject. (6) To develop the guidelines for teaching science at standard V based on the present study. Based on the findings of the present study, it was concluded that instructional strategy for teaching science at standard V based on the theory of multiple intelligences helped students to perform better than the control group students on post-testing ($p=0.002$). Gradual improvement was also seen in the students' usage of process skills viz. observation, classification, inference, communication and measurement. It was found that strength in linguistic, logical-mathematical, visual-spatial and interpersonal intelligence helped the experimental group students to develop understanding in science. The opinionnaires and focus group interview data indicated that the experimental group students enjoyed learning science based on the theory of multiple intelligences.

- **Rekha (2013)** conducted *a study of the multiple intelligences creativity and achievement motivation among the secondary school students of Mysore city*. It was conducted in a descriptive cum correlation study. The tools used were "Multiple Intelligence scale" constructed by the researcher himself; "A verbal test of creative thinking" by Bager Mehdin and achievement and "Achievement Motivation test" by Deo Mohan. The normative survey was employed through random sample on 1005 students of Secondary school. In view of the result obtained it was found that the mass of the students have obtained average level of scores for all the Multiple Intelligences type wise viz., Verbal-Linguistic, Logical-Mathematical, Visual-Spatial, Bodily- Kinesthetic, Musical Multiple Intelligences Total. Secondly more number of students in comparison to below average level of scores have obtained above average level of scores. Lastly less number of students compared to high and average level of scores has

obtained below average level of scores. The outcomes of the study with respect to hypothesis testing reveals a significant difference in the level of Multiple Intelligences with reference to gender and a non significant difference with reference to type of school, locale of the school and medium of instruction. In the level of creativity a non significant difference was obtained with reference to gender and a significant difference with respect to type of school, locale of the school and medium of instruction was evident. Achievement Motivation shows a significant difference with reference to all the background variables and finally the relationship between Multiple Intelligences with Creativity and Achievement Motivation were found to be highly significant.

- **Sebastian (2013)** conducted a study on *A Study on the Multiple Intelligences Aptitude and Value Pattern of Secondary School Students of Namchi District of Sikkim.* To study the Multiple Intelligences of standard IX students. 2. To study the difference between the Multiple Intelligences of male and female students. 3. To study the difference between the Multiple Intelligences of rural and urban students. 4. To study the difference between the Multiple Intelligences of private and government school students. To study the relationship between the Multiple Intelligences and Aptitude of standard IX students. 6. To study the relationship between the Multiple Intelligences and Aptitude of male and female students. 7. To study the relationship between the Multiple Intelligences and Aptitude of rural and urban students. 8. To study the relationship between the Multiple Intelligences and Aptitude of private and government school students. 9. To study the relationship between the Multiple Intelligences and value pattern of standard IX students. 10. To study the relationship between the Multiple Intelligences and Value pattern of male and female students. To study the relationship between the Multiple Intelligences and Value pattern of rural and urban students. 12. To study the relationship between the Multiple Intelligences and Value pattern of private and government school students. 13. To study the relationship among the Multiple Intelligences, Aptitude and Value pattern of standard IX students. 14. To study the relationship among the Multiple Intelligences, Aptitude and Value pattern of male and female students. 15. To study the relationship among the Multiple Intelligences, Aptitude and Value pattern of rural and urban students. 16. To study the relationship among the Multiple Intelligences, Aptitude and Value pattern of private and government school students. The present study was a descriptive survey on 'Interactive Relationship among Multiple Intelligences, Aptitudes and Value Patterns of standard IX. Adopting the descriptive survey method of research, the data was collected from 1000 secondary school students studying in standard IX of different schools of Namchi district

of Sikkim. Both descriptive and inferential statistics were used for the analysis and interpretation of the data. Both descriptive and inferential statistics were used for the analysis and interpretation of the data. From the statistical analysis and interpretation of objective sixteen, it can be concluded that there is significant relationship among the Multiple Intelligences, Aptitude and Value pattern of private and government school students. The scores on Multiple Intelligences Inventory, Aptitude Test and Rating Scale on Value pattern of private and government school students are significantly positively related.

- **Saroja (2014)** conducted *a study on Influence of cognitive style and multiple intelligence on academic achievement of prospective teachers of biological science*. The investigator has adopted survey method for the study on biological science prospective teachers studying in colleges of education of Tirunelveli, Kanyakumari, and Thootukudi districts affiliated with the Tamil Nadu Teachers Education, Chennai. The sample was collected through stratified sampling technique and 500 prospective teachers were selected. The tools taken for the study were: a)Cognitive style inventory (CSI) developed by Praveen Kumar Jha (2001) b)Multiple Intelligence: constructed and validated by M.Antony Raj, Bala (2009) c)Achievement test: constructed by the researcher .The main objective was to find the correlation between cognitive style and multiple intelligences have significant influence on academic achievement. It maybe owing to the curricular pattern and the related training in the institution. The investigator speculated that the learner's scientific inquiry behavior likely to be intimately tied to the intuitive and systematic mode of categorization. The findings of the study underscore the need for application of cognitive styles in the subject for the proper understanding.

- **Sreeraj (2015)** conducted *a study on Relationship between multiple intelligences and achievement in Mathematics of Students at Secondary Level*. The total population classified into sub samples based on gender, locality and management of the school. The survey method was used for the study .The sample size was 1500 high school students from three districts of Kerala. Stratified random sampling was used for data collection. The tools used namely: a)Test of Linguistic intelligence, b)Test of Logical Mathematical Intelligence, c)Test of Spatial intelligence ,d)Test of Interpersonal intelligence, e)Test of Intrapersonal intelligence and f)Achievement test in mathematics for standard IX. Multiple regression analysis is used to study the effectiveness of all the selected components of multiple intelligences together to predict achievement in mathematics. The correlation analysis shows that selected components of

Multiple Intelligences are positively correlated to the achievement in mathematics. It indicates that the relation between the selected components of Multiple Intelligences and Achievement in Mathematics are significant.

- **Ahila (2015)** conducted a study on *Multiple intelligence study involvement and academic achievement of orphan students.* The objectives of the study were: To find the level of multiple intelligence of orphan students. 2. To find the level of multiple intelligence of orphan students with regard to the background variables – gender, nature of school, type of school, location of school, physical conditions, standard, orphan type, birth order, and hobbies. 3. To find the level of study involvement of orphan students. 4. To find the level of study involvement of orphan students with regard to the background variables. 5. To find the level of academic achievement of orphan students. 6. To find the level of academic achievement of orphan students with regard to the background variables. 7. To find the significance of difference in the multiple intelligences of orphan students with regard to the background variables. 8. To find the significance of difference in the study involvement of orphan students with regard to the background variables. 9. To find the significance of difference in the academic achievement of orphan students with regard to the background variables. To find the significance of relationship between the multiple intelligences of orphan students and their study involvement. 11. To find the significance of relationship between the multiple intelligences of orphan students and their academic achievement. 12. To find the significance of relationship between the study involvement of orphan students and their academic achievement. 13. To find the significance of relationship between the multiple intelligences of orphan students and their study involvement with regard to gender. To find the significance of relationship between the multiple intelligences of orphan students and their academic achievement with regard to gender. 15. To find the significance of relationship between the study involvement of orphan students and their academic achievement with regard to gender. 16. To find the predictive nature of multiple intelligence and study involvement on the academic achievement of orphan students. The investigator adopted the survey method as the suitable form of research for collecting data. The investigator took 621 orphan students from the population using simple random sampling technique. The investigator used the following tools for collecting data: 1. Personal Information Schedule prepared by Investigator 2. Multiple Intelligence Inventory developed and standardized by Terry Armstrong (1998) was adapted by the investigator. 3. Study Involvement Inventory developed by Asha Bhatnagar (1982) was adapted by the investigator. 4. For measuring academic achievement of orphan students, the investigator collected the percentage

of total marks obtained in quarterly examinations by the orphan students from the orphanage records. It is inferred from the study that there is significant relationship between the multiple intelligences of orphan students and their study involvement.

- **Nair (2016)** conducted *a study on Relationship between student related variables and multiple intelligences among higher secondary school students*. Study is intended to find out the Relationship between Students related Variables and Multiple Intelligences among Higher Secondary School Students. The total population was classified in to sub samples based on gender and stream of study. The normative survey method was adopted for the study. The sample size was 1050 Higher Secondary School Students from nine districts of Kerala. Stratified Random Sampling technique was for data collection. The tools used were : a)Multiple Intelligences Scale, b)Self-efficacy Scale and c)Creative Thinking Test. The study shows that there is substantial relationship between Creative Thinking and components of Multiple Intelligences, Verbal Linguistic, Logical Mathematical, Interpersonal and Naturalistic Intelligence. Relationship between Creative Thinking and components of Multiple Intelligences, Bodily Kinesthetic, Spatial, Musical and Naturalistic intelligences are negligible and significant. The study also shows that Self- efficacy and Creative Thinking can be predicted from components of Multiple Intelligences like Verbal Linguistic, Logical Mathematical, Interpersonal and Naturalistic Intelligence.

- **Vinnaras (2016)** conducted a study on *Influence of Multiple Intelligence and Self Efficacy of B Ed Trainees on Their Teaching Competency*. The objectives of the study were 1. To find out the level of Multiple Intelligence and its dimensions of the B.Ed Trainees with their background variables.2. To find out the level of Self-efficacy and its dimensions of the B.Ed Trainees with their background variables such as sex, educational qualification. 3. To find out the level of Teaching Competency and its dimensions of the B.Ed Trainees with their background variables. 4. To find out the significant difference in Multiple Intelligence of the B.Ed Trainees with respect to their background variables.5. To find out the significant difference in Self-efficacy of the B.Ed Trainees with respect to their background variables.6 To find out the significant difference in Teaching Competency of the B.Ed Trainees with respect to their background variables.7. To find out the significant difference if any among different optional subjects, types of college, religion and social status with respect to Multiple Intelligence of the B.Ed Trainees.8. To find out the significant difference if any among different optional subjects, types of college, religion and social status with respect to Self-efficacy of the B.Ed Trainees.9. To

find out the significant difference if any among different optional subjects, types of college, religion and social status with respect to Teaching Competency of the B.Ed Trainees.10. income and Multiple Intelligence and its dimensions of the B.Ed Trainees.11 income and Teaching Competency and its dimensions of the B.Ed Trainees. 12.To find out the significant relationship if any, between Multiple Intelligence & its dimensions and Teaching Competency & its dimensions of the B.Ed Trainees with respect to their background variables.13. To find out the significant relationship if any, between Self-efficacy & its dimensions and Teaching Competency & its dimensions of the B.Ed Trainees with respect to their background variables. 14.To find out the significant influence of Multiple Intelligence & its dimensions and Self-efficacy & its dimensions on Teaching Competency and its dimensions of the B.Ed Trainees.15. To find out the significant factor with positive loading of the variables namely Multiple Intelligence & its dimensions and Self-efficacy & its dimensions on Teaching Competency and its dimensions of the B.Ed Trainees. The present study reveals that majority of the B.Ed trainees have average level of multiple intelligence, self-efficacy and Teaching Competency. This may be due to the changing educational scenario mainly in the field of educational psychology and technology. The present study concluded that there is influence of multiple intelligence and self-efficacy of B.Ed trainees on their teaching competency.

- **Singh (2017)** conducted a study on *A study on different forms of intelligence in Indian school-going children.* In this cross-sectional observational study, we recruited 1065 school children between the age of 12 and 16 years from two government and 13 private schools in five towns, six cities, and two villages across India. All the children were administered multiple intelligences questionnaire by Armstrong, consisting of thirty true/false types of questions to assess the intelligences of a child in seven domains including linguistic skills, logical/mathematical abilities, musical skills, spatial intelligence, bodily-kinesthetic skills, intrapersonal intelligence, and interpersonal intelligence. IQ scores were assessed by Ravens Standard Progressive Matrices. The sample size was 1200 school children between the age of 12 and 16 years from two government and 13 private schools in five towns, six cities, and two villages across India. Out of the 1200 students, only 1065 submitted completed forms. The schools for inclusion in this study were selected randomly and both government and private schools were selected. The findings of the study were that the study involving 1065 students, we found that an individual person can possess various forms of intelligence, and IQ measures just one part of it. Only some forms of intelligence are correlated with IQ scores while some are not at all related to it. Out of these nine forms of intelligence, only two are positively correlated to

IQ score because IQ tests measure only logical/mathematical part and spatial part of our intelligence. Different students possessed different forms of intelligences and most students had more than one forms of intelligence. Of seven forms of intelligence, only three forms of intelligence such as logical/mathematical, musical, and spatial were positively correlated with the IQ score.

- **Singh (2017)** conducted a study on *Multiple intelligences theory based teacher education model* to assess the existing status in the teacher education colleges regarding the multiple intelligences theory based classroom practices and to develop a multiple intelligences based teacher education model and establish its usability in teacher education colleges affiliated to Savitribai Phule Pune University. The objectives of the study were 1. To access and analyze the existing status in the teacher education colleges regarding the multiple intelligences theory based classroom practices followed by the teacher educators. 2. To access and analyze the existing status in the teacher education colleges regarding the multiple intelligences theory based classroom practices followed by the pre service teachers. 3. To develop a Multiple Intelligences theory based Teacher Education model (MARC) using framework of teacher education models to train pre service teachers in teacher education colleges using multiple intelligences in their teaching learning practices. 4. To establish Usability of the developed MARC Mode. The MARC Model integrates the three teacher education namely Applied Science Model, Reflective Model and Crafts Model with multiple intelligences theory. The present research focuses on developing multiple intelligences based teacher education model for educating pre service teachers in multiple intelligences based teaching learning process. All eight intelligences namely: Verbal, Visual, Logical – Mathematical, Bodily Kinesthetic, Interpersonal, Intrapersonal, Musical and naturalistic are considered for developing the model. The present study was a multi method study consisting of a survey, product development and survey for usability testing. The findings of the study revealed that teacher educator's use mostly practices related to verbal and logical – Mathematical intelligence. The findings even show that MARC model was useful for educating pre service teachers in multiple intelligences based teaching – learning.

- **Francis (2017)** conducted a *study on the efficacy of multiple intelligences theory in English language teaching a study with reference to task based approach*. The present study is qualitative and quantitative in nature. It is qualitative, because of the descriptive, analytical and exploratory factors and reference to different sources on ELT, MI theory and Task-Based

Approach. The researcher has used questionnaires for his data collection, which were specially prepared to find out the reactions and ideas of the first year students from five different colleges, regarding their personal profile, intelligences, and how MI theory and TBA have helped them to learn the language and language skills, and develop self-learning. The study sample consisted of 300 students from the tertiary level General English classrooms. The students in the study sample were from five different colleges in the city of Chennai, Tamilnadu. The study sample consisted of both boys and girls. They were from different types of schools, such as government schools, government-aided schools, private schools, and public schools. They were from different boards, such as State Board, CBSE, ISCE etc., and different medium of instruction. They were also from urban, semi-urban, and rural areas. Students also came from a mixed residential background in the city, slum, private area, posh area, shopping area, and a few others were from residential area. The tools used for the study were as follows-A questionnaire used by Armstrong (2000) in his work Multiple Intelligences in the classroom (2nd ed.) was used to find out the intelligence profile of the learners. 2. The story The Selfish Giant by Oscar Wilde was used for teaching the students using MI theory. 3. The Main questionnaire. The findings of the study has established that such an integrated approach, which is the outcome of the present study, has the potential to trigger and activate the dormant intelligences of the language learners resulting in the learning of language skills, learner empowerment in ESL classrooms, and leading to self-learning and a holistic growth.

- **Gupta (2017)** conducted a study on *A Study of Multiple Intelligences of Secondary School Students of Jodhpur City of Rajasthan State*. The objectives of the Study: 1. To study the multiple intelligence of secondary schools students 2. To compare the multiple intelligences of secondary school students with respect to their type of family 3. To compare the multiple intelligences of secondary school students with respect to their siblings 4. To compare the multiple intelligences of secondary school students with respect to their size of the family. The investigator developed a self-constructed multiple intelligences inventory for administering on secondary school students in Hindi language and the limitations of this tool were the limitation of this study. The present study was delimited to standard 9th students of secondary schools in Jodhpur District in Rajasthan State. In the present study, the population encompassed all the 9th standard schools students of secondary schools of Jodhpur City in Rajasthan State. In the present study, sample is selected by simple random sampling technique. Lottery method is used to identify proportionate numbers of schools from all the secondary schools included in the population. The sample encompasses 42 secondary schools in Jodhpur city. The total sample is

2228 which included 1148 boys and 1080 girls. The study, the researcher selected descriptive type of survey research, because it studied the current status of multiple intelligences of secondary school students in Jodhpur city. The researcher prepared a self-constructed Multiple Intelligence Inventory with 5 point Likert type scale (1-Never, 2- Rarely, 3- Sometimes, 4-Usually, 5-Always). the major findings of the study: 1. It was found that the status of multiple intelligences in secondary school students was ranked in the following order: Naturalistic Intelligence > Logical Intelligence >Linguistic Intelligence > Musical Intelligence > Intrapersonal Intelligence > Interpersonal Intelligence > Bodily-kinesthetic Intelligence > Spatial Intelligence. 2. It was found that there was no significant effect of parents‟ type of family, siblings and size of family on the multiple intelligences when studied as a whole component.

- **Kailash (2017)** conducted *a study on Effectiveness of multiple intelligences interests and aptitudes in academic and non academic achievements of school students*. The study was planned to scrutinize the "effectiveness of multiple intelligences, interests and aptitudes in academic and non academic achievements of school children. The present study was conducted on a sample of 300 (150 male and 150 female) school students of Kurukshetra town in Haryana through the technique of cluster random sampling. The measuring instruments used for the collection of data consisted of : a) Multiple intelligences profiling questionnaire, b) Chatterji's Non-Language Preference Record, and c)Differential Aptitude Test. Study examined the effectiveness of multiple intelligences, interests, and aptitudes in academic and non-academic achievements by adopting a multivariate approach. Findings have revealed that on most of the measures boys and girls are fairly comparable except one on bodily-kinesthetic intelligence boys were found to be higher than girls. Findings of the present study provide a strong evidence of connection between multiple intelligences and academic achievement of school students.

- **Sivaranjani. (2017)** conducted *a study on role of multiple intelligence in developing vocabulary competence of second language learners in the context of English language teaching*. The study aims to evaluate the Arts and Science second year undergraduate students' interested and productive vocabulary stock and identify the impact of MI based activities in improving the learners' vocabulary range. The findings are presented based on the students' performance in the selected task and frequency level-wise. The study was conducted by quantitative analysis of the Pre-test. The role of Multiple Intelligences is an effective instrument to teach and learn vocabulary skills of the second language learners. The theoretical as well as statistical evidences are proved in the study.

- **Jeevitha (2017)** conducted *a study of multiple intelligence in relating to learning style among higher secondary students*. The investigator adopted survey method to study the multiple intelligences and its impact on academic achievement in Coimbatore district of Tamil Nadu. A sample of 300 from 5 various schools were selected by random sampling technique. Based on the findings from the present study it was revealed that the higher mean value of female students indicates that they have higher multiple in intelligence compared to their male counter.

- **Chand (2017)** conducted a study on *Effectiveness of multiple intelligences interests and aptitudes in academic and non academic achievements of school students*. The objectives of the study were: To study the relationship between multiple intelligences and academic achievement. 2. To explore the relationship between multiple intelligences and nonacademic achievement. 3. To explore the relationship between interests and academic achievement. 4. To study the relationship between interests and non-academic achievement. 5. To study the relationship between multiple aptitudes and academic achievement. 6. To study the relationship between multiple aptitudes and nonacademic achievement. 7. To examine the extent to which multiple intelligences, interests and aptitudes jointly contribute to academic achievement. 8. To examine the extent to which multiple intelligences, interests and aptitudes jointly contribute to non-academic achievement. The present study was conducted on a sample of 300 (150 male and 150 female) school students of Kurukshetra town in Haryana. The sampling of the students was accomplished through the technique of cluster random sampling. The measuring instruments used for the collection of data consisted of multiple intelligences. Profiling questionnaire, Chatterji's Non-Language Preference Record, and Differential Aptitude Test. Findings of the present study add to these earlier observations and provide a strong evidence of connection between multiple intelligences and academic achievement of school students. Individual differences in multiple intelligences are positively related to performance in co-curricular or extracurricular activities.

- **Khint (2018)** conducted a study on *A study of an effectiveness of C L L cooperative language learning and M I multiple intelligence on educational achievement and retention with reference to teaching of Gujarati language* The present research was experimental in nature. Randomized groups- pretest, post-test design was selected for the implementation of the experimentation. There were pre-test and post-test of both the semesters i.e. Sem-I and Sem-II. The objectives of the study were: 1.To constructs the C.L.L. content of Gujarati subject. 2. To construct M.I.

worksheet for teaching of Gujarati subject. 3. To make a teacher made test to find out the educational achievement of Gujarati subject. 4. To compare the effectiveness of C.L.L. method and M.I. approach for teaching of Gujarati subject. 5. To compare the effectiveness between Traditional method and C.L.L. of Gujarati subject. 6. To compare the effectiveness of Traditional method and M.I. method with reference to educational achievement of selected units of Guajarati subject. 7. To compare the effectiveness of C.L.L. method and M.I. method for selected units of Gujarati subject. 8. To compare the effectiveness of Traditional method and C.L.L. method with reference to educational achievement of selected units of Gujarati language. 9. To compare the effectives of the traditional method with M.I. method with reference to retention of selected units of Gujarati subject. Total universe of the study is of total primary schools of Jamnagar district among these schools the researcher has considered total 4 schools for the sample of the study. Total 180 students have been considered as the respondents. The study was delimited to only Jamnagar district has been considered as the universe. 4. In this study only 2016-17 has been taken as the study year. 5. Students of standard 8th only considered for the study. 6. Area is the only variable taken for the study. The findings of the study was, on the base of data we can say that there will be no significant impact of the area on the ranks of the educational retention of various teaching approaches prepared for teaching of Gujarati language.

- **Khan (2018)** conducted a study on *Development of strategies to teach mathematics at elementary level using the multiple intelligence approach*. To identify the various multiple intelligences that the students possess at the elementary level. To develop the strategies of mathematics at elementary level by applying the identified multiple intelligences. To study the interest level of the elementary students in doing mathematics while using the new teaching strategies. To compare the achievement level of the elementary students after using the new strategies based upon multiple intelligences. The objectives of the study were: 1.To identify the various multiple intelligences that the students possess at the elementary level. 2. To develop the strategies of mathematics at elementary level by applying the identified multiple intelligences. 3. To study the interest level of the elementary students in doing mathematics while using the new teaching strategies. 4. To compare the achievement level of the elementary students after using the new strategies based upon multiple intelligences. The present study used the mixed methods approach. For the final study one group pretest post-test experimental method was used to carry out this study. After conducting the pilot study experimental method was used to carry

out the research. This study will attempt at finding the achievement levels of the experimental group using the new methods of teaching mathematics as compared to the control group using basic statistical techniques. The population of present study comprises all the elementary eighth grade students of CBSE pattern schools in Delhi. Sample of the following study comprised students of one eighth class section from a school following the CBSE syllabus. The school randomly selected was Jamia Middle School (Morning Shift). Tools and techniques were used Multiple Intelligences Developmental Assessment Scales (MIDAS) version for the Kids-Opinionnaires, after each strategy performed, were filled by the students. In the present study the researcher used the following tools and techniques: Multiple Intelligences Developmental Assessment Scales (MIDAS) For Kids (10- 14) Intelligence based Observation Schedule for each strategy based on checklist by Thomas Armstrong. Strategies developed by the researcher in light of the eight intelligences. Semi-structured Interview Schedule and opinionnaires developed by the researcher. Pre-test and post-tests in the form of achievement tests were devised by the researcher for each lesson. The findings of the study were seen at an adolescent level the students with high intelligence scores are likely to perform in that intelligence at high, moderate or low levels. It is less likely for low scored students in the particular intelligence to perform at a high level for that intelligence involved in the strategy. Moderately scored students may be observed transitioning in their performances from high to medium to low limits during strategies also depending on whether they scored moderately high to moderately low. Combination of intelligences incorporated within the strategies also elicited varied differences in the students performing high, moderate or low for a given strategy.

2.3.1: STUDIES CONDUCTED ABROAD ON COGNITIVE SELF MANAGEMENT

- **Ling (2005)** conducted a study on Malleability *of Cognitive Style and its Implications for Management Practice.* It involved a comparison of cognitive styles between the Chinese and British nationals to determine the effect of culture on cognitive style. The study also sought to explore the effect of acculturation on the way individual's process information. A longitudinal, quasi-experimental sample survey was conducted with 125 Chinese and 36 British subjects engaged in a postgraduate course in a British University. In this phase of the study, subjects completed the Allison-Hayes Cognitive Style Index (CSI) twice over a six-month period. Based on these results, the research moved to Phase II to explore the relationship between cognitive style and a range of acculturation variables by adopting a cross-sectional sample survey and in-

depth interviews The units of analysis are therefore at the individual level (expatriates) and the changes of cognitive style over time There are two types of sampling technique, namely non-probability sampling and probability sampling The ideal sampling for this present study could potentially have involved the collection of data from different disciplines in up to 100 institutions in the United Kingdom randomly, in order to represent the entire education population. The instrument chosen to measure the analytic-intuitive cognitive style for the present research is Allison and Hayes' (1996) Cognitive Style Index (CSI). 19 respondents chosen from the total number of persons who answered the CSI questionnaire at both Time 1 and Time 2. There were 11 males and 8 females, representing a broad range of CSI scores from 22 to 58, whose CSI scores changed between Time 1 and 2. ata from the sample survey do not support a correlation between interaction effectiveness and level of acculturative stress with a change in cognitive style, cross-cultural differences between the British and Chinese nationals were detected. This suggests that both nationals had different experiences which might influence their information processing style. Finally, results from interviews do point to possible directions for future research, e. g. perception of the host culture.

- **Johnson (2009)** conducted a study *on Students' Cognitive Self Appraisal And Self Management, And The Level Of Difficulty Of An Engineering Design Project: Are They Related?* Two survey instruments were constructed and used in this study: Engineering Design Project Inventory (EDPI) and Rubric for Rating Students' Design Project (RRSDP). Due to the lack of availability of test instrument that is specifically designed to evaluate students' CSA and CSM in engineering design context, adoption with some modifications of two existing instruments that measure students' CSA and CSM were conducted for this study In this investigation, the relationship between students' CSA and CSM was evaluated. A two-tailed Pearson correlation analysis indicated a significant correlation between CSA and CSM, $r(168) = .69$, $p < .01$. e is a significant relationship between one's CSA and CSM. Although this study only confirmed the existence of the relationship between CSA and CSM, and also self-efficacy, self-confidence, and task value contribute less than 50 percent of overall students' self-management, it is strongly suspected that these three self-appraisal factors may have played an essential role in shaping students' self-management.

- **Sun (2011)** conducted a study on *Construction and Validation of Self-Management Scale for Undergraduate Students*. Participants were 612 undergraduate students from seven departments in Northwest University, Xi'an, and Shannxi Province, China. It was randomly selected students

based on their ID number, balancing the ratio of gender and major. Two graduate researcher generated items about self-management on time, goal, emotions and personal relationships based on literature review and a half- structured interview of 8 undergraduate students. To examine the relationships between self-management and life satisfaction, physical, psychological, and social health, four tools were administered in Study 2, including the revised Self Management Scale, a Life-Satisfaction Scale, the Self- Rated Health Measurement Scale (SRHMS, Version 1.0) and the Social Desirability Scale-17. These findings show that by management on performance and association constitutes undergraduate students' self-management in daily life.

- **Nitulescu et al. (2012)** conducted a study on *Academic learning and the competence development of the cognitive self-management.* In the present research, it analyzed the effectiveness of the involvement program both in a (meta) cognitive plan and in the plan of the learning behavior in the instructive-educational activity but also relating to the non- cognitive modification of the student's personality. It was in experimental method of study. In this research it started from the premises which point to the concepts and theories centered on academic learning. It was considered that in order to support the students in developing the self-direction, must be taken into account the development of the (meta) cognitive abilities which support the process of self- management. From this point of view, it was initially observed that the learners used traditional and the participation behavior is in more didactic way. The learners even projected a delayed way of engagement in solving tasks but after the application of the experimental program the results were better and improved in the post test than the pre test for all the assessed aspects.

- **Lavinia (2012)** conducted a study on *Academic learning and the competence development of the cognitive self-management* Starting from the conviction that the student who will be a future reflexive practicing teacher is aware of his/her own evolution both by the participation in the transformation of his/her self-image and by a self-guidance of learning (Perrenoud, 2006) and highlighting the idea that in autonomous learning the accent is put on individuality In the present research, we have analyzed the effectiveness of the intervention program both in a (meta)cognitive plan and in the plan of the learning behaviour in the instructive-educational activity but also concerning the non The experimental program has contained: *a*. The initiation activities in the theoretic problems of the experiment; *b*. Applicative activities centered on the self-monitoring, self-assessment, the self-management of the learning process; *c*. Counseling

activities (in group or individually). For the experimental sample, the significance of the differences (calculated using the following formula) indicates the success of the intervention programme The study is oriented towards the reach of the main objectives of the pedagogic formation of the future teachers: a) the completion of the improvement of the didactic career according to the new requests and social, cultural, scientific expectations; b) the assurance of the opening of their formation in the initial stage towards the continuous formation.

- **Briesch (2015*)*** conducted study on *Implementing self-management within a group counseling context: effects on academic enabling behaviors* complications common of applied research in schools, such as teacher turnover, absences, and the end of the school year, limited the amount of data that were able to be collected. The purpose of this study was to examine the effectiveness of utilizing self-management within a group counseling intervention to improve and sustain academic enabling behaviors. Fourteen students participated in a 14-session self-management group in which they (a) selected academic enabling behaviors to improve, (b) self-monitored and graphed their performance of these behaviors, (c) set performance goals, and (d) received group-based rewards for reaching their goals. Three target students were monitored for intervention response within one target academic period, and their teachers completed brief, daily ratings of the students' academic enabling behaviors. Visual analysis suggested that academic enabling behaviors moderately increased for two of the three target students, and decreased for one student. The results of this study add to the emerging evidence suggesting that self management strategies can be successfully embedded into group counseling interventions demonstrating that they are not only effective in improving behavior, but also found to be acceptable, understandable, and enjoyable for students.

- **Maloy (2015)** conducted a study on *An Educational Intervention To Promote Self-Management And Professional Socialization In Graduate Nurse Anesthesia Students* The purpose of this study was to evaluate the effectiveness of an educational intervention designed to promote self-management, professional socialization, and academic achievement of first semester graduate nurse anesthesia students. The self-management component of this study focused on academic self-efficacy and locus of control. There were two delimitations to this study. First, Tinto's model addressed social structures contributing to student persistence within the academic structure and social structure of the university and the external environment. . An interaction

model for nurse anesthesia adapted from Tinto's theory (Braxton et al., 2003) was used to compare students randomly assigned to attend the professional aspects of anesthesia seminar to students in a control group in terms of academic self-efficacy, locus of control, professional socialization, and academic achievement. The populations of this study were the graduate-level nurse anesthesia students in the United States. The sample came from first semester graduate students in a nurse anesthesia program found in a small private university located in the south-western United States. This nurse anesthesia program admits approximately 120 graduate students annually. Students come from across the United States and represent 4% of national annual nurse anesthesia admissions. An experimental pretest-posttest design with stratified random assignment of participants from local and distant classrooms. The data analysis indicated that the null hypotheses could not be rejected for all four research questions. The evidence was insufficient for supporting the hypotheses that participation in the professional aspects of anesthesia seminar improves academic self-efficacy, locus of control, academic achievement, or professional socialization among first semester graduate nurse anesthesia students.

- **Ercoşkun (2016)** conducted a research on *adaptation of self-control and self- management scale (SCMS) into Turkish Culture: a study on reliability and validity.* The population of the research is composed of total 7460 students on the undergraduate programs of an education faculty in a state university. Stratified purposeful sampling was one of the non-probability sampling method, utilized in the study. The instrument used was SCMS is a self-evaluating tool for adults which has been developed for measuring the overall features of self-control and self-management skills, has a cognitive and behavioral structure, and which has been successfully evaluated during the development process of the scale (Mezo, 2009) It was revealed that there was a positive and meaningful relationship between the scores the pre- service teachers got from the whole scale and from all of the sub-dimensions and their academic achievement scores.

- **Rasplica (2016)** conducted on the study *Examining the Relationship of Early Literacy Skills and Cognitive Self-Regulation to Kindergarten Readiness of Preschool Students.* The study was conducted in three school districts, consisting of a total of 21 preschool classrooms, located in an urban area of the Northeast United States, a rural community in the Southern United States, and a suburban area of the Pacific Northwest. Study participants were 165 preschool students, ages 4 to 5 years. Due to missing data at pretest and posttest, results include complete data for 125 preschool students within 17 classrooms from three school districts in three different

regions of the United States. The purpose of this study was to examine the effects of preschool progress in cognitive self-regulation and early literacy skills on kindergarten readiness. Indicate that students made growth in both early literacy and cognitive self-regulation skills across the preschool year, and growth in these skill sets looked very similar to one another. For example, both early literacy and cognitive self-regulation skills demonstrated a curvilinear relationship so that gains in these skills were more rapid at the beginning of the school year than at the end of the year. The findings from the present study also indicate a strong relationship between early literacy and cognitive self-regulation skills. Therefore, students with higher cognitive self-regulation skills also had higher early literacy skills at all three time points measured. However, the impact of early literacy skills on cognitive self-regulation skills was stronger from the fall to winter than it was from the winter to spring.

- **Kostromina et al. (2017)** conducted *the interrelationship between cognitive control and academic success of first-year students:* It was an interdisciplinary study. The main objective of this study is to identify the psychological and neurophysiologic features of cognitive control in the due course of the learning activity, for students with different levels of academic success. The design is interdisciplinary and assimilates three different approaches: the neurophysiologic, psychological, and pedagogical. 31 first-year students of Saint Petersburg State University (SPbSU) were taken for the study. The indicators used to assess academic achievement of the outcome of the Unified State Examination (USE) and the first term of the 2016–17 academic year. The collected data was analyzed by correlation analysis and analysis of variance. The outcome of the study revealed that students with better academic success are characterized by less emotionality, a higher potential for goal-setting, and a lower capacity for forecasting, as well as greater attention and greater commitment in solving the task of finding mistakes. Such students flexibly distribute their efforts depending on the difficulty of the task and are less likely than the less successful students to change their initial answer to the experimental task. The study states with superior academic success are characterized by less emotionality, a higher capability for goal-setting, and a lower ability for forecasting, as well as greater attentiveness and greater commitment in solving the task of finding mistakes. Such students flexibly distribute their efforts depending on the difficulty of the task and are less likely than the less successful students to change their initial answer to the experimental task.

- **Wiyono et al. (2018)** conducted on *the development of academic self-management inventory of vocational high school students.* The intention of conducting this research was to develop

academic self-management inventory of vocational high school students. The academic self-management inventory used was a development model developed by Borg & Gall. This model is called research and development involving 10 development steps: a) Research and information gathering; b) Planning; c)develop product preliminary form;

(1) Preliminary field tests;
(2) Major product revisions;
(3) Main field tests;
(4) Revision of operational product;
(5) Operational field tests;
(9 review of the final product; and
(10) Dissemination and distribution

The main field test is the core activity of inventory testing on several student subjects that were sampled in this case the students of Vocational High School 5 Malang. The sample in this research is determined by using purposive sampling technique. The qualitative data are analyzed descriptively, while the quantitative data are analyzed using statistical formula to find the coefficient of validity, reliability and norm. Based on research and development, obtained 50 items that meet the level of validity of the construct through expert test and calculation of the coefficient of validity r arithmetic $\geq$ r table with a significance level of $p \leq 0.05$ and Alpha reliability coefficient level of 0.840. The result of the distribution of data is divided into three (3) categories of high academic self management, medium, and low.

- **Tinajero et al. (2019)** conducted a study on *Cognitive Style and Learning Strategies as factors which Affect Academic Achievement of Brazilian University Students.* The sample selected in this study consisted of 313 first year university students aged between 17 and 30.The instruments used were:

    a) Academic Achievement- It was measured by the mean marks (computed on a scale from 0 to 10) obtained by the students during the first semester.
    b) Learning Strategies- It were assessed using the Learning and Study Inventory (LSSI; Weinstein, 1987)

A greater impact of cognitive style through learning strategies should be expected on less experienced students, as suggested by data available on the association between field dependence-independence and learning strategies that was summarized in the beginning and obtained mostly with students from primary education.

2.3.2: STUDIES CONDUCTED IN INDIA ON COGNITIVE SELF MANAGEMENT

- **Jayagandh (2015)** conducted a study on *A study on cognitive self management among teacher trainees of second year D.T.Ed students.* The study has been conducted on a sample of 80 students to study the level of cognitive self management. The sample of the students has been taken of the students who were studying in second year D.T.Ed. Teacher trainee in District Institute of Education and Training, Madurai district. The random sampling technique was used in the study. The tool used was Cognitive self-management tool developed by Stephanie (Rude, 1980). The study discovered that there is no major difference in the mean scores of cognitive self- management with respect to gender, age, marital status, staying, mother's educational qualification, parent's annual income and newspaper reading. And also the study revealed that there is significant difference in the mean scores of cognitive self with respect to father's educational qualification and locality.

- **Lathadeviamma (2016**) conducted *a study on influence of learning style cognitive self management and attitude towards academic work on achievement in Malayalam of higher secondary school students of Kerala.* The population of the present study was XI students of Thiruvananthapuram, Kottayam and Kozhikode districts. The investigator use stratified random sampling technique to decide on sample. Schools as of urban and rural area were chosen for the study. The investigator selected 16 schools including both Government and aided schools. The instruments use were as :

    a) Personal data sheet (organized by the investigator)
    b) Learning style inventory (adopted from Catherin Jester, 2000)
    c) Cognitive self management test (adopted from Stephanie Rude 1980)
    d) Scale of Attitude towards academic work (Prepared by the investigator).
    e) Achievement test in Malayalam (Prepared by the investigator)

  The findings proved that the majority of higher secondary students have average level of cognitive self management. And the implementation of cognitive self management has brought in significant difference in the academic achievement of the secondary students.

- **Nongtodu (2017)** conducted *a Metacognition and its relation with academic achievement among college going students of Meghalaya*. The present study has adopted descriptive survey

method as to describe the Metacognition and Academic Achievement of college going students in Meghalaya Population of the study constitutes Arts, Science and Commerce final year undergraduate students studying in colleges of Meghalaya It was further delimited to students of final year of undergraduate courses of arts, science and commerce students (B.A, B.Sc and B.Com) of Meghalaya. The tools adopted are as:

a) Metacognition tool - Metcognition Inventory which was constructed by Punita Govil (2003)

b) Academic Achievement of the students -Marks of the students of final year examination.

The study found that majority of college going students of Meghalaya have average level of Met cognition which means majority has average level of understanding their own thinking. Gender does not affect the met cognition of college going students of Meghalaya. Urban college going students have a high Met cognition as compared to their counterpart. Students from Science stream have a high Met cognition as compared to Arts and Commerce stream students not the same in Arts and commerce students. Met cognition is one of the factors which affect strongly and absolutely on Academic Achievement of the gender, milieu and different stream.

3.3: IMPLICATIONS OF THE REVIEW OF RELATED LITERATURE FOR THE PRESENT STUDY

Spearman as early as in 1927 wrote that in *'Truth', 'Intelligence' has become a mere vocal sound with so many meanings that finally it has now*" And from that era of thought it has come a long way at the present. An era of where Intelligence was restricted to the cognitive mental abilities of the human beings to Intelligence being related to all areas, fields, i.e. Social Intelligence Emotional Intelligence, Academic Intelligence, Multiple Intelligence.

Lewis Terman – Intelligence scale in 1916 to measure the Intelligence Quotient or IQ was later considered absolute with the assertation that the individual's Cognitive capacity cannot be represented adequately in a single measurement such as IQ score. And with the propositions of each person manifests varying levels of separate intelligences, and unique cognitive profile. With the trends reaching to this point have brought out different studies being conducted with respect to this

aspect igniting a curiosity to queer into trends. During the latter half of the 20th century considerable research had been carried out on the construct of intelligence. In particular there has been much examination of specific abilities that extend beyond the concept of general undifferentiated intelligence (Naglieri, 1999).

In 1960s a good number of cognitive theorists studied neuropsychology, neuroscience and higher mental processes, described as the cognitive revolution. Cognitive psychology encompasses the higher mental processes including the way people know and understand the world, process information, make decisions, judgment and describe their knowledge and understanding to others. It can be further modified and managed by an individual through interventions (Joshi, 2018).

The development and management of the mental abilities and capacities which helps an individual to adjust his behaviour to the ever changing environmental conditions or to enable him to accomplish a task that needs complex cognitive abilities is referred to as mental or cognitive self management. Mental development of an individual at any stage of his development includes the overall development of these abilities.

And various studies have been conducted to explore in these areas. There is dearth of information on studies on the relationship between the variables – Multiple Intelligence and Cognitive Self Management and its scope in education.

A number of scholars belonging to various disciplines have studied the variables individually. It is found that scholars with different ideological predilections and theoretical propensities have studied the variables with considerable diversity in substantive focus, theoretical and methodological orientation and also the findings in the available literature. Notwithstanding the theoretical, methodological and substantive plurality of the available literature, it is of considerable significance to the present undertaking. A critical analysis of these studies would enable us to examine the strength and weakness of the theoretical and methodological perspectives used in analyzing the theoretical soundness of the finding and the areas that have been given inadequate focus.

Keeping in view the objectives and focus of the present undertaking, studies exclusively done in Multiple Intelligence, Cognitive Self Management and Academic achievement, a total of ***50 studies*** have been reviewed in this chapter. An attempt has been made to develop a holistic perspective of the nature and findings of these studies and to arrive at a rationale for the present study.

Reviewing the related literature brought forth the positive impact and the relationship of the variables with academic achievement:-

Studies conducted by **Singh (2017)** showed and supported the findings of Gardner that different students possess different intelligence profiles and most of the students have more than one active intelligences. It is seen that the there is positive impact of the application of multiple intelligence strategy in the academic level of the students ; **Palaniappan et al. (2006); Glenn (2010); Bas (2016); Hossein (2016); Rekha (2013); Sreeraj (2015).** And further on it even scored higher in findings when compared with the traditional strategies

The earliest studies conducted by **Jones (1996); Chisholm (1998)** which was done on qualitative bases for studying the inclusive classroom for differently abled children and it showed that with the adoption of the multiple intelligence the needs of the students can be fulfilled provided the proper training given to the teachers. On the contrary, from the studies conducted by **Koura et al. (2014); Pérez et al. (2014); Mogera (2013)** it was found that among the eight intelligence, Kinesics and interpersonal intelligence scored higher in the academic achievement, Interpersonal intelligence was the most preferred intelligence and the least of preference was musical intelligence.

The development of selected components of intelligence could also bring positive changes in achievements of certain subjects **Sreeraj (2015), it is further advocated by the** studies conducted by **Mogera (2013)** and **Khan (2018)** in Science**, Erkus (2017)** in English and **Gurçay (2003)** in Physics respectively. The study of **Neupane (2018)** stated that Naturalistic intelligence occupies the topmost rank where as linguistic intelligence occupies the eight rank. And **Koura and Hebaishi (2014)** inter-personal intelligence as the most preferred intelligence with musical intelligence as the least.

The studies of **Miguel (2014)** and **Neupene (2018)** showed that females scored significantly higher in Linguistic, Spatial and Interpersonal intelligence and even the older pupils scored higher in Linguistic and Naturalistic intelligence considerably. Further related literature brought forth, with the positive impact of MI strategy on academic {**Khint (2018); Bas (2010)}**, in boosting the effectiveness of curriculum transaction (**Achamma (2012),** improved teacher effectiveness with the adoption MI instructional approach.

Throughout the studies, it is seen that the adoption of multiple intelligence has a close correlation with the academic achievement of the learner and the application of multiple intelligence brings a significant difference in academic achievement and even non academic. On the other side, in the area of Cognitive self-management, it was found that not much work has been conducted in school education and most of the research has done in the area of medical deficiency or disabilities.

The research work of **Lavinia (2012)** evidenced to the development of competence, improving behaviour **Briesch (2015)** through cognitive self management. The investigation conducted by **Jayagandh (2015) and Lathadeviamma** used the same tools of Stephanie Rude (1980) for measuring cognitive self-management and it was found that the implementation of cognitive self-management has brought noteworthy changes in the academic performance of the learner.

Thus by reviewing the related literature, helped the investigator to find various research gaps mentioned below:

- The studies related to multiple intelligence were only focused on the secondary students and not much on the student teachers.
- The studies related to multiple intelligence on various subjects need to be concentrated.
- The positive aspects of multiple intelligence on academic achievement and also that of cognitive self management is been seen but the investigator didn't come across any module created in this respective area.
- The studies in both the variables have not been explored in India.
- The researcher found there is dire need to work in areas of Multiple Intelligence and Cognitive self- management and its effects on learning.

Hence, the present study is a humble attempt to explore the area. The study of the related literature has helped the investigator to have a clear perspective of the problem chosen for the present investigation. The review of the related literature has enabled the investigator to formulate relevant hypothesis for the study. Further based on the review designed the method of research, description of the variable, sample selection, selection of suitable tools, administration and scoring have been adopted and which is discussed in the succeeding chapter.

CHAPTER: 3

RESEARCH METHODOLOGY

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CHAPTER III

RESEARCH METHODOLOGY

3.1.0: INTRODUCTION

In the words of John W. Best & J. V. Kahn (1995) "Research is the systematic and objectives analysis and recording of controlled observations, principles or theories resulting in predictions and possible ultimate control of events" (p.20)

In any given investigation it is desirable to identify and use the most appropriate methodology based on the objectives of the study. The decision about the method to be employed however depends upon the nature of the problem selected and the kind of data necessary for its solution.

According to George J. Mouly (1986), "the systematic and scholarly application of the scientific method interpreted in its broader sense, to the solution of educational problems, conversely, any systematic study designed..." The main aim of methodology is to describe and analyze methods, throwing light on their limitations and resources, classifying and relating their potentials to the twilight zone at the frontiers of knowledge.

This chapter of methodology is oriented to concentrate on the plan and procedure adopted in order to attain the objectives of the present study. It describes in detail, the design of the study, nature and selection of sample and a brief description of the tools used in the investigation. It also gives a brief description of procedure adopted for the collection of data, its scoring and classification and finally the statistical treatment of the data for testing the hypothesis that were formulated.

3.2.0: METHOD OF THE STUDY

The present study was a descriptive cum Correlational study. It aimed at investigating the influence of multiple intelligence and cognitive self management with effect to academic achievement of the Higher Secondary students. Hence forth, the investigator had adopted the survey method as the suitable form of research for collecting data.

Survey research is defined as "the collection of information from a sample of individuals through their responses to questions" (Check & Schutt, 2012, p. 160). This type of research allows for a variety of methods to recruit participants, collect data, and utilize various methods of instrumentation. Survey research can use quantitative research strategies (e.g., using questionnaires with numerically rated items), qualitative research strategies (e.g., using open-ended questions), or both strategies (i.e., mixed methods). As it is often used to describe and explore human behaviour, surveys are therefore frequently used in social and psychological research (Singleton & Straits, 2009).

The data collected for the study was obtained from 300 students of different schools of Vadodara. The data was collected by survey method by administering the selected tools and was analyzed using appropriate statistical techniques.

3.3.0: POPULATION OF THE STUDY

As stated by Van Dalen (1999) a population may refer to all cases of any specified group of human beings or non-human being entities such as objects, geographical areas, time units, methods, texts or schools.

The study included all the higher Secondary English medium students of standard XI of Vadodara district comprised the population for the study.

3.4.0: SAMPLE OF THE STUDY

Once the population was defined, the next step was to select a representative sample from the population. A sample is a small proportion of population selected for observation and analysis. By observing the characteristics of the sample, one can draw certain conclusions or inferences about the characteristics of the population from which it is drawn.

In order to have a fair representation of the population, sample was selected randomly. Due to the pandemic conditions, the questionnaire in Google format was prepared was circulated among all the higher secondary schools of Vadodara. Of which the first 300 student respondents of standard XI was selected from each stream i.e. commerce and science respectively.

3.4.1: DISTRIBUTION OF THE SAMPLE

The following figures show the distribution of the sample with respect to the background variables:

TABLE 3.1 GENDER WISE DISTRIBUTION OF SAMPLE

GENDER	NUMBER	PERCENTAGE
BOYS	153	51%
GIRLS	147	49%
TOTAL	**300**	**100%**

It is inferred from the above table (3.1) that 51% of students were boys and 49% were girls.

FIG 3.1: GENDER WISE DISTRIBUTION OF THE SAMPLE

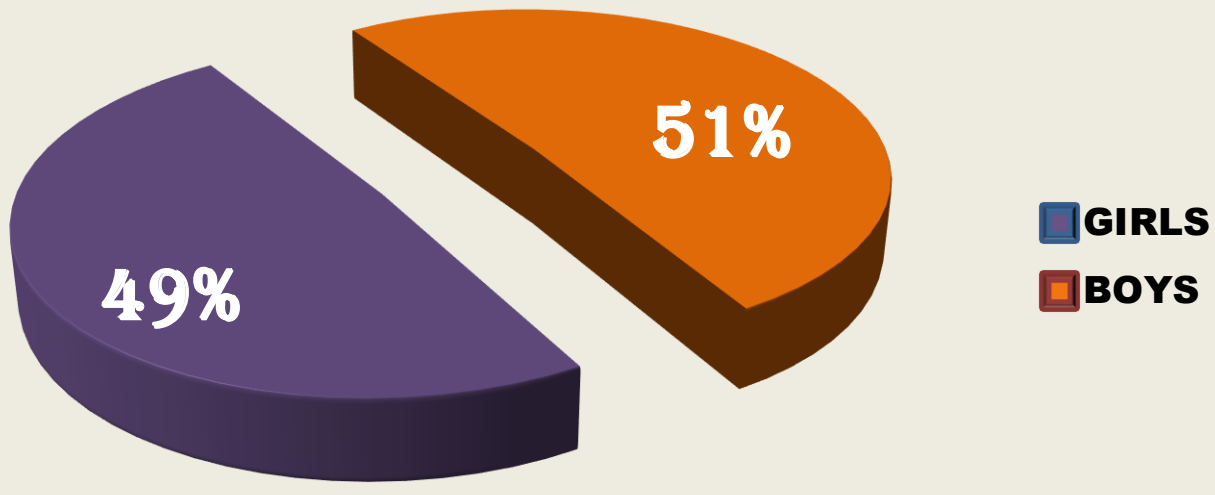


TABLE 3.2 MODE OF SCHOOL WISE DISTRIBUTION OF SAMPLE

MODE	NUMBER	PERCENTAGE
REGULAR	288	96%
RESIDENTIAL	12	12%
TOTAL	**300**	**100%**

It is inferred from the above table (3.2) that 96% of the total was from regular schools and 12% were residential schools.

FIG 3.2 : MODE OF THE SCHOOL DISTRIBUTION OF THE SAMPLE

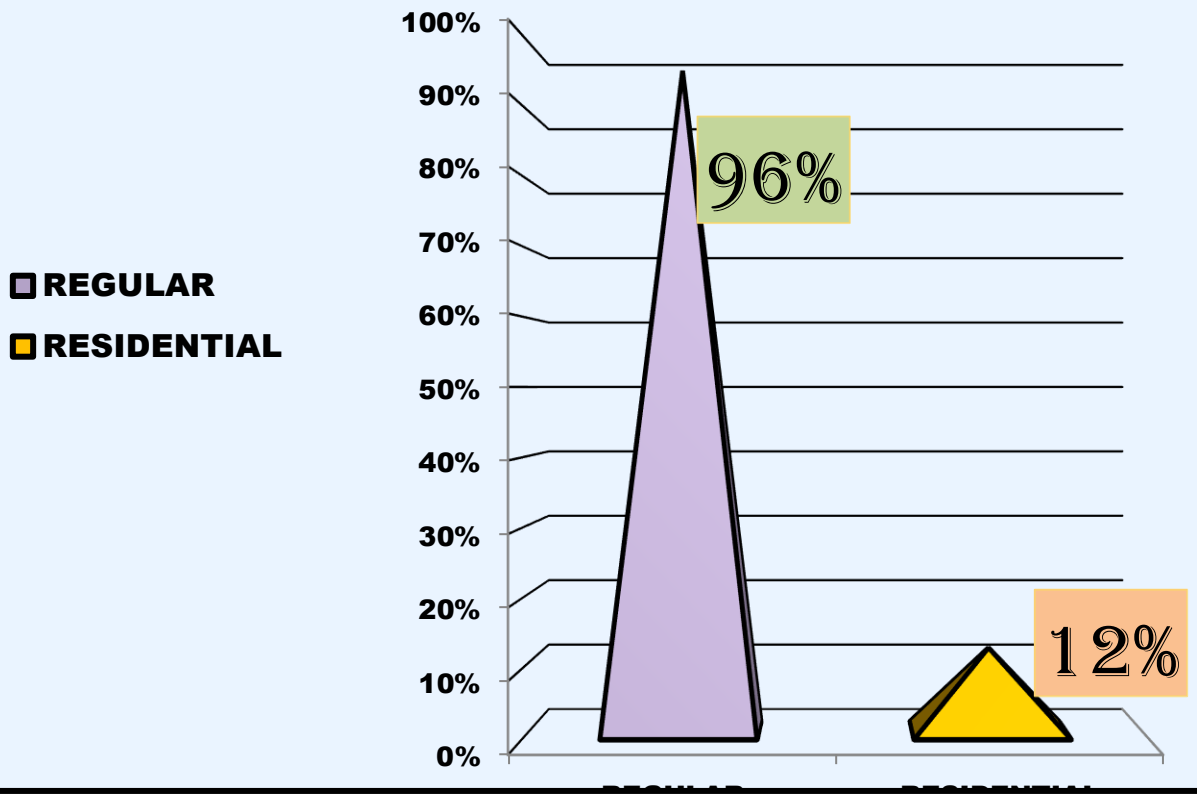
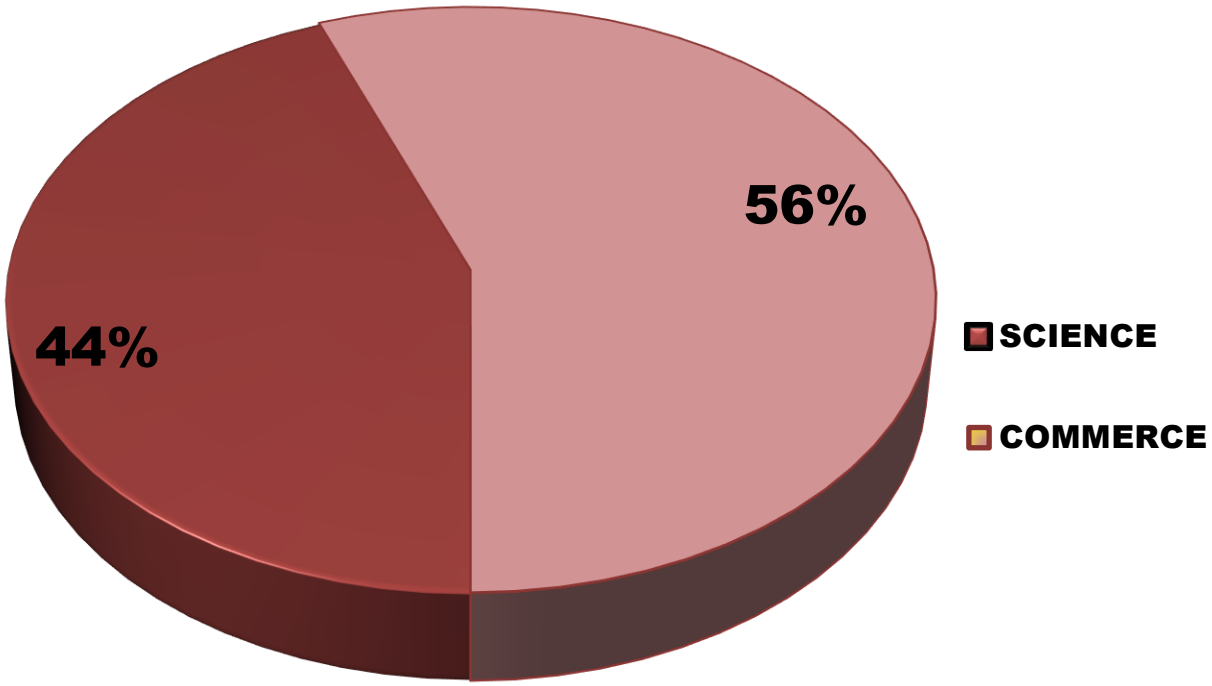


TABLE 3.3 SUBJECT STREAM WISE DISTRIBUTION OF SAMPLE

MODE	NUMBER	PERCENTAGE
SCIENCE	133	44%
COMMERCE	167	56%
TOTAL	**300**	**100%**

It is inferred from the above table that 44.3% of the students were from Science stream and 56% were from the commerce stream.

FIG. 3.3 SUBJECT WISE DISTRIBUTION OF SAMPLE



3.5.0: TOOLS FOR DATA COLLECTION

A suitable research tool is pivotal to the validity of the findings of any research study. In order to collect the necessary data needed and to group them to test the hypothesis, research tools are of utmost importance. In research, the data collection tools are used to obtain standardized information from the sample. The completion of any research work investigation rests purely on the choice of a proper tool and its most effective application**.**

To achieve the objectives of the present study, the following tools were selected by the investigator to collect the desired data for the present study which are as follows**.**

1. Multiple Intelligence Inventory developed and standardized By Terry Armstrong (1998) but further modified and standardized by Rekha V. (2013).
2. Cognitive Self-Management Test developed and standardized by Stephanie Rude (1980) but further modified and standardized by T. Usha Kumari (2017).
3. For measuring the academic achievement of the students, the investigator with reference to the prescribed textbook, prepared the questionnaire.

3.5.1: DESCRIPTION OF THE TOOL

- **Multiple Intelligence Inventory**

Research shows that students are more engaged and learn best when they are given various ways to demonstrate their knowledge and skills, which also helps teachers more accurately assess student learning (Darling-Hammond, 2010).The investigator used the Multiple Intelligence Inventory developed and standardized by Terry Armstrong and further modified and standardized by Rekha V.(2013) was adopted for the present study.

The original inventory contained 56 statements but it was further elaborated by Rekha V. (2013) with 24 additional statements for getting detailed information regarding the multiple intelligences of an individual. The adapted inventory contains 80 statements. Against each statement there are three alternatives: - 1- Always; 2-Many times; 3- Sometimes; 4-Never; 5- Don’t know. The test and retest was also found to be highly reliable at .7832.

The respondent can choose from among the given options describing how well they describe themselves. The investigator pooled al the 80 statements into eight dimensions of multiple intelligences. In the Multiple Intelligences scale each Intelligences is for a maximum of 40 marks, Verbal-Linguistic Intelligence – 40, Logical-Mathematical Intelligence – 40, Visual-Spatial Intelligence – 40, Bodily-Kinesthetic Intelligence – 40, Musical-Rhythmic Intelligence – 40, Inter-Personal Intelligence – 40, Intra-Personal Intelligence – 40, Naturalistic Intelligence – 40, Multiple Intelligences Total will be equal to 320. The mean scores obtained by the students are categorized into average level of scores, above average level of scores and below average level of scores by using the standard formula $M \pm \sigma$.

TABLE 3.4 DIMENSIONS OF MULTIPLE INTELLIGENCE

SN	STATEMENT NO.	DIMENSIONS
1.	1 - 10	Verbal Linguistic Intelligence
2.	11 - 20	Logical/Mathematical Intelligence
3.	21 - 30	Visual/Spatial Intelligence
4.	31 - 40	Bodily/Kinesthetic Intelligence
5.	41 - 50	Musical/Rhythmic Intelligence
6.	51 – 60	Interpersonal Intelligence
7.	61 - 70	Intrapersonal Intelligence
8.	71 - 80	Naturalistic Intelligence

TABLE 3.5 SCORING KEY

The responses are recorded against each statement under the five point scale namely:

Always, Many times, Sometimes, Never, I don't know

RESPONSE	SCORE
ALWAYS	4
MANY TIMES	3
SOMETIMES	2
NEVER	1
I DON'T KNOW	0

❖ **Cognitive Self Management Scale**

The investigator had adopted the Cognitive Self Management scale developed and standardized by Stephanie Rude (1980) and further standardized and modified by T.Usha Kumari. The reliability of cognitive ability questionnaire was established and was found to be 0.863 which infers that the scale is highly reliable. Thus it may be inferred that this tool is highly valid.

The Cognitive Self Management tool had 26 items classified under five dimensions namely positive focus; systematic problem solving; task efficacy; self blame; reasonable goal setting. 7 items each for the dimensions –Positive Focus, Systematic Problem-solving, and Self Blame, 5 items for the dimensions Reasonable goal setting and 8 items for the dimensions Positive Focus respectively. Out of the 26 items in the scale, 13 items were positive and 13 items were negative. The maximum score can be 78. The mean scores obtained by the students are categorized into average level of scores, above average level of scores and below average level of scores by using the standard formula $M \pm \sigma$.

TABLE 3.6 ITEM DESCRIPTION OF THE COGNITIVE SELF MANAGEMENT TEST

SN	CSM SCALE	ITEM NUMBERS
1.	Positive Focus	1,3,5,9,1013,14,21
2.	Systematic Problem Solving And Task Efficacy	7,11,12,17,19,23,25
3.	Self Blame	2,6,8,15,20,22,26
4.	Reasonable Goal Setting	4,16,18,24,26

TABLE 3.7 SCORING KEY

RESPONSES	SCORE	
	POSITIVE	NEGATIVE
ALWAYS	3	1
SOMETIMES	2	2
NEVER	1	3

❖ **ACADEMIC ACHIEVEMENT TEST**

An achievement test in science and commerce was constructed by the investigator to measure the science and commerce achievement of students of both streams. The contents of science and commerce of standard XI from NCERT and GSEB were selected for this purpose. Question paper which contains 25 question of 1 mark each covering all the 6 levels of cognitive domain (i.e. Knowledge, understanding, application, analysis, synthesis and evaluation). Items were divided uniformly among all the chapters of the respective subjects.

3.6.0 DATA COLLECTION

After finalizing the sample and the tools to be used, the investigator got acquainted with the testing procedures and possible eventualities. The investigator made necessary arrangements for the administration of the research tools.

The research tool selected was the inquiry forms i.e., the questionnaire:

1. A standardized test Multiple Intelligence Inventory developed and standardized by Terry Armstrong and further modified and standardized by Rekha V. was adopted for the measurement of multiple Intelligence.
2. A standardized test Cognitive Self Management scale developed and standardized by Stephanie Rude (1980) and further standardized and modified by T.Usha Kumari. was adopted for the measurement of cognitive self management.
3. A standardized test for the measurement of achievement in science and commerce was constructed by the investigator to measure the science and commerce achievement of students of both streams.

Due to the pandemic situation, almost all schools where functioning with student attending classes online. Hence the Google form links of the tool was prepared and administered to all the schools through contacts which was spread out throughout Vadodara. The schools approached made necessary arrangements to administer the tool to the students. Some schools denied the permission and alternative schools were chosen from the back up sample list to full fill the sample requirement.The data from the filled Questionnaire from students were collected and consolidated. The statistical computation of the consolidated data was done later.

3.7.0 ANALYSIS OF DATA

A systematic organization, classification and tabulation of data is essential for a good research study. Analysis of data means studying the tabulated material in order to determine the inherent facts or meanings.

- **PARAMETRIC DATA**

Data of this type are measured data, parametric tests assume that "Data are normally or nearly normally, distributed," Parametric tests are applied to both interval and ratio scaled data. Hence assuming the data to be normally distributed and the sample data collected is representation of the population parametric tests were applied.

- **STATISTICS**

In the present study the investigator had used both descriptive data analysis as well as inferential data analysis. Investigator has applied both the types of statistic application which are relevant to the study.

For the purpose of descriptive analysis of data mean, standard deviation, standard error of mean, was used. For the purpose of inferential analysis, product moment correlation and multiple correlations was used as per the requirement of the data.

CHAPTER: 4

DATA ANALYSIS

AND

DATA INTERPRETATION

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

4.1.0 INTRODUCTION

Analysis of data is the heart of a research report (Best and Khan, 1996). The mass of data collected which may be in the raw form needs to be systematized and organized; i.e., edited classified and tabulated before it can serve any worthwhile purpose. Analysis of the data is as important as any other component of the research process says Gay (1976). This chapter deals with analysis of the data.

According to Giles G.B. (1984), "In the process of analysis relationship or differences supporting or conflicting with original or new hypothesis should be subjected to statistical tests of significance to determine with that validity data can be said to indicate any conclusion."

A systematic organization, classification and tabulation of data are essential for a good research study. Analysis of data means studying the tabulated material in order to determine the inherent facts or meanings. It involved breaking down the existing complex factors into simple parts together in new arrangement. The acceptance or rejection of the hypothesis will ultimately determine what contribution the study makes in the scientific development of that particular area

In the words of Kothari C.S. (1995), "Analysis particularly in case of survey or experimental data, involves estimating the values of unknown parameters of the population and testing hypothesis for drawing inferences. Here the investigator had resorted to statistical analysis or inferential analysis."(p.162)

Analysis of data is done to verify the hypothesis of the research, thus in the process of analysis of relationships or differences conflicting with original or new hypothesis should be subjected to statistical tests of significance to determine with what validity data can be said to indicate any conclusion. Analysis of data is the heart of a research report (Best and Khan, 1996). The mass of data collected which may be in the raw form needs to be systematized and organized; i.e., edited, classified and tabulated before it can serve any worthwhile purpose.

4.1.1 PURPOSE OF ANALYSIS OF DATA

The following are the purposes of analysis of data (Usha, 2017):

- To obtain the significant results
- To make the raw data meaningful
- To evaluate the parameters
- To test the null hypothesis
- To draw some inferences or make generalization

The present chapter depicts the details of the Analysis and Interpretation of the data related to the Multiple Intelligences, Cognitive Self Management and Academic Achievement. The study had been undertaken with an intention to examine the relationship between Multiple Intelligences, Cognitive Self Management and Academic Achievement. It gives the details of quantitative analysis of data collected on Cognitive Self Management and Academic Achievement of higher secondary students of various schools of Vadodara.

The effect of these variables was studied through descriptive and inferential statistics. The descriptive statistics applied were the- mean, standard deviation, and co-efficient of correlation. Inferential statistics like t-test was also administered. This section is devoted to the details of testing the hypothesis and their interpretation of data done for the following aspects.

Taking into consideration the objectives formulated by present study, the data collected was statistically analysed by employing various statistical methods viz., Mean, Standard Deviation., coefficient of correlation and multiple correlation. So, the data of the present study involving 300 students were subjected to:

- ❖ Descriptive analysis
- ❖ Co-relation analysis and
- ❖ Multiple correlation analysis.

For the systematic presentation of the results, the objective wise data analysis was done and interpretations were made on the basis of the analyzed data under the present study.

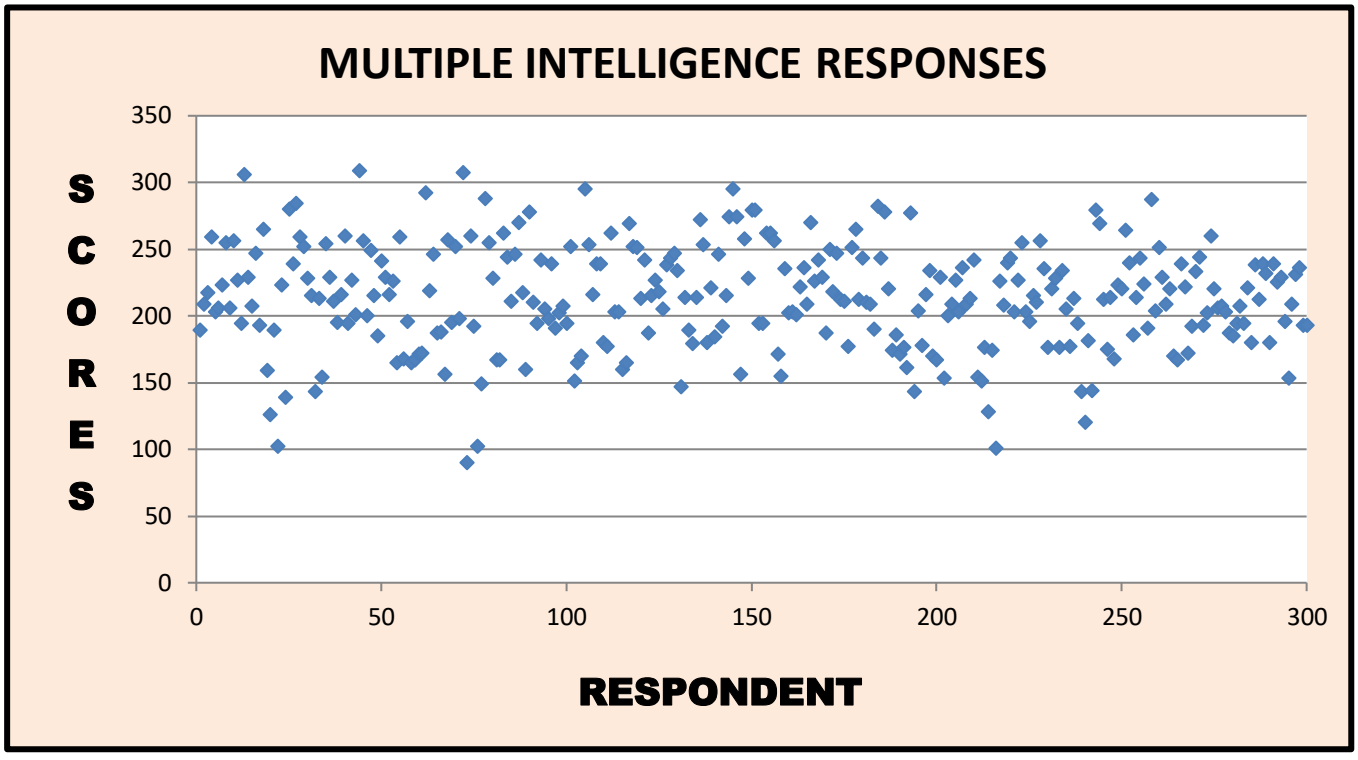
4.2.0 ANALYSIS OF DATA WITH RESPECT TO THE OBJECTIVES OF THE STUDY

Objective 1: To study the level of multiple intelligence among higher secondary students

The Multiple Intelligence of Higher Secondary students were measured with the help of Multiple Intelligence tool developed by Rekha V. (2017) including the eight intelligences – Verbal, Logical, Visual, Bodily, Musical, Interpersonal, Intrapersonal, and Naturalistic.

The tool administered on 300 higher secondary students of Vadodara brought forth the results as depicted on the scatter plot diagram:

Figure 4.1 Nature of responses with effect to multiple intelligence tool.



The data describes the nature of the group. The descriptive analysis provides valuable information about the nature of the group. Descriptive statistics are numerical and graphical methods used to summarize data and bring forth the underlying information. The numerical methods include measures of mean, standard deviation, standard error of mean, frequency and percentage.

Table 4.1: Mean and Standard Deviation, Minimum and Maximum possible score wise distribution of Multiple Intelligence of 300 (N) Higher Secondary students along with its eight Dimensions

MAIN VARIABLE	MINIMUM	MAXIMIUM	MEAN	STANDARD DEVIATION	PERCENTAGE	STANDARD ERROR OF MEAN
Verbal-Linguistic	10	40	27.36	7.16	68.4	.41
Logical-Mathematical	8	40	27.65	5.94	69.12	.34
Visual-Spatial	8	40	27.16	7.05	67.9	.40
Bodily-Kinesthetic	4	40	26.43	8.09	66.07	.46
Musical-Rhythmic	4	40	24.93	9.20	62.32	.53
Interpersonal	4	40	28.40	7.29	71	.42
Intrapersonal	9	40	28.54	6.57	71.35	.37
Naturalistic	4	40	22.99	8.49	57.47	.49
Multiple Intelligences Total	90	309	213.48	38.97	69.08	2.25

From the table 4.1, it was observed that the mean score of Verbal- Linguistic of Higher Secondary students was 27.36 out of the total score of 40 with the standard deviation of 7.16 and the standard error of mean of .41. From the said values it states that the Higher Secondary students were average in their Verbal- Linguistic with 68.04 % of mean score.

It was further observed that the mean score of Logical-Mathematical of Higher Secondary students was 27.65 out of the total score of 40 with the standard deviation of 5.94 and the standard error of mean of .34. From the said values it states that the Higher Secondary students were average in their Logical-Mathematical with 69.12 % of mean score.

The mean score of Visual- Spatial of Higher Secondary students was 27.16 out of the total score of 40 with the standard deviation of 7.05 and the standard error of mean of .40. From the said values it states that the Higher Secondary students were average in their Visual- Spatial with 67.9 % of mean score

The mean score of Bodily-Kinesthetic of Higher Secondary students was 26.43 out of the total score of 40 with the standard deviation of 8.09 and the standard error of mean of .46. From the said values it states that the Higher Secondary students were average in their Bodily-Kinesthetic with 66.07 % of mean score.

The mean score of Musical-Rhythmic of Higher Secondary students was 24.93 out of the total score of 40 with the standard deviation of 9.20 and the standard error of mean of .53. From the said values it states that the Higher Secondary students were average in their Musical-Rhythmic with 62.32 % of mean score.

The mean score of Interpersonal of Higher Secondary students was 28.40 out of the total score of 40 with the standard deviation of 7.29 and the standard error of mean of .42. From the said values it states that the Higher Secondary students were above average in their Interpersonal with 71 % of mean score.

The mean score of Intrapersonal of Higher Secondary students was 28.54 out of the total score of 40 with the standard deviation of 6.57 and the standard error of mean of .37. From the said values it states that the Higher Secondary students were above average in their Intrapersonal with 71.35 % of mean score.

The mean score of Naturalistic of Higher Secondary students was 22.99 out of the total score of 40 with the standard deviation of 8.49 and the standard error of mean of .49. From the said values it states that the Higher Secondary students were average in their Naturalistic with 57.47 % of mean score.

From the table 4.1, it was observed that the mean score of multiple intelligence of Higher Secondary students was 213.48 out of the total score of 320 with the standard deviation of 38.97 and the standard error of mean of 2.25. From the said values it states that the Higher Secondary students were average in their multiple intelligences with 69.08 % of mean score. Also, from the said

standard deviation and standard error of mean, it can be said that the group seems not to be homogenous.

From the same table, it was observed that the mean score of Intrapersonal multiple intelligence as a dimension of Secondary students was highest with 28.54 out of the total score of 40 with the standard deviation of 6.57 and the standard error of mean of 0.37. From the said mean, it can also be said that secondary students were moderate compared to other components of the multiple intelligences. From observing, the values of standard deviation and mean of multiple intelligence it can be said that the data is spread out from mean. It is further observed, that the standard error of mean 2.25 states closer estimate of the population for study.

Figure 4.2 Nature of the Group with respect to the Multiple Intelligence

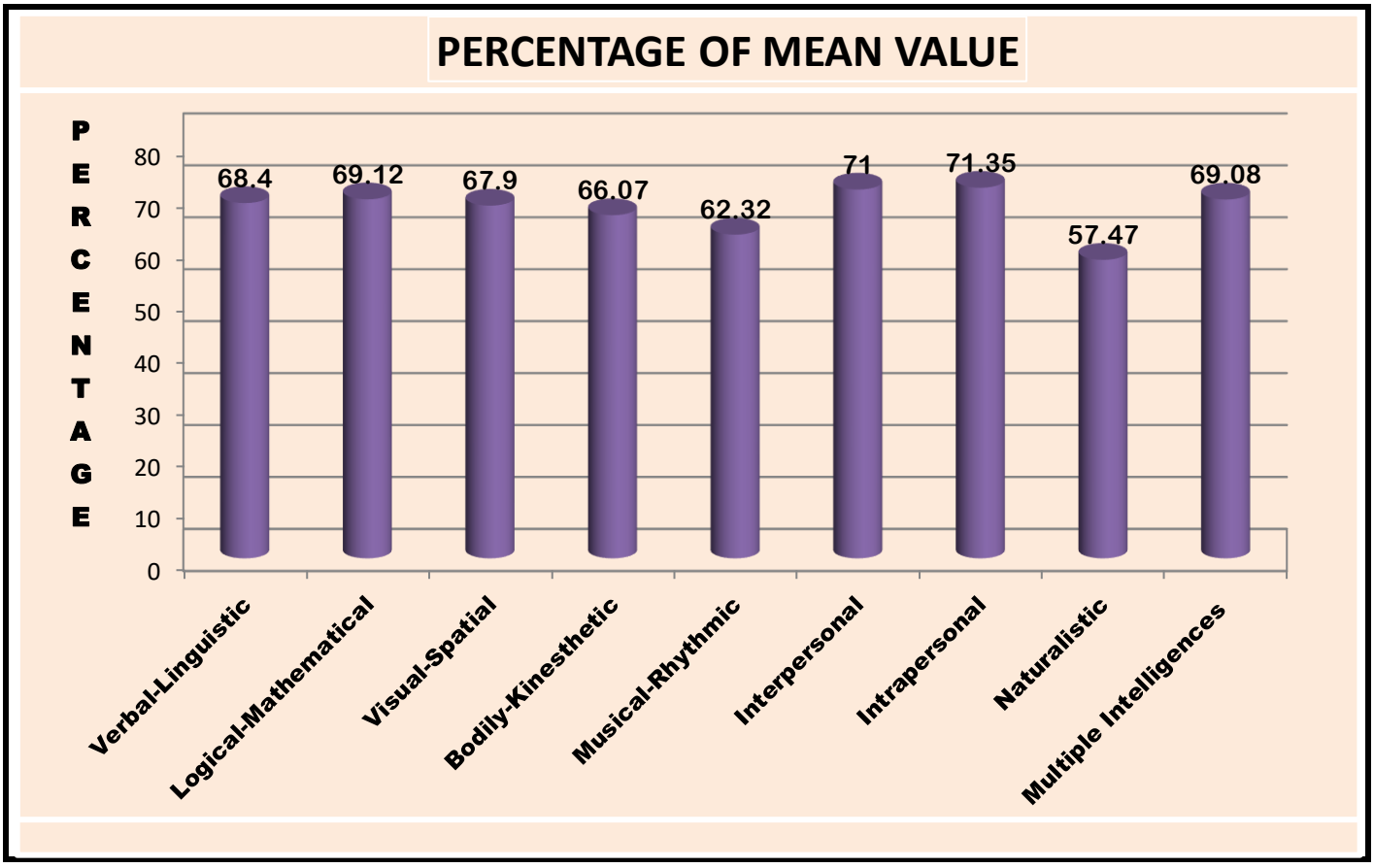


Figure 4.2 indicates the descriptive statistics of the main variable viz., Multiple Intelligences. The highest percentage of the mean value was found for Intrapersonal Intelligence with 71.35%. The Second highest percentage of the mean value was found for Interpersonal Intelligence with 71%. Finally, for Multiple Intelligences in total mean value was found to be 69.08%.

Table 4.2: Details of levels of Multiple Intelligence of 300 (N) Higher Secondary students according to the manual of tool of multiple intelligence.

VARIABLE	LOW		MODERATE		HIGH	
	N	%	N	%	N	%
Verbal Linguistic	92	30.66	142	47.33	66	22
Logical/Mathematical	60	20	190	63.33	50	16.66
Visual/Spatial	87	29	137	45.66	76	25.33
Bodily/Kinesthetic	90	30	128	42.66	82	27.33
Musical/Rhythmic	89	29.66	132	44	79	26.33
Interpersonal	73	24.33	32	10.66	95	31.66
Intrapersonal	41	13.66	166	55.33	92	30.66
Naturalistic	167	55.66	99	33	34	11.33
Multiple Intelligence	100	33.33	153	51	47	15.6

It is inferred from the above table (4.3) that 30.66% of students have low, 47.33% have moderate and 22% have high level of Verbal/ Linguistic intelligence.

In Logical/ mathematical, 20% of students have low, 63.33% have moderate and 16.66% have high level of Logical/Mathematical Intelligence.

29% students have low level, 45.66% have moderate and 27.33 % have high level of kinesthetic intelligence.

29.66% of students have low level, 44% are moderate and 26.33% have high level of Musical/ Rhythmic Intelligence.

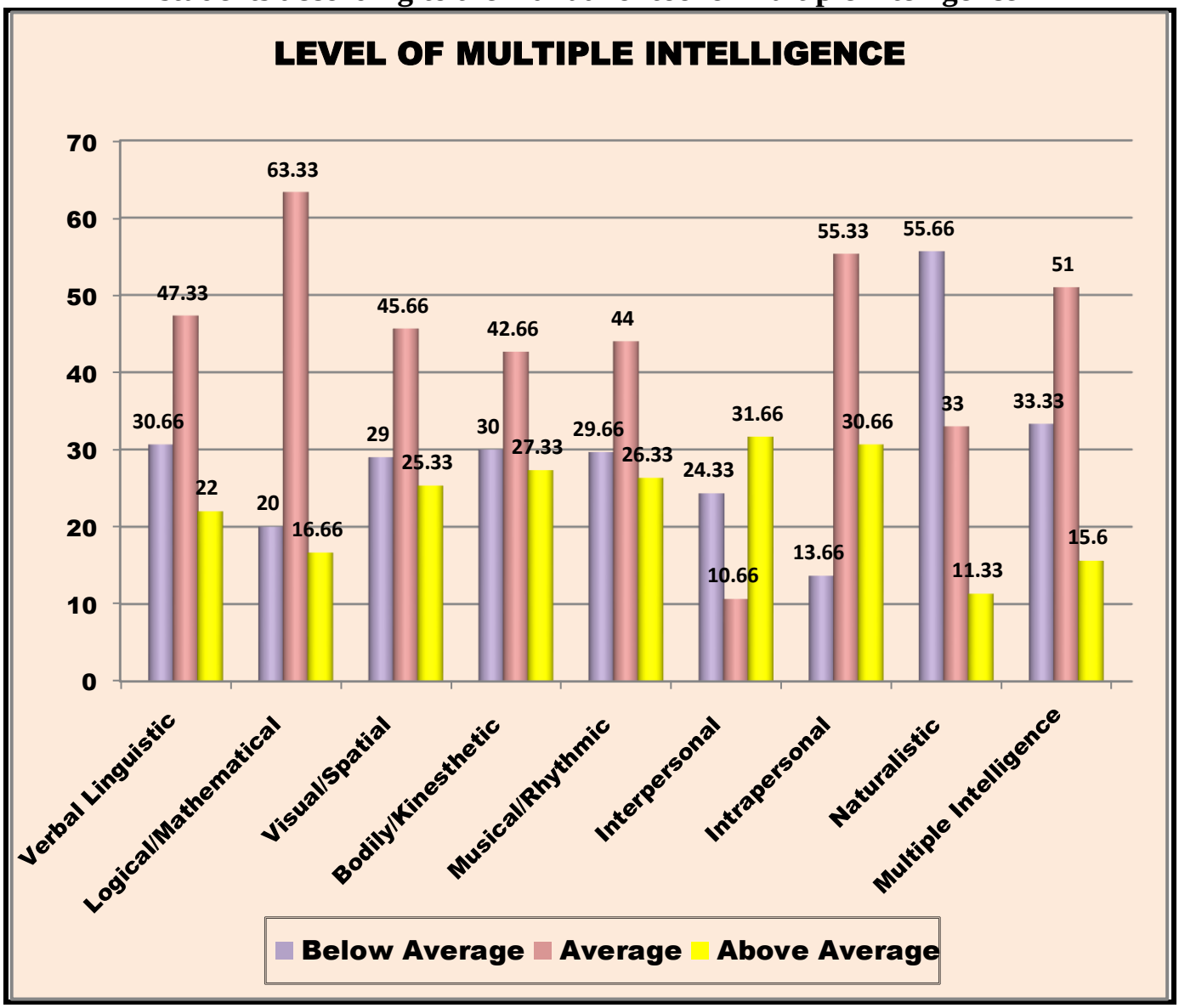
24.33% of students have low level, 10.66% have moderate level, 31.66 % have high level of Interpersonal intelligence.13.66% of students have low level, 55.33 % have moderate level, and 30.66 % have high level of Interpersonal intelligence.

55.66 % of students have low level, 33 % are moderate and 11.33 % have high level of Musical/ Rhythmic Intelligence.

33.33 % of students have low level, 51 % are moderate and 15.6% have high level of Multiple Intelligence of the of 300 (N) Higher Secondary students.

Figure 4.3:

Showing the level of Multiple Intelligence of 300 (N) Higher Secondary students according to the manual of tool of multiple intelligence



The figure (4.3) shows the chart percentage representation of the level of Multiple Intelligence is given.

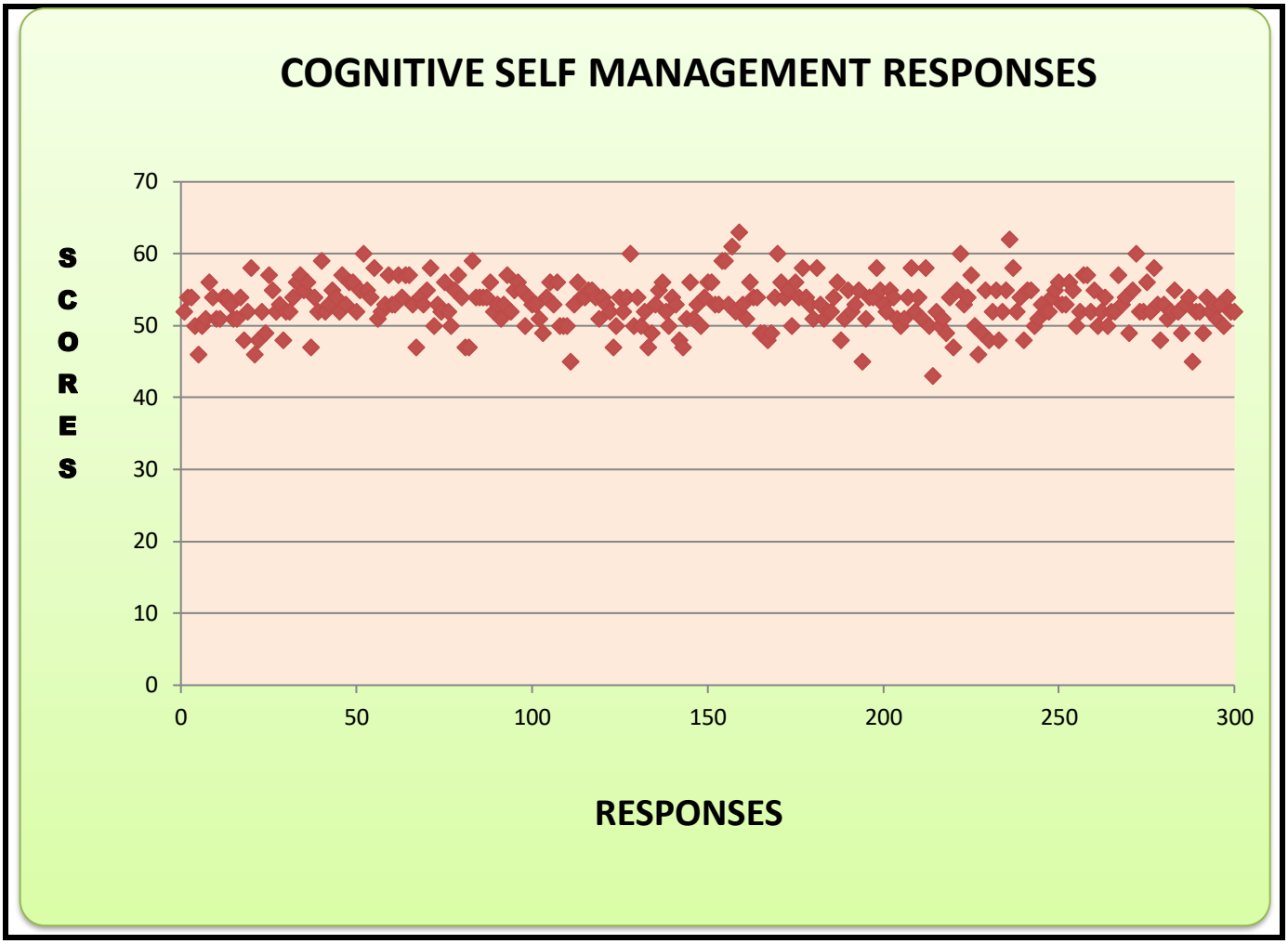
Objective 2: To study the level of cognitive self management among higher secondary students

The Cognitive Self Management of Higher Secondary students were measured with the help of Cognitive Self Management tool developed by T.Usha Kumari. (2017) including the four

dimensions – Positive focus, Systematic problem solving and Task Efficacy, Self Blame and Reasonable goal setting.

The tool administered on 300 higher secondary students of Vadodara brought forth the results as depicted on the scatter plot diagram:

Figure 4.4 Shows the nature of responses with effect to Cognitive Self Management tool



The data describes the nature of the group and the scores forming a linear trend line. The descriptive analysis provides valuable information about the nature of the group. Descriptive statistics are numerical and graphical methods used to summarize data and bring forth the underlying information. The numerical methods include level of cognitive self management, measures of mean, standard deviation, standard error of mean, frequency and percentage.

Table 4.3: Mean and Standard Deviation, Minimum and Maximum possible score wise distribution of Cognitive Self Management of 300 (N) Higher Secondary students along with its four Dimensions

MAIN VARIABLE	MINIMUM	MAXIMIUM	MEAN	STANDARD DEVIATION	PERCENTAGE	STANDARD ERROR OF MEAN
Positive Focus	12	24	18.21	2.08	75.87	.120
Systematic Problem Solving and Task Efficacy	9	21	14.51	2.06	69.09	.119
Self Blame	8	21	13.03	1.99	62.04	.115
Reasonable Goal Setting	5	15	9.22	1.87	61.46	.108
COGNITIVE SELF MANAGEMENT Total	43	78	53.00	3.14	67.94	.181

From the table 4.4, it was observed that the mean score of Positive Focus of Higher Secondary students was 18.21 with the standard deviation of 2.08 and the standard error of mean of .120. From the said values it states that the Higher Secondary students were above average in Positive Focus with 75.87 % of mean score.

It was observed that the mean score of Systematic Problem Solving and Task Efficacy of Higher Secondary students was 14.51 with the standard deviation of 2.06 and the standard error of mean of .119. From the said values it states that the Higher Secondary students were average in Systematic Problem Solving and Task Efficacy with 69.09 % of mean score.

It was further observed that the mean score of Self Blame of Higher Secondary students was 13.03 with the standard deviation of 1.99 and the standard error of mean of .115. From the said values it states that the Higher Secondary students were average in Self Blame with 62.04 % of mean score.

It was further observed that the mean score of Reasonable Goal Setting of Higher Secondary students was 9.22 with the standard deviation of 1.87 and the standard error of mean of .108. From the said values it states that the Higher Secondary students were average in Reasonable Goal Setting with 61.46% of mean score.

From the table 4.4, it was observed that the mean score of cognitive self management of Higher Secondary students was 53.00 out of the total score of 78 with the standard deviation of 3.14 and the standard error of mean of .181. From the said values it states that the Higher Secondary students were average in their cognitive self management with 67.9 % of mean score. Also, from the said standard deviation and standard error of mean, it can be said that the group seems to be homogenous.

From the same table, it was observed that the mean score of Positive focus as a dimension of Secondary students was highest with 18.21 out of the total score of 24 with the standard deviation of 2.08 and the standard error of mean of .120. From the said mean, it can also be said that secondary students were moderate compared to other components of the multiple intelligences. From observing, the values of standard deviation and mean of multiple intelligence it can be said that the data is not spread out from mean. It is further observed, that the standard error of mean 3.14 states closer estimate of the population for study.

Figure 4.5 Nature of the Group with respect to the Cognitive Self Management

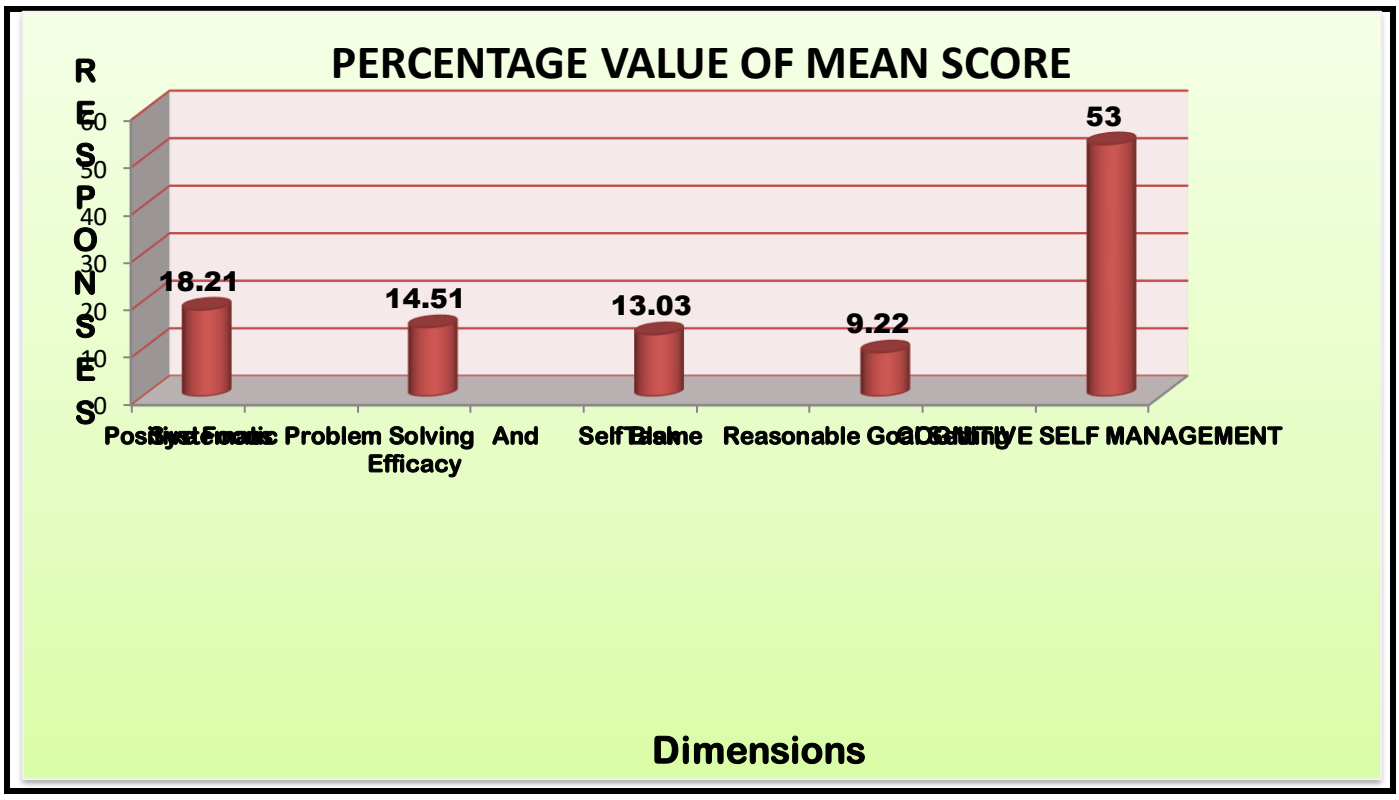


Figure 4.5 indicates the descriptive statistics of the main variable viz., Cognitive Self Management.

The highest percentage of the mean value was found for Positive Focus with 75.87%. The Second highest percentage of the mean value was found for Problem solving and Self Efficacy with 69.09 % .

Finally, for Cognitive Self Management in total mean value was found to be 67.94 %.

Table 4.5: Level of Cognitive Self Management of 300 (N) Higher Secondary students according to the manual of tool of Cognitive Self Management.

VARIABLE	LOW		MODERATE		HIGH	
	N	%	N	%	N	%
Positive Focus	2	0.66	298	99.33	0	-
Systematic Problem Solving and Task Efficacy	0	-	300	100	0	-
Self Blame	0	-	300	100	0	-
Reasonable Goal Setting	0	-	300	100	0	-
COGNITIVE SELF MANAGEMENT	14	4.66	273	91	13	4.33

It is inferred from the above table (4.3) that 0.66% of students have low, 99.33% have moderate and nil have high level of Positive focus.

In Systematic Problem Solving and Task Efficacy, nil percentage of students have low level, 100% have moderate and nil have high level of Systematic Problem Solving And Task Efficacy.

Nil students have low level, 100% have moderate and nil have high level of Self Blame.

Nil of students have low level, 100% are moderate and nil have high level of Reasonable Goal Setting.

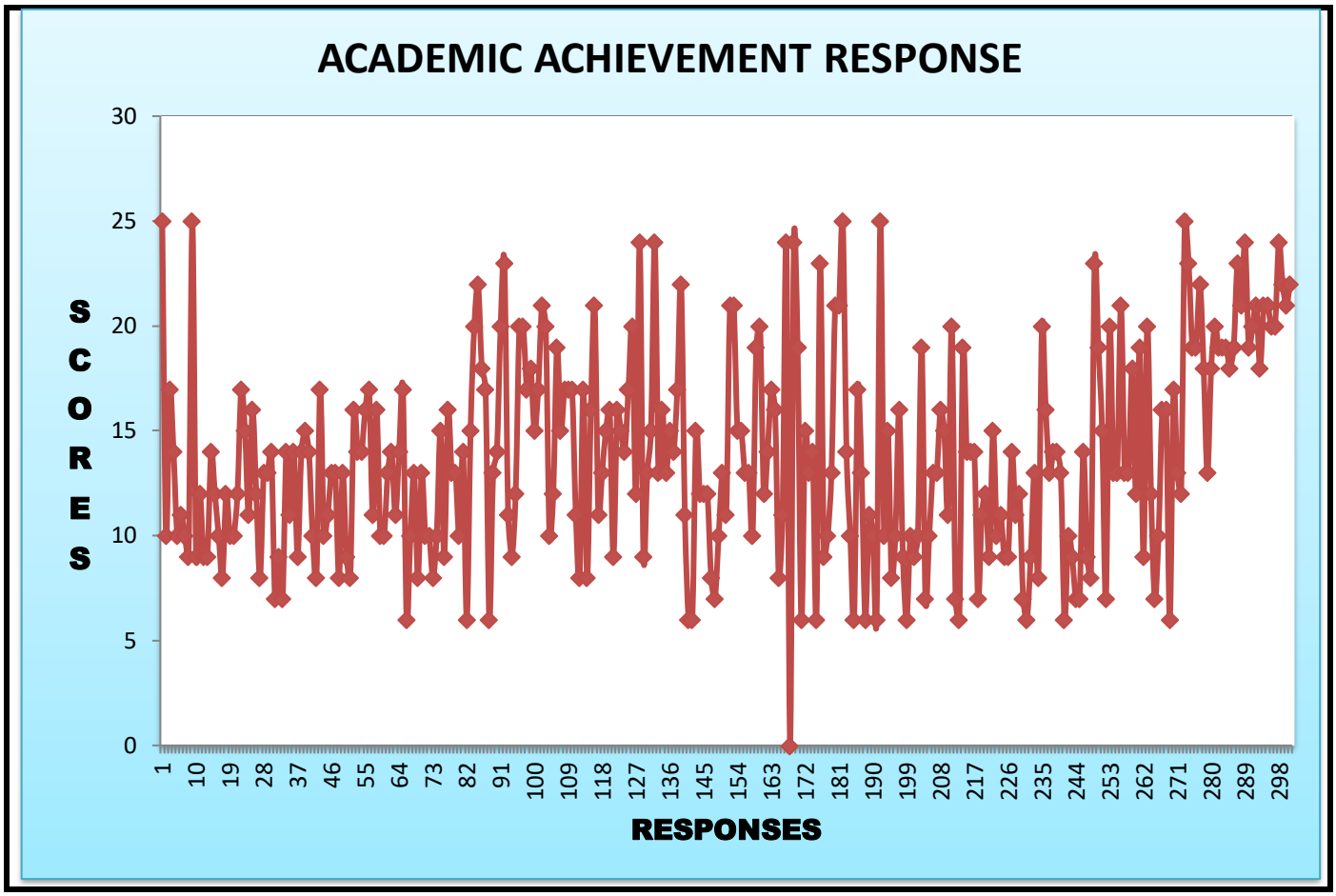
4.66% of students have low level, 91 % have moderate level, 4.33 % have high level of cognitive self management among the 300 Higher Secondary students.

Objective 3: To study the level of academic achievement among higher secondary students

The tool had been administered on 300 higher secondary students of Vadodara brought forth the results as depicted on the scatter plot diagram:

Figure 4.6

Shows the nature of responses with effect to Academic Achievement



The data describes the nature of the group and the scores forming a linear trend line. The descriptive analysis provides valuable information about the nature of the group. Descriptive statistics are numerical and graphical methods used to summarize data and bring forth the underlying information. The numerical methods include level of academic achievement, measures of mean, standard deviation, standard error of mean, and percentage.

Table 4.7:

Level of Academic Achievement of 300 (N) Higher Secondary

VARIABLE	LOW		MODERATE		HIGH	
	N	%	N	%	N	%
Academic Achievement	26	8.66	212	70.66	62	20.66

It is inferred from the above table (4.7) that 8.66% of students have low, 70.66% have moderate and 20.66 % of students have high achievement in academic.

Figure 4.7: Showing the level of Academic Achievement of 300 (N) Higher Secondary students

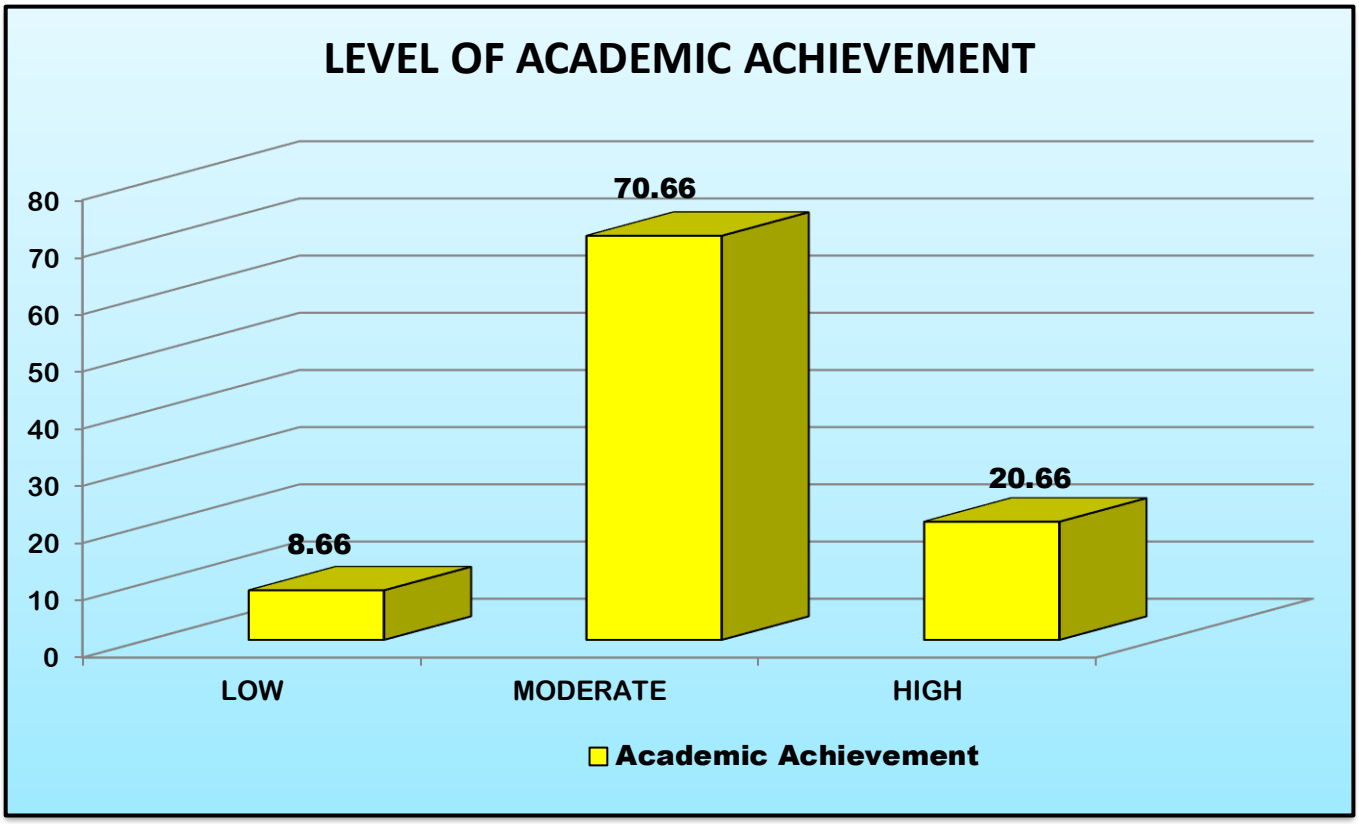


Table 4.8 Mean and Standard Deviation, Minimum and Maximum possible score wise distribution of Academic Achievement of 300 (N) Higher Secondary students

MAIN VARIABLE	MINIMUM	MAXIMIUM	MEAN	STANDARD DEVIATION	PERCENTAGE	STANDARD ERROR OF MEAN
ACADEMIC ACHIEVEMENT	**6**	**25**	**13.80**	**4.80**	**55.2**	**0.28**

From the table 4.8, it was observed that the mean score of academic achievement of Higher Secondary students was 13.80 out of the total score of 25 with the standard deviation of 4.80 and the standard error of mean of 0.28. From the said values it states that the Higher Secondary students were moderate in their academic achievement with 55.2 % of mean score. Also, from the said standard deviation and standard error of mean, it can be said that the group seems to be homogenous.

From observing, the values of standard deviation and mean of academic achievement it can be said that the data is less spread out from mean. It is further observed, that the standard error of mean 0.28 states closer estimate of the population for study.

Objective 4: To study the relationship between multiple intelligence and cognitive self Management of higher secondary students.

The relationships between Multiple Intelligence, Cognitive Self Management and Academic Achievement were found by using the statistical measures like Pearson‘s coefficient of correlation and the multiple correlation which are given in the following tables. It helped the investigator to test the formulated null hypotheses related to these three variables. The null hypotheses will be formulated and tested at 0.01 level of significance.

To analyze the next objective of the correlation between multiple intelligence and cognitive self management of higher secondary students and to test the hypothesis:

$H_0$1. — ***There will be no significant relationship between multiple intelligence and Cognitive self management of higher secondary students***.

The data was analyzed and presented in table 4.10.

Table 4.10: Coefficient of correlation, level of correlation and significance of Correlation between Multiple Intelligence and Cognitive Self Management of higher Secondary students.

CORRELATION BETWEEN	r- VALUE	LEVEL OF CORRELATION	SIGNIFICANT AT 0.01 LEVEL
Multiple Intelligence and Cognitive Self Management	**.181**	**LOW**	**SIGNIFICANT**

It has been observed from the table (4.10) that the calculated r-value of the correlation between multiple intelligence and cognitive self management of secondary students was found to be 0.181 which can be referred as significant but the strength of the relationship is indifferent/ negligible relationship (page. 176 of (Garrett, 2008) between the variables. Further referring the table 25 (page 201) of (Garrett, 2008) for the degree of freedom (df) 298 at the significant level of 0.01, the calculated value was found to be equal to the table value (0.181).

Hence, the $H_0$1 i.e. — "There will be no significant relationship Multiple Intelligence between Cognitive Self Management of higher Secondary students" is retained. So it can be said that the correlation between Multiple Intelligence between Cognitive Self Management of higher Secondary students of Vadodara district was found to be significant but low level of correlation. So, it can be said that the correlation between Multiple Intelligence and Cognitive Self Management higher secondary students of Vadodara district was found to be positive, low and significant.

Objective 5: To study the relationship between multiple intelligence and academic achievement of higher secondary students

To analyze the next objective of the correlation between multiple intelligence and cognitive self management of higher secondary students and to test the hypothesis:

$H_0$2 ***—There will be no significant relationship between Multiple Intelligence and academic achievement of higher secondary students.***

The data is analyzed and presented in table 4.11:

Table 4.11: Coefficient of correlation, level of correlation and significance of Correlation between Multiple Intelligence between Academic Achievement of higher Secondary students.

CORRELATION BETWEEN	r- VALUE	LEVEL OF CORRELATION	SIGNIFICANT AT 0.01 LEVEL
MULTIPLE INTELLIGENCE AND ACADEMIC ACHIEVEMENT	- 0.021	Low	NOT SIGNIFICANT

It has been observed from the table (4.11) that the calculated r-value of the correlation between multiple intelligence and Academic Achievement of secondary students was found to be 0.021 Although technically a negative correlation, the relationship between variables is weak as the value is nearer to zero, there is sufficient evidence to conclude that there is a significant linear relationship between the variables because the correlation coefficient is significantly different from zero which can be referred as significant but the strength of the relationship is negligible relationship (Garrett, 2008) between the variables. Further referring the table 25 (page 201) of (Garrett, 2008) for the degree of freedom (df) 298 at the significant level of 0.01, the calculated value was found to be less than to the table value (0.181).Hence, the $H_0$2 i.e. — "There will be no significant relationship between Multiple Intelligence between Academic Achievement of higher Secondary students of Vadodara district" is retained. So, it can be said that the correlation between Multiple Intelligence and Academic Achievement higher secondary students of Vadodara district was found to be negative, low and not significant.

Objective 6: To study the relationship between cognitive self management and academic achievement of higher secondary students.

To analyze the objective of the correlation between cognitive self management and academic achievement of higher secondary students and to test the hypothesis:

$H_0$3 — ***There will be no significant relationship between Cognitive Self management and academic achievement of higher secondary students,***

The data is analyzed and presented in table 4.12:

Table 4.12: Coefficient of correlation, level of correlation and significance of Correlation between Cognitive Self management and academic achievement of higher secondary students.

CORRELATION BETWEEN	r- VALUE	LEVEL OF CORRELATION	SIGNIFICANT AT 0.01 LEVEL
COGNITIVE SELF MANAGEMENT AND ACADEMIC ACHIEVEMENT	0.040	LOW	NOT SIGNIFICANT

It has been observed from the table (4.12) that the calculated r-value of the correlation between Cognitive Self Management and Academic Achievement of secondary students was found to be 0.040 although technically a positive, but the relationship is very low and negligible (page. 176 of (Garrett, 2008) between the variables.

Further referring the table 25 (page 201) of (Garrett, 2008)) for the degree of freedom (df) 298 at the significant level of 0.01, the calculated value was found to be less than to the table value (0.181).Hence, the $H_0$3 i.e. — "There will be no significant relationship Cognitive Self management and academic achievement of higher Secondary students of Vadodara district" is retained. So, it can be said that the correlation between Cognitive Self Management and Academic Achievement of higher secondary students of Vadodara district was found to positive, low and not significant.

Objective 7: To study the relationship both multiple intelligence and cognitive self management on the academic achievement of higher secondary students

To analyze the objective of the correlation between cognitive self management and academic achievement of higher secondary students and to test the hypothesis:

$H_0$1. — ***There is no significant relationship in the multiple correlation taking Academic achievement, Multiple Intelligence and Cognitive self management.***

The data is analyzed and presented in table 4.13.

Table for Multiple Regressions

Table 4.13: Summary of Multiple Correlation of Multiple Intelligence (MI) and Cognitive Self Management (CSM) Academic Achievement (ACC) of Higher Secondary Students with N=300.

BETWEEN VARIABLES	R-VALUE	MULTIPLE CORRELATION (R)	F VALUE AND DF	LEVEL OF SIGNIFICANCE AT 0.01	SE OF R	0.99 CONFIDENCE INTERVAL	DEGREE OF R
MI & CSM	0.181	0.041	0.254 DF = 2/299	Not Significant	0.057	0.18 to -0.1	Negligible
MI & ACC	-0.002						
CSM & ACC	0.040						

From the table 4.13, the correlations of 0.181, -0.002 and 0.040 were found between the variables Multiple intelligence and Cognitive self management; Multiple Intelligence and academic achievement; and Cognitive Self management and academic achievement respectively. The multiple correlations considering academic achievement as dependent variable and Multiple intelligence and Cognitive self management as independent variables, was found to be 0.041.

The F-value of ANOVA for regression-residual model was found to be 0.254 and this F-value was found to be significant at 0.01 level of significance with the degree of freedom (DF) of 2 and 299. Hence, the multiple correlation between these three variables was found to be significant at the decided level of significance i.e. 0.01. Further analyzing, from the same table the standard error of multiple correlation was found to be 0.057. From the said multiple correlation and the standard error of multiple correlation, the 0.99 confidence interval for the population R is from 0.003 to -0.004. The said confidence interval of correlation can be considered as negligible relationship (page. 176) of (Garrett, 2008). So, on the basis of this analysis the calculate R can be considered as negligible.

Hence, the H04 i.e. — "There is no significant relationship in the multiple correlation taking Academic achievement, Multiple Intelligence and Cognitive self management is not accepted and it can be said that Multiple Intelligence and Cognitive self management had moderately significance influence on the Academic achievement of higher secondary students.

4.3.0 CONCULSION

The present chapter described in details the descriptive and relational analysis of data related to Multiple Intelligence, Cognitive Self Management and Academic Achievement of secondary school Students. The major findings and discussion thus obtained from the analysis have been summarized and presented along with a brief report of the research study in the next chapter.

CHAPTER: 5

SUMMARY, DISCUSSION

And

CONCLUSION

CHAPTER V
SUMMARY, DISSCUSSION AND CONCLUSION

5.1.0 INTRODUCTION

This chapter presents the summary of the entire study, major findings of the present study, discussions of the major findings and suggestions for the future endeavors. The findings are drawn out from the analysis of the data and the interpretations of the data arrived from the data analyzed

5.2.0 AN OVERVIEW OF THE STUDY

Our ancient education system evolved over the period and focused on the holistic development of the individual by taking care of both the inner and the outer self. The system focused on the moral, physical, spiritual and intellectual aspects of life. It accentuates values such as humility, truthfulness, discipline, self-reliance and respect for all creations. Students were taught to acknowledge the balance between human beings and nature. Teaching and learning followed the tenets of Vedas and Upanishads fulfilling duties towards self, family, and society, thus enveloping all aspects of life. The education system focused both on learning and physical development. In other words, the emphasis was on a healthy mind and a healthy body. You can see that education in India has a heritage of being pragmatic, attainable, and integral to life.

Education should aim at making human life better not only through the economic exhilaration of individuals but also through social, moral, and spiritual strengthening. This will not only improve human life but also realize the "higher truth" i.e. "Tamaso Ma Jyotirgamaya" from darkness to light. Thus education is not only a way of earning but it also helps to develop a human personality with skills, values, morals, and enrichment of different idiosyncrasies of man. So education is a vital means for the potentialities of a human being to emerge in a positive direction so that a man can live in a society full of dignity.

Today the Indian society is bound to encounter current and perpetual problems. We live in a society where the child spends his parent's earnings and still not getting the standard education and

struggling to get the desired employment, a decrease in ethical values, unlawful activities, inhuman behavior, Indiscipline, violation of rules, no self-realization, and immoral consumption, which is slowly breaking the structure of Indian society, nation, and the world.

Many of these children may be ending up in learning disability lapses and wasting time in regular classrooms, at least in part because nobody has been able to figure out how to make use of their talents in a formal school setting, (Armstrong, 1987). The report of the Parliamentary Standing Committee (1999) noted that there has been conscious erosion of values in our society.

Rabindranath Tagore had judged it long back that the Indian education system needs to change. Recognizing such an enormous potential of education, all progressive societies have committed themselves to the universalization of education with an explicit aim of providing 'Quality for All' which includes exceptional and special children also. The Education Commission (1964-66) has emphasized that education is the one and only instrument that can be used to bring about a change towards the social and economic betterment of our nation.

Gardner's gift to the classroom is in his conceptualization of intelligence as multifaceted and multidimensional (1983) adds to understand the individual differences and construct and develop an education system which complements an individual's personality. He defines human potential in terms of the ability to solve problems in a culturally valued setting. In light of this broad perspective, Gardner identified eight realms of intelligence: verbal, logical, visual, musical, bodily, interpersonal, intrapersonal, and naturalistic. As seen in countless classrooms, these multiple intelligences work in various combinations as students interact and connect in the execution of complex tasks.

When Gardner brought up the theory in America in 1983. The theory was extensively applied in the American education system, causing an educational reform (Sternberg, 1988). With multiple intelligences theory spreading across America and all over the world has brought profound changes in the school system.

Multiple Intelligences Theory works as a creative approach to develop and implement a curriculum. Transactions made in early child development and learning has a positive impression on formal education by sustaining him/her in school for a longer period of time (Yadav, 2006).

Education is a process of empowering and enlightening individuals to materialize a better and higher

quality of life. An effective system of education results in the unfolding of learners' potentialities, enlargement of their competencies, and transformation of their aptitudes, interests, attitudes, values, etc. In our classrooms children are multifaceted, having many abilities and teachers need to provide them with opportunities to strengthen and apply their abilities and talents throughout their life.

Most educators would not only agree with this emphasis but also advocate a need to develop student ability to meet external expectations irrespective of the curriculum presented to the learner. Cognitive presence concerns the process of both reflection and discourse in the initiation, construction of meaningful learning outcomes. If deep and meaningful learning outcomes are the goal of an educational experience, then an understanding of cognitive presence is a priority.

In a learning context, there are two properties- reflection and collaboration- that shape cognitive presence in a way unique to this medium. (Garrison, 2000) The nature of learning calls on learners to be self-directed and to take responsibility for their learning. That is, to assume greater control of monitoring and managing the cognitive and contextual aspects of an individual learning.

James and Gardner (1995) outlined learning vogue because of the "complex manner that during which within which} and conditions below which learners most effectively understand, process, store, and recall what they're trying to find out. It influences learners' considerations, tradition, cognition, internal method, and retention of recent and troublesome information"

Taking responsibility and control of one's learning is core to reflective inquiry and self-directed learning as well as the development of meta-cognitive abilities that ultimately provide the foundation for continued learning. The emphasis of learning is on internal development and self-regulation. Knowing how to learn is more important than amassing a lot of knowledge. Self-management is the process undertaken by students and for themselves based on self- discipline, with the characteristics of students carry out the process of independence that is working on their own initiative and carry out planning activities.

Regular self evaluation is required in this process in order to be aware of inner dynamics and their external influences. This is the point where the importance of Cognitive self-management is felt. Cognitive self-management is the ability to think in abstract terms, the highest level of intellectual

functioning. It is the way or the ability of a learner to control oneself in systematic problem-solving. Exploring this area could certainly bring notable changes in the learning environment, attitude, and achievement.

As per the Secondary Education Commission (1952-53), the objectives of secondary education are the development of democratic citizenship, the development of qualities for leadership, and the development of personalities among children to create future citizens with democratic values and to make them fit for higher education or vocational education. Secondary education becomes necessary to study in-depth and details what was learned in primary education. It is very essential for every child to be successful in secondary education and academic achievement is one of the very important indicators for success. From among these factors, multiple intelligence and cognitive self-management of secondary school children have some role in determines their academic achievement to some extent.

Multiple intelligence helps students to build up skills or unravel problems as it is a process of functioning several intelligences at the same time in a balanced manner for performing a task. Similarly, cognitive self-management is a higher-order intellectual ability that helps secondary school children to control themselves for solving problems in a systematic and optimistic way. Hence, the present study is an attempt to measure these components and also to study the influence of these components on the academic achievement of the student's teachers.

5.3.0 RATIONALE OF THE STUDY

Learning is a never-ending process for the acquisition of knowledge, skills, values, beliefs, and habits. Education is the potent instrument of the learning process in which the knowledge, skills, values, beliefs, and habits of the children are shaped as per the required need of the society in a phased manner from the primary to higher secondary level. The formal system of education is created by society to provide education through the best learning system for the holistic development of each and every child considering their own abilities.

But in recent years, there has been a serious downfall in learning outcomes as shown in the reports of ASER (Annual Status of Education Report, 2018) survey which is a nationwide survey that was convened as a survey in 596 districts of India to evaluate the learning outcomes. The legacy of

learning deficit visible so far in elementary school children is now being reflected among young adults too. The survey states -57% of 14-18year olds can't do a simple division;40% of 18year olds can't read a simple sentence in English;76% of them can't count money; 25% in age group 14-18 can't read basic text in their own language ; this statistics is of students who have these years of schooling.

It is seen the quality of learning outcomes is not been concentrated which resulted in a gradual decline in learning outcomes is evident. This survey was conducted in especially for secondary, higher secondary stages. The secondary stage, it is a crucial point, as the learner is in the transition period between elementary and higher education. The education imparted to the students of this stage should be able to develop a scientific attitude of mind to think objectivity. The teaching learning process should be inclusive by accepting the individual differences and mould students to have an intellectual integrity to shift to the truth from falsehood, be able to reject fanaticism and prejudice.

Learning is the most important constituent in the education system. In learning each individual learner has a personal and unique style. They learn better in this way and that they have different learning styles that work best for them (Cuaresma, 2008; Ornstein and Lasely, 2000).

The word of Gardner becomes relevant here – students display very different cognitive profiles and which puts forth the urgency of implementation of multiple intelligence theory- oriented instructional strategies in the schools. Gardner also proposes eight different potential pathways to learning. The theory of Multiple Intelligence proposes a major transformation of

the existing education system. It has proved by the various research studies conducted that the implementation of the theory showed significant changes in the academic achievement of the learners. (Jones 1996, Hamze 2013)

The first dimension Verbal/Linguistic intelligence enables the learners to understand a particular structure, concepts, process, relationship and function of an organism in an accurate and precise model. The second dimension Logical/Mathematical intelligence supports the acquisition of the right concept of patterns, rules, and theories involved in nature and formulation of generalizations in the form of principles and theories. the skill of observation, objective thinking, drawing conclusion, the skill of inquiry and experimentation are strengthened and enhanced by this dimension. The third dimension Visual / Spatial intelligence promotes the development of talents and skills involved in

spatial perception. he fourth dimension Musical / Rhythmic intelligence develops an appreciation for nature which comprises flora and fauna, sounds in nature, hidden rhythms in the flow of waters, the blow of winds and the individual develops a biological sense of life. It shows the significance of multiple intelligence developed in learner acts as an instrument to acquire the foundation's skills of knowledge.

The curriculum thus should be designed which takes into account individual multiple intelligences, differences of the learner. It has time and again proved that intelligence is inherent in an individual who is trainable and it can be achieved by increasing the cognitive ability by training on tasks in a procedural format.

The investigator came across few studies conducted in the field of multiple intelligence teaching and learning strategies in India but in abroad many studies have been conducted and have been implemented in the curriculum. In India, there are counted few schools which have tried to implement it. Despite the recent rise in implementation of the Theory of multiple intelligence it continues to be evolving and isn't quite established.

The work of Gardner and Lambert (1959) has demonstrated that a casual relationship between attitude and the learning of a single subject would seem reasonable to expect attitudes to school to affect the total school performance. Education is expected to bring about changes in the cognitive behavioral and attitudinal dimensions of personality. Through traditional tests and examinations, we generally assess only the cognitive aspect of personality.

In learning, achievement has paramount importance. Each and every child follows its own unique way to learn and process information and the existence of different styles is due to the different composition of multiple intelligence developed in an individual which gets reflected in the academic achievement of the learner. Studies of Kailash (2017), Bas (2010) showed the correlation of multiple intelligence in academic achievement. The learning outcomes should be able to bring in a revolution in the cognitive abilities of an individual and a developed aptitude for management of the abilities. It is worth understanding that a socially matured adolescent has some independence in taking or making decision. The instilling cognitive self management gives the direction to the individual to process of developing and managing the abilities and intelligences.

Educators and research workers have found that cognitive self-management is an important factor in influencing achievement. One of the determinants of the academic success of students is the ability

of self-management. Cognitive Self-management deals with awareness and skills to regulate the surroundings that affect individual behavior. The investigator also feels that the development of cognitive self-management among learners will also help them to develop an intellectual functioning by a systematic procedure. It can be used for the development of mastery of several skills.

From the review of related literature, very few studies have been conducted to find out the relationship between cognitive self management and achievement. A major part of studies was conducted in cognitive self-management was in the medical field for persons with different disabilities and in India, there have been hardly a few studies conducted related to school education.

The investigator here feels that if a learner's cognitive self-management is developed it will help the learner to identify one's own multiple intelligences and be able to work on the learner to improve and increase his learning outcomes, and in changing his outlook for life. The true success of learning largely depends upon the minds of the learners with endless powers. The natural philosophers like Rousseau and Tagore advocate the development of the spirit of independence among the learners. True learning acquires only in an autonomous environment. The personality of the learners is fulfilled when the spirit of independence is developed. Hence, factors like multiple intelligence and cognitive self-management should be studies in different dimensions to enhance the achievement of students in different subjects. Saroja (2014)

The investigator didn't come across any researches conducted to study the correlation of multiple intelligence and cognitive self-management with respect to its influence on academic achievement. Among the 45 studies only one study was conducted in India on cognitive style and multiple intelligence with respect to academic achievement. This thought prompted the investigator to take these variables and study their correlation with their effects on academic achievements.

5.4.0 STATEMENT OF THE PROBLEM

Study of Multiple Intelligence and Cognitive self Management with respect to academic achievement of Higher Secondary Students.

5.5.0 OBJECTIVES OF THE STUDY

1. To study the level of multiple intelligence among higher secondary students.
2. To study the level of cognitive self management among higher secondary students.
3. To study the level of academic achievement among higher secondary students.
4. To study the relationship between multiple intelligence and cognitive self management of higher secondary students.
5. To study the relationship between multiple intelligence and academic achievement of higher secondary students.
6. To study the relationship between cognitive self management and academic achievement of higher secondary students.
7. To study the relationship of both multiple intelligence and cognitive self management on the academic achievement of higher secondary students.

5.6.0 HYPOTHESES OF THE STUDY

The following null hypotheses will be formulated and tested at 0.01 level of significance.

H01: There will be no significant relationship between multiple intelligence and Cognitive self management of higher secondary students.

H02: There will be no significant relationship between Multiple Intelligence and academic achievement of higher secondary students.

H03: There will be no significant relationship between Cognitive Self management and academic achievement of higher secondary students.

H04: There is no significant relationship in the multiple correlation taking Academic achievement, Multiple Intelligence and Cognitive self management.

5.7.0 OPERATIONAL DEFINATIONS

Multiple Intelligence: It is score secured by the students using the Multiple Intelligence Inventory prepared by Armstrong (1998).

Academic Achievement: The percentage of marks in the secondary school examination will be considered as the academic achievement of the students.

Cognitive self management: It the score secured by students using cognitive self management scale prepared by Rude (1980).

5.8.0 DELIMITATIONS OF THE STUDY

The proposed study was delimited to the higher Secondary English medium students of standard XI of Vadodara district affiliated to CBSE.

5.9.0 METHODOLOGY

The present study is a survey research. Survey research is a method for collecting and analysing data obtained from a large number of respondents, representing a specific population. It is an organized attempt to describe and interpret what exist at present in the form of conditions, practices, process, trends, effects, attitudes and beliefs. It is concerned with phenomena those are typical of the normal conditions. It seeks to find the real facts with regard to existing conditions. The methodology of the survey research was used in the present study.

5.10.0 POPULATION

There are 7388 Higher Secondary schools comprising of 999464 students approx spread in Vadodara city according to the statistics as per Commissionerate of Schools. Hence, the population comprised of 999464 approximately in Vadodara city.

5.11.0 SAMPLE

Sample of the proposed study was selected randomly. Stratified random sampling method was used. 300 standard XI students was selected, 150 from each stream i.e. commerce and science students, those completed all the data collection tools comprised as the sample for the present study

5.12.0 TOOLS FOR THE DATA COLLECTION

The tools used for the proposed study will be:

- **Multiple Intelligence Inventory** developed and standardized by Terry Armstrong (1998) - The adapted inventory contains 80 statements with alternatives. The statements pooled the statements so as to cover the eight dimensions of Multiple Intelligences.

- **Cognitive Self Management Questionnaire** developed by Stephanie Rude (1980) – The tool has 26 items in five dimensions initially developed by S. Rude but a simpler and understandable version of the questionnaire developed and executed by Usha (2017) is used by the investigator.

- **Academic Achievement Questionnaire** was constructed by the investigator- the tool had 25 items each of each stream- Science and Commerce.

5.13.0 PROCEDURE OF DATA COLLECTION

Due to pandemic, the data was collected as per the responses received in due course from students of the schools under the population of study. According to the availability of the students, the researcher visited the institutes personally and administered the tools even. Hence, data collection procedure was completed during a period of one month through online and offline mode.

5.14.0 DATA ANALYSIS

Data were analyzed with the help of SPSS and excel. For the purpose of descriptive analysis of data mean, standard deviation, standard error of mean, was used. For the purpose of inferential analysis, product moment correlation and multiple correlations were used as per the requirement of the data. The collected data was analyzed by employing quantitative techniques like, mean, standard deviation, product moment correlation and multiple correlations.

The following analysis was done on basis of students responses:

- Mean and Standard Deviation, Minimum and Maximum possible score wise distribution of Multiple Intelligence of 300 (N) Higher Secondary students along with its eight Dimensions

- Details of levels of Multiple Intelligence of 300 (N) Higher Secondary students according to the manual of tool of multiple intelligence.

- Mean and Standard Deviation, Minimum and Maximum possible score wise distribution of Cognitive Self Management of 300 (N) Higher Secondary students along with its four Dimensions

- Level of Cognitive Self Management of 300 (N) Higher Secondary students according to the manual of tool of Cognitive Self Management.

- Level of Academic Achievement of 300 (N) Higher Secondary

- Mean and Standard Deviation, Minimum and Maximum possible score wise distribution of Academic Achievement of 300 (N) Higher Secondary students

- Coefficient of correlation, level of correlation and level of significance of Correlation between Multiple Intelligence between Cognitive Self Management of higher Secondary students.

- Coefficient of correlation, level of correlation and level of significance of Correlation between Multiple Intelligence between Academic Achievement of higher Secondary students.

- Coefficient of correlation, level of correlation and level of significance of Correlation between Cognitive Self Management between Academic Achievement of higher Secondary students

- Multiple Regression of Multiple Intelligence, Cognitive Self Management and Academic Achievement

5.15.0 MAJOR FINDINGS OF THE STUDY

1. Based on the data analysis it was found that the majority of the responses of the secondary students fall in the score range of 150-250 in their Multiple Intelligence.

2. Secondary school students were found to be average in their Multiple Intelligence ability with 69.02 % of mean score. The group was found to be homogenous in terms of their mean of Multiple Intelligence score. Students were also found with similar mean score ranging from 62.8% to 71.44% in all the eight components of Multiple Intelligence like Verbal, Logical, Visual Bodily, Musical, Interpersonal, and Intrapersonal. Out of the 300 secondary school students 51% were found moderate, 33.33% were found low and 15.6 % were found high in their level of Multiple Intelligence Ability

3. It was found that the majority of the responses of the secondary students fall in the score range of 50 - 60 in their Cognitive Self Management.

4. A secondary school student was found moderate in their cognitive self management with 67.94 % of mean score. The group was found to be homogenous in terms of their cognitive self management mean score. Out of the 300 secondary school students 91 % were found moderate, 4.66 % were found low and 4.33 % were found high in their level of Cognitive Self Management.

5. Secondary school students was found high in their academic achievement with 55.2 % of mean score. Out of the 300 secondary school students, 70.66% were found moderate, 8.66% were found low and 20.66 % were found high in their level of academic achievement.

6. The correlation between Multiple Intelligence and cognitive self management of secondary school students was found to be negligible, indifferent and significant.

7. The correlation between Multiple Intelligence and Cognitive Self Management of secondary Students was also found to be negligible, and not significant.

8. The correlation between cognitive self management and academic achievement of secondary students was also found to be negligible, and not significant.

9. The Multiple Intelligence and Cognitive Self Management had moderately significance influence on the Academic Achievement of secondary school students.

5.16.0 DISCUSSION

Each student has an individual profile of characteristics, abilities and challenges that result from learning and development. These manifest as individual differences in intelligence, creativity, cognitive style, motivation and the capacity to process information, communicate and relate to others. Two fundamental assumptions that underlie formal education systems are: (a) students retain knowledge and skills they acquire in classroom; and (b) they can apply them in situations outside the classroom.

In pursuance of the objectives of the present study, the data was organized to accomplish the objectives. One of the major objectives of the study was to define Multiple Intelligences along with its dimensions and to know the level of Multiple Intelligences of secondary school students of Vadodara city. The dimensions of this component were identified through in-depth study and review of literature.

The findings of the present study reveal that the levels of Multiple Intelligence students were moderate with 69.08% of the mean score. The mean, standard deviation and standard error of mean was 213.48, 38.97and 2.25 respectively that explains that the score distribution is spread out, and a close estimate of the population of the study. It is also seen that the findings were supported by the study conducted by Chisholm (1998) and while the research studies conducted by Gurçay (2003)**,** Bakić-Mirić (2010), Glenn (2010) revealed the importance of Multiple Intelligence in the teaching learning process of Secondary students and for productive results future. The findings relayed to the relational analysis of the data revealed that there is low and significant relationship between the attitude towards Multiple Intelligence and academic achievement of the Secondary students and is supported by the studies of Singh (2017), Hossein (2016) and Rekha (2013).

The highest percentage of the mean value was found for Intrapersonal Intelligence with 71.35%. The Second highest percentage of the mean value was found for Interpersonal Intelligence with 71% is supported with the studies of Sreeraj (2015), Neupane et al. (2018) in relation to the dimensions of multiple Intelligence of Secondary students of Vadodara. In the studies of Singh (2017) findings states that different students possessed different forms of intelligences and most students had more than one forms of intelligence

The findings of the present study involving Cognitive Self Management revealed that nearly 67.94% of the secondary school students were moderate. The mean, standard deviation and the standard error of mean of the Cognitive Self Management of secondary school Students were 53.00, 3.14 and .181respectively which explains that the score of distribution is clustered more in the center of the graph. The findings are supported by study conducted by Briesch (2015*)* and Nitulescu et al. (2012) while there are other research studies by Lathadeviamma (2016) which reveal that the majority of higher secondary students have average level of cognitive self management. And the implementation of cognitive self management has brought in significant difference in the academic achievement of the secondary students. The highest percentage of the mean value was found for Positive Focus with

75.87%. The Second highest percentage of the mean value was found for Problem solving and Self Efficacy with 69.09 % as can been seen in the findings of Lavinia (2012). Due to a paucity of articles related to cognitive self management, other studies analyzing Cognitive style and self management were reviewed to draw conclusions for the present study. The findings related to relational analysis of the data stated that there is neglible relation between Cognitive self management and academic achievement of teachers.

The other aspect of the study was the Academic Achievement of the students. When this component was further studied the analysis revealed that nearly 70.66% of the secondary school students had moderate level in their Academic achievement. The mean, standard deviation and the standard error of mean of Academic achievement were 13.80, 4.80 and 0.28 respectively that explains that the score of distribution is clustered in the center of the graph. The relational analysis findings of the data revealed that the Cognitive Self Management and Multiple Intelligence effects on the academic achievement of the secondary students were moderately significant.

5.17.0 IMPLICATIONS OF THE PRESENT STUDY

Majority of the students have obtained average level of scores compared to above average and below average level of scores which indicates that the Multiple Intelligences possessed by the students need to be nurtured and strengthened. The major implication of the study is in favor of the student community it helps the students to discover their own strengths. They will realize that all of them possess eight different kinds of strengths and their self-esteem is enhanced. All the strengths may not be uniformly developed some strengths may be strong and well developed others may be in a latent state. It is imperative that educational support should be given in the respective types of Multiple Intelligences and facilitate in maximizing their potential to the fullest. As Gardner considers intelligence as a trainable faculty appropriate exposure, opportunities for learning and necessary guidance will help in enhancing the development of the intelligence. Effective usage of cognitive self management strategies will enhance both cognitive and skills such as Positive focus, problem solving, self efficacy and reasoning etc. These strategies help the learners to their successful learning in the teaching learning process.

The following are the implications drawn out from the findings of the present study:

- The findings can give suggestions to government and non- government organizations to reframe the curriculum and implement strategies with the aim to enhance multiple intelligences, cognitive abilities and cognitive self management of secondary school students.

- The curriculum of pre- service teacher education programme should be designed equips the student teachers with the a pedagogy to enhance the teaching learning process with respect to the ways of enhancing the Multiple Intelligences in the classroom as well in the student teachers, and instill the quality of cognitive self management in the students and in teachers.

5.18.0 SUGGESTION FOR FURTHER STUDIES

The present research was limited to Secondary School schools of Vadodara in Gujarat. The researcher would like to suggest some more area and issues for the further studies which are as below:

- ❖ Studies should be conducted in Cognitive Self management and Multiple Intelligence and its effect on academic achievement of Secondary students, due to the paucity in researches in this area of study.

- ❖ The studies could be conducted with a little bigger sample.

- ❖ Similar study can be conducted into other standards and in different affiliated boards.

- ❖ Studies could be studied along with few personal, social and academic variables.

- ❖ Research studies on instruction using with Multiple Intelligences curriculum can be pursued by the researchers.

- Similar studies can be conducted with sample like, children with special needs, differently abled etc

5.19.0 CONCLUSION

In a society where education is so vital, it is important to have students catch up and get ahead in different skills. This can be accomplished through purposeful teaching of specific skills and strategies. Students are asked to take on multiple roles and to learn many different skills in educational institutions.

The present study was conducted with the objective to determine the level of Multiple Intelligence, Cognitive Self Management on academic achievement of secondary school students and to determine the relationship among these variable**.**

The major implication of the study is in favor of the student community it helps the students to discover their own strengths. The investigator was inspired to use Gardner's Multiple Intelligences theory in this study because, if this theory is incorporated in the present education system, each child can succeed in their educational pursuits as there are many possible path ways to learning. Effective usage of cognitive self management strategies will enhance both cognitive and skills such as Positive focus, problem solving, self efficacy and reasoning etc. These strategies help the learners to their successful learning in the teaching learning process.

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APPENDIX

APPENDIX – A

MULTIPLE INTELLIGENCES SCALE

**(Developed and standardised by Terry Armstrong(1998)
but further modified and standardized by Rekha V.)**

INSTRUCTIONS :

The Questionnaire consists of 80 questions which cover eight Multiple Intelligences. Read each question carefully. There are five choices.

Mark the responses which suits you. There is no right or wrong answer.
The responses should be true and honest. Be fair.
Do not exaggerate or underrate yourself.

Answer all the items in the response sheet frankly.

Your responses will be kept confidential and used only for the purpose of research.

SN	ITEMS	ALWAYS	MANY TIMES	SOME TIMES	NEVER	DONT KNOW
1	**Is Language one of your favorite subjects at school?**					
2	**How well did you learn the alphabets and words in nursery school?**					
3	**How well do you construct sentences in languages?**					
4	**Do you ever use a dictionary to know the meaning of a word that you come across?**					
5	**Are you good in grammar of languages?**					
6	**Is it easy for you to explain your ideas, feelings and facts to others?**					
7	**Do you enjoy working on writing projects, given at school?**					
8	**Do you enjoy debates, discussions and public speaking?**					
9	**Do you like cross-words, word puzzles, and word-building?**					

10	**Do you enjoy reading books, magazines and websites?**					
11	**Do you enjoy logic puzzles like 'Sudoku'?**					
12	**Was it easy for you to learn subtraction?**					
13	**Was it easy for you to learn how to divide?**					
14	**Is Mathematics your favourite subject at school?**					
15	**How difficult was it for you to learn numbers and counting?**					
16	**How well do you solve complex Arithmetic problems?**					
17	**Do you like to be systematic and thorough in whatever you do?**					
18	**Do you get frustrated with disorganized people?**					
19	**Do you like to think through a problem carefully, considering all the consequences?**					
20	**How well do you remember telephone numbers?**					
21	**Is drawing and painting your favourite co-curricular activity/hobby?**					
22	**Do you tend to get lost, when you are alone in a new place?**					
23	**Do you find graphs and charts easy to understand**					
24	**How well can you read Maps and Blue prints?**					
25	**Are you good at constructing geometrical figures?**					
26	**Do you enjoy rearranging a room and redecorating it with drawings, posters and pictures?**					
27	**Do you recall things as mental pictures?**					
28	**Are you good at craft work in school or at home in holiday**					
29	**Do you enjoy all kinds of entertainment media like video, cinema, computer graphics, 3d Animation**					
30	**Do you like to create designs for houses, cards, clothes or other new things?**					

31	**Do you play any outdoor sport?**					
32	**Are you good at athletics in school?**					
33	**Do you use learning by doing method?**					
34	**Do you like working with tools?**					
35	**How well can you run, jump or hop around?**					
36	**How often do you want to do things like riding a bicycle playing foot ball?**					
37	**How well can you use your body or face to act like someone in a movie, your teacher or friends**					
38	**How well do you use your hands for throwing a ball or juggling?**					
39	**How well can you dance or move to a beat?**					
40	**How well have you been physically co-ordinated?**					
41	**Is Music very important to you?**					
42	**Do you hum or sing to yourself?**					
43	**Do you love attending music classes in School?**					
44	**Do you put 'on' music in the background always?**					
45	**Can you play a musical instrument?**					
46	**Does singing and playing an instrument make you feel happy?**					
47	**Do you often have a tune or song playing in your head?**					
48	**Do you enjoy different kinds of music like classical, Bhavgeetha, folklore, filmy and western music?**					
49	**Do you dream of becoming a musician or a singer?**					
50	**Can you identify most sounds without seeing what causes them?**					
51	**Are you a very social person and enjoy being with other people?**					
52	**Do you like to play in teams?**					

53	**Do you have friends in other classes and near your house?**					
54	**Do you find it easy to talk to strangers? (new people)**					
55	**Were you ever the leader at school or among friends?**					
56	**Can you influence or convince people if you wish to?**					
57	**Can you make out easily whether some one likes you or dislikes you?**					
58	**Do you care a lot about how people around you feel?**					
59	**Do you get upset if you see someone cry and you be not able to help?**					
60	**Do your friends come to you for emotional support and advice?**					
61	**Do you like to spend time alone?**					
62	**You like to learn about Yourself?**					
63	**Can you identify your moods or how you feel?**					
64	**Do you like to meditate?**					
65	**Are you aware of your strengths and weaknesses?**					
66	**Do you set plans, aims and goals for the future?**					
67	**Can you predict your feelings and behaviors in certain situations fairly accurately?**					
68	**How well do you know your skills and abilities?**					
69	**Is it easy for you to concentrate?**					
70	**Have you ever thought about what you want to be when you are grown up?**					
71	**Is Biology/Science one of your favorite subjects in School?**					
72	**Is it easy for you to understand and care for an animal?**					
73	**Do you enjoy working in a garden?**					
74	**Would you like to be a doctor for animals?**					

75	**Do you like to visit zoo's national parks and forests to see and study about animals?**					
76	**Do you find it very easy to learn about different kinds of plants?**					
77	**Do you like to spend time with nature?**					
78	**Do you like to go around and collect different types of leaves, flowers, seeds and fruits?**					
79	**Do you go out for exploring nature, trekking, adventure camps etc?**					
80	**Do you have extra interest and skills in science experiments participate in science clubs, nature study etc?**					

SN	STATEMENT NO.	DIMENSIONS
1.	1 - 10	Verbal linguistic intelligence
2.	11 - 20	Logical/mathematical intelligence
3.	21 - 30	Visual/spatial intelligence
4.	31 - 40	Bodily/kinesthetic intelligence
5.	41 - 50	Musical/Rhythmic intelligence
6.	51 – 60	Interpersonal intelligence
7.	61 - 70	Intrapersonal intelligence
8.	71 - 80	Naturalistic intelligence

SCORING KEY

The responses are recorded against each statement under the five point scale namely:
Always, Many times, Sometimes, Never, I don't know

RESPONSE	SCORE
Always	**4**
Many times	**3**
Sometimes	**2**
Never	**1**
I don't know	**0**

APPENDIX – B

COGNITIVE SELF MANAGEMENT SCALE

Prepared and Standardized by T. Usha Kumari
(Based on the tool of Stephanie Rude, 1980)

DIRECTIONS: This test intends to assess your Learning factors.
Below is a list of statements and there are three alternatives against each statement representing the three ways in which one can response to these statements, they are:
1: Always ; 2 : Sometimes ; 3 : Never
Read it carefully and respond honestly.

SN	ITEMS	1	2	3
1.	I give importance to flattering than being criticized or neglected.			
2.	When I approach a challenging task, I am thinking positively.			
3.	Iam pleased and encouraged by even small or partial success.			
4.	I spend time thinking and enjoying my success.			
5.	If something good happens, I spend more time thinking about it than if something bad happens.			
6.	I generally deal with failures and rejections by gradually looking on the positive side and finding new strategy.			
7.	I usually give a 'pat on my back 'for even small achievements.			
8.	I give myself emotional support much as one friend would give support.			
9.	I can usually overcome any initial difficulties I experience in learning something new.			
10.	I avoid starting tasks because I doubt I will be able to do it.			
11.	Once I set my mind to do something Iam confident that I'll will do it.			
12.	I generally take responsibility of accepting my work and behaviour, when things go wrong.			
13.	If I have trouble in achieving a goal, I tend to figure out where the problem lies and then correct it.			
14.	I set up a step – by – step plan, for what I want to accomplish.			
15.	If a task seems too big, I break it down into smaller parts and take one step at a time.			
16.	If something bad happens, I think, there is nothing to be done and I stop thinking of it.			
17.	I can't control myself thinking on things that went wrong.			
18.	Insecurities or other negative feelings often make it difficult for me to think and perceive a situation at the earliest.			
19.	I have difficulty maintaining a constructive /positive attitude.			

20.	When I approach a challenging task I tend to thinking a lot about what might go wrong.			
21.	I feel little confidence and am very tensed when approaching a new task.			
22.	I try to blame myself for things that go wrong.			
23.	I often react to a failure or setback by feeling extremely low.			
24.	My expectations of myself achieving success in a task are often too high for me to reach.			
25.	I don't agree to bring my goals to a lower level when I can't see to achieve it.			
26.	If I do something wrong, I tend to make myself suffer.			

SCORING PROCEDURE

Taken five dimensions based on theory: Positive focus; Systematic problem solving and task efficacy; Self blame; Reasonable goal setting

CSM scale	Item numbers
1. Positive focus	1,3,5,9,1013,14,21
2. Systematic problem solving and task efficacy	7,11,12,17,19,23,25
3. Self blame	2,6,8,15,20,22,26
4. Reasonable goal setting	4,16,18,24,26

The tool has both positive and negative items and responses marked as follows:

RESPONSES	SCORE	
	POSITIVE	NEGATIVE
Always	3	1
Sometimes	2	2
Never	1	3

SCORING KEY

QUESTION NO	SCORE BASIS	ONE	TWO	THREE
1.	Negative	1	2	3
2.	Positive	3	2	1
3.	Positive	3	2	1
4.	Negative	1	2	3
5.	Positive	3	2	1
6.	Negative	1	2	3
7.	Positive	3	2	1
8.	Negative	1	2	3
9.	Positive	3	2	1
10.	Negative	1	2	3
11.	Negative	1	2	3
12.	Positive	3	2	1
13.	Positive	3	2	1
14.	Positive	3	2	1
15.	Negative	1	2	3
16.	Negative	1	2	3
17.	Positive	3	2	1
18.	Negative	1	2	3
19.	Positive	3	2	1
20.	Negative	1	2	3
21.	Positive	3	2	1
22.	Negative	1	2	3
23.	Positive	3	2	1
24.	Negative	1	2	3
25.	Positive	3	2	1
26.	Negative	1	2	3