Introduction
CHAPTER – 1

INTRODUCTION

Education is one of the most powerful mechanisms for developing intellectual prowess; that meaningful interaction with adults, peers, and the environment is essential in mediating the learners intellectual development; that learning is a continual transformation of inner perceptions, knowledge and experiences; and that all human beings have the potential to continually develop their intellectual powers throughout their lives. [Costa, 2001].

“Let us think of education as the means of developing our greatest abilities, because in each of us, there is a private hope and dream which fulfilled can be translated into benefit for everyone and greater strength for our nation” Quotes John F. Kennedy.

Development of ability has a close bearing on education. The purpose of education is not only instilling knowledge but also discovering human intelligence and guiding them to evolve as well [Chen, et al., 2005]. If we want our schools to prepare students for the challenges they will face after they leave, we must constantly pose challenges in school that force them to invoke a variety of intelligences, they should involve a variety of intelligences, they should encourage collaboration, and they should provide opportunities for reflection [Summary at the II National Symposium: Application of Multiple Intelligences in research-].

Schools have often sought to help students develop a sense of accomplishment and self confidence. Furthermore, if we want our schools to prepare students for the challenges they will face after they leave, we must constantly pose challenges in school that force them to invoke a variety of intelligences. These challenges should have different kinds of solutions, they should involve a variety of intelligences, they should encourage collaboration and they should provide opportunities for reflection. [Brauldi, 1996] this is made possible by incorporating Howard Gardner’s theory of Multiple Intelligences. Which has had a wide audience among educators. It has been interpreted and adapted in many different ways.
Project zero [1967] A basic research group at the Harvard Graduate school of education begun by a noted philosopher of art, Nelson Goodman and co-funded by Howard Gardner, their findings suggest that multiple intelligences help schools in several ways. It offers a vocabulary for teachers to use in discussing children’s strengths and in developing curriculum; it validates the practices of teachers whose work is already synchronous with Multiple Intelligences theory; it promotes or justifies education in diverse art forms; and it encourages teachers to work in teams, complementing their own strengths with those of their colleagues. It also encourages schools to devise rich educational experiences for children from diverse backgrounds. [Krechevsky, M., and Kornhaber, M, 2007].

Multiple Intelligence Theory focuses human’s to real life circumstances, and emphasizes the training of students to solve problems. This connects to the real world, rather than abstract classroom learning, places it close to the true reason humans learn, for this reason, it has caught wide spread attention from various international circles. When Gardner brought up the theory in America in 1983. Furthermore, the theory was extensively applied in the American education system, causing an educational reform [Sternberg, 1988]. With Multiple Intelligence theory spreading across America and all over the world, it produced the following influences on American education.

- Learning abilities : besides giving traditional knowledge of languages, mathematics and physics, education extended to train students to have a greater diversity of living skills.
- Learning setting : besides applying traditional instructional models such as context and teaching materials, education was added contents like learning different signals, presentation for physical movement, music and so on
- Learning assessment : besides traditional assessments like writing tests, it emphasizes multiple assessments.
- Individual differences for learners: it respects an individuals development of abilities and behaviors not concentrating on coherent learning standards and goals.
- Variety of teaching materials and instruction methods: education is no longer based on single teaching material and instruction methods emphasizing variation in teaching materials and instruction methods.
Thomas Hoerr, [2002] opines that, when Viewed through an MI lens, more children succeed, put another way, when teachers offer different pathways for students to learn—rather than just filtering all information and learning through the “Scholastic intelligences” – more students find success in school. An MI approach is “Child-Centered”. Educators begin by looking at how the child learns and then work to develop curriculum, instruction and assessment based on this information. [Conversely, in most schools, a “Curriculum-Centered” approach is used as educators bend the students to fit the curriculum].

The current research adds to a small group of studies that tries to find a relationship between Multiple Intelligences with Creativity and Achievement Motivation.

An awareness of multiple-intelligence theory has stimulated teachers to find more ways of helping all students in their classes. Some schools do this by adapting curriculum. In “Variations on a Theme: How teachers Interpret Multiple Intelligences Theory”. [Educational Leadership, Sep 1997]. Linda Campbell describes five approaches to curriculum change; * Lesson design, * Interdisciplinary units, * Students projects, * Assessments and* Apprenticeships. With an understanding of Gardner’s theory of Multiple Intelligences teachers, school administrators, and parents can better understand the learners in their midst. They can allow students to explore and learn in many ways, understand and appreciate their strengths, and identify real-world activities that stimulate more learning. [Guignon A., 1998].

Using M.I has several implications for teachers in terms of class-room instructions. They have realized that all the seven intelligences are needed to productively function in society and teachers should consider all intelligences as equally important. Thus the theory implies that educators should recognize broader range of talents and skills [Brualdi, A.C. 1996]. Teaching can change from something that is done by individual teachers to a collaborative, endeavor in which the entire faculty works and grows together.

As children do not learn in the same way, they cannot be assessed in a uniform fashion. Therefore, it is important that a teacher should develop “intelligence profiles” for each students knowing how each student learns will allow a teacher to make more informed decisions on what to teach and how to dissipate information [David. L., 1992].
The Multiple Intelligence theory has caught the attraction of the educational community rather than the psychological community mainly because the educators are striving day in and day out, to develop pedagogies that help children to learn well. In this context, the emergence of Multiple Intelligence theory was a blessing in disguise which endorses the following aspects:

- We are not all the same;
- We do not all have the same kinds of minds;
- Education works most-effectively for most individuals if these differences in mentation and strengths are taken into account rather than denied or ignored.

Therefore this novel theory invites the research faculty to study its relationship with various other aspects of education, its effectiveness in schools of different cultures.

1.1. BACKGROUND OF THE STUDY

1.1.1 The Traditional Concept of Intelligence

Humans have pondered about the nature of intelligence for centuries. Intelligence is considered to be one of the most desirable personality qualities in today’s society. Expectant parents are told to read and play music to the fetus, in order to stimulate its brain. Being bright is often thought of as one of the keys to success in life, and highly intelligent people such as Albert Einstein are celebrated. However, despite all the tests and criteria that measure intelligence, the question still remains: What is intelligence? How can it be measured? Is there only one kind of intelligence, or do humans possess several? These seemingly simple questions have proved to be some of the most perplexing and contentious topics in both public and scientific circles. [Andoh-Dawson, 2001].

Intelligence is very hard to define, Psychologists also differ from one another in their concept and definition. The concept of “intelligence is a highly argumentative topic for majority of the psychologists”. The description of intelligence is focused on the individual trait which is the ability to understand, think, reason and other cognitive processes. The concept of intelligence seems to be a broad field which has occupied many researchers for years without they reaching a definite conclusion. We talk about an intelligent student, a prudent officer, a wise woman, a shrewd business man etc. in day to day life, yet we cannot find a universally accepted definition.
Psychologists and philosophers feel they have not yet found a valid answer to the question of what intelligence is and how the mind is structured. Sternberg [1985, 1987] regards the concept of intelligence to be a most elusive one similar to Nickerson et al., [1993], who also regards intelligence to be a dynamic concept. This concept in his opinion though can be described using information processing theory of the nature of human intelligence has to be viewed in terms of mental processes Which contribute to 'Cognitive task performance'.

Goertzel [1993], agrees with Sternberg and Nickerson et.al., He claims that the theories on intelligence are not theories of the same thing but represent different aspects of it. Yet, it's the key to understanding the mind. So Goertzel says it cannot be found in contemporary psychology but in a new field called "complex system science" which is based on the idea that complex systems are systems which - like immune systems, ecosystems, societies, bodies and minds have the capacity to organize themselves". Some theorists believe that intelligence is a basic ability that affects the performance on all cognitively oriented tasks. Consequently an "intelligent" person will do well in computing mathematical problems, in analyzing poetry, in taking history essay examination and in solving riddles and problems.

Historical Perspectives of Intelligence

The etymological derivation of the word "Intelligence" is derived from a Latin verb "intelligere" which derives from "inter-leggere" meaning to "pick out" or discern. Later a Latin philosopher "Ceceron", used the word "intelligence" to describe the phenomenon of intellectual ability.

To begin with let us examine Binet and Simon, 1916, they have defined intelligence in a full-fledged manner in the following way, "it seems to us that in intelligence, there is a fundamental faculty, the alteration or the lack of which is of the utmost importance for practical life. This faculty is 'Judgment', otherwise called 'good sense', 'practical sense', 'initiative', the faculty of adopting one's self to circumstance. A person may be a moron or an imbecile if he is lacking in judgment; but with good judgment he can never be either. Indeed the rest of the intellectual faculties seem of little importance in comparison with, judgment".

David Weschler - defines that "the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment".
Intelligence is defined according to Wikipedia as: "A property of the mind, that encompasses many related mental abilities such as the capacities to reason, to plan, to solve problems, to think abstractly, comprehend ideas, to use language, and to reason". The definition goes on to include other elements such as creativity and personality. But also suggests that these aren't necessarily accepted characteristics, so they are left out.

**Theories of Intelligence**

Theories of intelligences basically are classified into two different group of theories. 1] Factor theories of intelligence, 2] Process oriented theories of intelligence.

**I. Factor Theories of Intelligence**

The theories interested in identifying "the fact of factors" which constitute intelligence, and the theories that have enunciated with this concept are called the factor theories. The Factor theories of intelligence constitute: The *unitary theory* or *monarchial theory*: Which says that there is a single ability intelligence underlining the various intelligent behavior that people show on the surface.

**Two Factor theory of intelligence or Spearman's G-factor theory:**- One of the pioneering psychologists who attempted to explain the concept of intelligence, Charles Spearman [1904] proposed that a broad general intelligence [G] factor lies beneath the surface. According to Spearman, factor "g" appears in the same extent in all human abilities. Spearman [1927] argues that this factor is identified as inherent mental energy, and each individual intellectual task taps both general intelligence, of ‘G’ and some other ability, ‘S’ specific to that particular task.

**Multifactor Theories**

Multifactor theorists have concluded that intelligence has multiple components. It can be inferred that intelligence includes a number of factors like, a memory factor, a numerical-ability factor and many more. The theories proposed are known as multifactor theories they are as follows.

**L.L. Thurstone [1938] ‘Multifactor Theory’**: He has identified factors which he called primary mental abilities. They included Numerical factor, Verbal Factor, Spatial factor, Word fluency factor, Perceptual factor or Reasoning factor. Thurstone assembled a battery of tests to measure these abilities.
P.E. Vernon, [1950] ‘Vernon's hierarchial theory’: He proposed that elements of G-factor theory and the multifactor theories be combined to form a hierarchical theory. In this theory, intelligence is depicted as a sort of pyramid. At the top of the pyramid is ‘G’, ‘general intelligence’, which shows up in virtually all kinds of intellectual activity. Underneath it are several moderately specific ability factors. This hierarchical theory borrows from several factor theories to form a multilayered view of intelligence. This theory seems to be the most reasonable of all.

J.P. Guilford [1967]. Structure of the Intellect: The three dimensional cubeshaped model, includes five content categories [visual, auditory, symbolic, semantic, and behavioral], six operation categories [evaluation, convergent production, divergent production, memory retention, memory recording, and cognition], and six product categories [units, classes, relations, systems, transformations, and implications]. The intersection of the three categories provides a frame of reference for generating one or more new hypothetical factors of intelligence. Each factor is represented by a cell in the cube and in some combination of these three dimensions: [1] Five kinds of operations, [2] Six kinds of products, and [3] four kinds of contents \(5 \times 6 \times 4 = 120\). Guilford's concept of the structure of the intellect also includes divergent thinking, which is closely related to creative or original, problem solving in contrast to convergent thinking, which is involved in solving problems with a single correct answer.

The second group of theorists have centered on the process involved in solving problems or planning how to remember something, think abstractly etc.

**II. Process-Oriented Theories of Intelligence**

These theorists concentrate on the intellectual processes and the patterns of thinking that people use when they reason and solve problems. They are interested in cognition and cognitive processes rather than intelligence.

**Piaget's Theory**

Jean Piaget [1970] is one of the most prominent process theorist. In Piaget's view, intelligence is an adaptive process that involves an interplay of biological maturation and interaction with the environment. He views intellectual development as an evolution of cognitive processes such of grammar, and mathematical rules. Piaget theorized that the learners' interactions lead to structural changes in how they think about something as they assimilate and accommodate incoming data.
**Bruner's Theory**

Jerome Bruner [1973] is a process theorist who sees intellectual development partly as a growing reliance on internal representation. Babies, according to Bruner, have a highly action oriented form of intelligence; they "know" an object only to the extent that they can act on it. Young children know things by perceiving them and are consequently strongly influenced by the vivid perceptual characteristics of objects and events. Older children and adolescents know things internally as symbols or representations of objects or actions to hold these mental images in mind. Bruner is interested in how these growing abilities are influenced by the environment especially by the rewards and punishments people receive for using particular intellectual skills in particular ways.

**Information Processing Theories**

They are the most famous process oriented approaches. These theories break intelligence down into various basic skills that people employ to take in information, process it, and then use it to reason and solve problems.

Robert Sternberg [1984] distinguishes between information processing "components" and "meta components". Components are the steps one goes through to solve a problem; meta components are the kinds of knowledge one has about how to solve the problem. Sternberg's idea is that we use meta components which are closely related to the kind of general intelligence proposed by Spearman. Sternberg is researching how the components and meta components relate to each other during various intellectual activities and how both grow more complex during development.

**The Three Stratum Theory**

John B. Carroll [1964] proposed the 'Three Stratum Theory,' which is a hierarchical model of intellectual functioning. The strata has three different levels of generality over the domain of cognitive abilities. At the bottom is the first stratum, which is represented by narrow abilities that are highly specialized [e.g., induction, spelling ability]. The second stratum is represented by broad abilities that include moderate specialization in various domains. Carroll identified eight second stratum factors: fluid intelligence, crystallized intelligence, general memory and learning, broad visual perception, broad auditory perception, broad retrieval ability, broad cognitive speediness, and processing speed [reaction time decision speed].
Liquid and crystallized theory of intelligence

Raymond B. Cattell [1952]. The theory of "fluid and crystallized general abilities," will be found to be not one factor but two principal classes or dimensions. One is crystallized ability "gc" which influence the process of early learning life experience, and the cognitive performance will become crystallized as a result of experience. The second one fluid ability "gf" is a outcome of the influence of biological factor on the intellectual development. The factor "gf" is under the control of the brain and strong genetic factor. This factor influences all the mind abilities. The fluid intelligence [gf] is depending on genetic structure of brain function. The changes in the fluid intelligence are related to growing up process and also the generation of the brain cell. Crystallized intelligence [gc] develop the fluid intelligence in the process of learning and gaining life experience. People in the oldest age also have high effect of the characteristic intellectual function. The crystallized intelligence are determined by culture. Crystallized abilities continue to improve as individuals age.

Cognitive Theories

American psychologist Lee cronbach, a leader in the testing filed argued that “some psychologists study individual differences and others study commonalities in human behaviour but never do the two meet” in an address to the American Psychological Association in 1957. He urged the two groups to unite the “two disciplines of scientific psychology” this gave a start to the development of cognitive theories of intelligence and of the underlying processes explained by these theories. A number of cognitive theories of intelligence have evolved. Among them is that of the Earl B. Hunt, Nancy Frost, and Clifford E. Lunneborg, [1973] showed one way in which psychometrics and cognitive modeling could be combined. Instead of starting with conventional psychometric tests, they began with tasks that experimental psychologists were using in their laboratories to study the basic phenomena of cognition, such as perception, learning, and memory. They showed that individual differences in these tasks, which had never before been taken seriously, were in fact related [although rather weakly] to patterns of individual differences in psychometric intelligence test scores. These results, they argued, showed that the basic cognitive processes might be the building blocks of intelligence.
Allen Newell and Herbert A. Simon, in the late 1950s and early 1960s they worked with a computer expert, Clifford Shaw, to construct a computer model of human problem solving. Called the General Problem Solver, it could solve a wide range of fairly structured problems, such as logical proofs and mathematical word problems. Their program relied heavily on a heuristic procedure called “means-ends analysis,” which, at each step of problem solving, determined how close the program was to a solution and then tried to find a way to bring the program closer to where it needed to be.

All of the cognitive theories described so far have in common their primary reliance on what psychologists call the serial processing of information. American psychologists David E. Rumelhart and Jay L. McClelland, Proposed what they call “Parallel distributed processing” models of the mind. These models postulated that many types of information processing occur at once, rather than just one at a time.

Psychometric Approach of Intelligence

The most influential approach to understanding intelligence with the most supporters and published research over the longest period of time is based on the psychometric testing. It is also by far the most widely used in practical settings. The first test was the Binet and Simon test developed by French Psychologists Alfred Binet and Theodre Simon, together. Binet and Simon’s intelligence scale was first published in 1905. Later various tests were developed like. Stanford- Binet, Raven's progressive matrices, Wechsler Adult Intelligence Kaufman assessment battery for children scale, Bhatia's battery, Cartel's culture fair test of intelligence, etc.

1.1.2 Critics of traditional concept of Intelligence

Critics of IQ testing maintain that the idea of general intelligence is deceptive, and that no such global, mental capacity exists. They believe that intelligence is more of a result of an individuals opportunities to learn skills and information valued in a particular cultural context [Scientific American]. They emphasize that successful learning in school depends on many personal characteristics such as persistence, interest in school, and willingness to study. Encouragement for academic achievement received from friends, family, teachers is also important together with other cultural factors.
Another criticism of IQ tests is that their predictive capacity of the tests declines when they are used to forecast outcomes in later life, such as job performance or salary.

Moreover, IQ predictions becomes less effective once populations, situations or tasks change. One study found that IQ positively predicts leadership success in low stress conditions. But in high-stress situations, the tests actually negatively predict success [Scientific American website].

Western thought based IQ tests cannot be applied to other cultures, which may have differing values and world views. This lends strong support to the notion of the existence of several kinds of intelligence, and recent theories argue for a further extension of the concept of intelligence to include these other classes or kinds of intelligences.

Robert Sternberg and Todd Lubart maintain “Rather than put obstacles in their paths, let’s do all that we can to value and encourage the creativity of students in our schools”. The eminent cognitive psychologist, Jerome Bruner challenged us, with growing evidence, to expand our understanding of what we commonly define as Intelligence. During most of his life Bruner struggled with the notion that schools limit intellectual growth most through their limiting focus on a fixed model of the learner.

Prominent current researchers of human intelligence, such as Robert Sternberg, Howard Gardner, Daniel Goleman and especially Stephan Jay Gould are great critiques of the single dimensional concept of Intelligence. They argue that IQ tests measure only a restricted aspect of human intellectual ability. Stephen Jay Gould was one of the most vocal critics of intelligence testing. In his book, the Mismeasure of Man. Gould argued that intelligence could not be quantified to a single numerical entity. He also challenged the hereditarian viewpoint on intelligence. These researchers also highlight the crucial importance of considering the cultural context for a fair evaluation of performance. They have propounded the following theories that give explanation to broader concept of intelligences.
Triarchic theory of intelligence

Robert Sternberg [1985] proposed the triarchic theory of intelligence to provide a more comprehensive description of intellectual competence than traditional differential or cognitive theories of human ability. The triarchic theory describes three fundamental aspects of intelligence.

- ‘Analytic intelligence’ comprises the mental processes through which intelligence is expressed.
- ‘Creative intelligence’ is necessary when an individual is confronted with a challenge that is nearly, but not entirely, when an individual is engaged in automatizing the performance of a task.
- ‘Practical intelligence’ is bound in a socio cultural milieu and involves adaptation to selection of, and shaping of the environment to maximize fit in the context. Now, the triarchic theory has been updated and renamed as the theory of successful intelligence by Sternberg.

Multiple Intelligences Theory

This theory of human intelligence developed by the psychologist Howard Gardner, suggests there are at least seven ways that people have of perceiving and understanding the world. Gardner labels each of these ways as distinct “intelligence” – in other words, a set of skills allowing individuals to find and resolve genuine problems they face.

Emotional Intelligence

Psychologists John Mayer and Peter Salovey, introduced the concept of emotional intelligence in the early 1990s. Emotions are internal events that coordinate, many psychological subsystems including physiological responses, cognitions, and conscious awareness. They usually arise in response to a persons changing relationships. Mayer and Salovey define emotional intelligence as “The ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth” [Emotional Intelligence Informational website]. They further defined four critical areas of the theory.

1. ‘Identifying emotions’, the ability to recognize how you and those around you are feeling.
2. ‘Using emotions’, the ability to generate emotion, and then reason with this emotion.
3. *Understanding emotions*, the ability to understand complex emotions and how emotions transition from one stage to another and

4. *Managing emotions*, the ability which allows one to manage their emotions.

**1.1.3 Evolving perspectives on Intelligence**

Most of the times, we use the term ‘Intelligence’ in a general way, we use this term without referring to a specific kind. In the field of ‘Education’ or ‘Science’, or research or in any other professional fields like Military or business, whenever we are using the intelligence tests like, Binet Stanford scale of Intelligence, Raven’s Progressive Matrices, Bhatia’s Battery, which measures our I.Q. we feel that it measures only a part of our intelligence namely, verbal, numerical and a bit of spatial. Probably our intelligences do not end there.

Many psychologists, like Howard Gardner, Robert Sternberg, Daniel goleman and especially Stephan Jay Gould, were great critiques to this kind of single dimensional, traditional concept of intelligence called as the ‘*g-factor*’ for ‘general intelligence’.

Slowly ‘evolution’ towards the development of the concept of more than one kind of intelligence, i.e., number of different kinds or the concept of ‘*Multiple Intelligences*’ began. Robin Fogarty [1998] explains about our changing perspectives of intelligence in the book Developing Minds by [Costa L.A., 2001] as follows:

“*The times they are a – changing*” is the way Bob Dylan described the 1960’s. The times and the thinking did change. Indeed, in the decades that followed the political turbalance of the 60’s, the thinking about human intellectual potential produced a turbalance of its own. Traditional theories about intelligence were questioned and previously accepted theory eventually was turned upside down- and inside out.

As we reflect on how the view of human intelligence has expanded during the past 20 years, we can truly say,

“*We have come a long way*”. The notion that intelligence is a static, known and quantifiable entity [Gould, 1981] that can be represented by a little-changing intelligent quotient [IQ] is under scrutiny.
The following paragraphs discuss the spectrum of theories that have enabled us to develop a changing perspective of intelligence. The theoretical designs are drawn from various fields ranging from cognitive psychology to neurobiology. They have set the foundation for sound pedagogy and a teaching repertoire of best practices.

The following psychologists philosophers, neurobiologists, in general eminent scholars have influenced greatly to develop a modern concept of intelligence. The influence of each of these eminent scholars is evident in classrooms throughout the world. Let us examine a few theories that have come to light in the recent times.

Social Interactions by Vygotsky [1978]

According to Vygotsky [1978] an individual first learns through a social setting of person-to-person or inter-personal interactions and then personally through an internalization process that leads to deep understanding.

Multiple Intelligences Theory by Dr. Howard Gardner [1983]

The Multiple Intelligences Theory is a psychological and educational theory put forth by the psychologist, Dr. Howard Gardner, a Professor at the Harvard University in the year 1983. Gardner's gift to the classroom is in his conceptualization of intelligence as multifaceted and multidimensional [1983]. He defines human potential in terms of the ability to solve problems in a culturally valued setting. He has identified 7 core intelligences in the book, “Frames of mind” – The theory of Multiple Intelligences and two more later in the book, “Intelligences Reframed” in 1999. Gardner's Categories of Intelligences:  

- Verbal - Linguistic Intelligence: Logical - Mathematical Intelligence: Visual - Spatial Intelligence: Bodily - Kinesthetic Intelligence: Musical - Rhythmic Intelligence: Interpersonal Intelligence: Intrapersonal Intelligence: Naturalistic Intelligence: Existential - Spiritual Intelligence:

These multiple intelligences work in various combinations as students interact in the execution of complex problems.
Triarchic theory of intelligence by Sternberg [1985]
Sternberg [1985]: Proposed the triarchic theory on intelligence as a factored model. The theory provides a more comprehensive description of intellectual competence than traditional differential or cognitive theories of human ability. The triarchic theory describes three fundamental aspects of intelligence. 'Analytic intelligence', 'Creative intelligence', 'Practical intelligence'

Emotional Intelligence by John Mayer and Peter Salovey [1990]
Mayer and Salovey define emotional intelligence as "The ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth" [Emotional Intelligence Informational website]. They further defined four critical areas of the theory. 'Identifying emotions', 'Using emotions', Understanding emotions, Managing emotions,

Cognitive Modifiability by Feuerstein [1990]
Feuerstein [1990], transformed thinking about intelligence and human potential. His theory of cognitive modifiability refutes the concept of a static and unchanging IQ and opens the meta cognitive realm of the classroom to intense examination.

Enriched Environments by Diamond [1990]
Marian Diamond describes the growth of dendrites in the brain as "magical trees of the mind," she shows a closed hand opening to demonstrate the flowering of the dendrites with stimuli-rich environments. As she speaks of an impoverished environment, she shows how the dendrite shrivel by slowly closing her hand into a small circle.

Multiple Intelligences by Tony Buzan and Raymond Keene
Tony Buzan and Raymond Keene have given a list of 10 multiple intelligences in their book, Book of Genius, which are more similar to Gardner's Multiple Intelligences these are as follows: Genius quotient, Verbal intelligence, Numerical Logical intelligence, Engineering / Spatial intelligence, Sensual intelligence, Body / Kinesthetic Intelligence, Creative Intelligence, Intra-personal Intelligence, Inter-personal Intelligence, Spiritual Intelligence.
Emotional Intelligence by Daniel Goleman [1995]

Goleman [1995] developed his idea of an emotional intelligence in the mid-1990s. Within his theory, he delineates five distinct domains: self-awareness [self-confidence and self-decisiveness]; self-regulation [controlling impulsivity and handling emotions]; motivation [hope, initiative in goal setting, zeal]; empathy [reading others feelings, caring]; and Social skill [influence, leadership, team building].

Learnable Intelligence by Perkins [1995]

Perkins [1995] presents one of the more palpable views of intelligence when he argues for what he calls "learnable intelligence". Perkins poses the idea of a neural intelligence that contributes to efficiency; an experiential intelligence that stores personal experience in diverse situations; and a reflective intelligence that contributes knowledge, understanding and attitudes about how to use the mind in intelligent behaviour.

Computational Theory of Mind by Pinker [1997]

Relying on the work of Newell, Simon, Minsky, Putnam, and Fodor, Pinker [1997] envisioned the "computational theory of mind" what the brain does to allow us to see, feel, think, choose, and act. Pinker explains the mind by "reverse-engineering" it, by tracing the process of natural selection to see what nature intended the mind to be able to do as it evolved.

Moral Intelligence by Coles [1997]

Using character development as the basis of intelligence, Coles [1997] contends that moral intelligence is a valid theory. Coles shows how children can become "smarter" in their inner characters and can learn empathy, respect, and how to live by the golden rule. The theory is founded on how values are born and shaped through the "moral archeology of childhood."

Successful intelligence by Sternberg [2000]

Sternberg and Grigorenko [2000] propose successful intelligence. They argue for three types of intelligence: analytical [compare, analyze, judge, evaluate]; creative [invent, imagine, suppose, design]; and practical [practice, implement, show, use]. Based on this theory, analytical intelligence involves verbal abilities; creative,
quantitative, thinking; and practical, spatial thinking. The interaction of the three is necessary for problem solving, decision making, and creative ideation. It is the interactive nature of the three intelligences that creates what Sternberg calls 'Successful Intelligence'.

**Habits of Mind by Costa [2000]**

Costa's theory focuses on 16 habits of mind that he believes characterize how human beings behave when they intelligently deal with problems [Costa and Kallick, 2000]. Those 16 intelligent problem-solving behaviours are persisting; managing impulsivity; listening to others with understanding and empathy; thinking flexibly; thinking about our thinking; striving for accuracy and precision; questioning and posing problems; applying past knowledge to new situations; thinking and communicating with clarity and precision; gathering data through all senses; creating; imagining and innovating; responding with wonderment and awe; taking responsible risks; finding humor; thinking interdependently; learning continuously.

**PASS theory**

PASS theory has been offered as an alternative to general intelligence, and is based on a description of neuropsychological processes. These authors suggested that a unidimensional model with just intelligence fails to assist researchers and clinicians who study learning disabilities, disorders of attention, mental retardation, and interventions designed for special populations who face those challenges. The PASS model covers four kinds of competencies that are associated with areas of the brain. *The planning processes, Attention / Arousal component, Simultaneous processing, Successive processing.*

**Social Intelligence**

Daniel Goleman [2006] cites neurological research that suggests that the human brain is a “social brain” with an innate capacity to bond with others, to empathize with others, to engage in social reasoning, and to have concern for others. He suggests that social prowess, not cognitive or physical superiority is what allowed Homo sapiens to achieve its highest evolutionary accomplishments. Goleman makes the case that intelligence is not all “cognitive” but rather is composed of emotional and social intelligence as well.
1.2 CONCEPTUAL FRAMEWORK OF THE STUDY

Conceptual frameworks are a type of intermediate theory that have the potential to connect to all aspects of inquiry [e.g., title of the problem, purpose, review of related literature, methodology, collection of data and analysis of data].

Conceptual frameworks act like maps that give coherence to empirical inquiry. They take different forms depending upon the research question or problems. Shields and Tajalli [2006] have identified several types of conceptual frameworks [working hypotheses, descriptive categories, practical ideal type, models of operations research and formal hypothesis] for the field of public administration. The frameworks are linked to particular research purposes [exploration, description, gauging, decision making and explanatory prediction] then purpose and methodology [Survey, interviews, analysis of existing data, direct observation, focus groups etc.] and type of statistical technique become obvious.

In the present study the variables, Multiple Intelligences, Creativity and Achievement Motivation have been conceptually framed and explained in the following pages.

The following paragraphs will display why the diligence to these concepts are important. It apparently begins by the construct definitions of each concept.

1.2.1 Multiple Intelligences Theory

The Multiple Intelligences theory by Howard Gardner is one of the most hopeful and revolutionary theories which is most ravingly appreciated and well accepted by all, especially the educators, in comparison to the faculty of psychology.

This theory has had a great impact on restructuring and renewing the education system. The Multiple Intelligences Theory is a psychological and educational theory put forth by the psychologist, Dr. Howard Gardner, a Professor at the Harvard University in the year 1983. Dr. Howard Gardner is a Harvard Scholar eminent psychologist. Basically studied on the development of “children’s cognitive processes” based on Jean Piaget’s work.
Later, he cofunded Project Zero [1967] – A basic research group at the Harvard Graduate School of Education begun by a noted Philosopher of art; Nelson Goodman and Co-funded by Howard Gardner. It focussed studies mainly on ‘artistic thoughts and creativity’. Gardner was influenced by Psychologists – Jeane Piaget, Jerome Bruner and Philosopher Nelson Goodman. Project Zero 1970; was a project on ‘Human Potential’ here his aim was to address, “the state of scientific knowledge concerning Human Potential and its realization. This has been the platform from which Gardner’s “Multiple Intelligences” ideas grew and were subsequently published in Gardners “Frames of Mind – The Multiple Intelligences theory” in the year [1983].

The heart of the theory is the notion that “At the core of our cognitive or intellectual abilities every human being possesses the bio, neuro, and psychological potential for knowing, for acquiring information, for understanding, and for learning in at least eight distinct but interrelated ways-what Gardner called “intelligences” or “frames of mind” [also the title of the groundbreaking book that presents the findings of his original research into the multiplicity of human intelligence].

Further Gardner defines an ‘Intelligence’ as a group of abilities that
- Is somewhat autonomous from other human capacities.
- Has a core set of information processing operations.
- Has a distinct history in the stages of development we each pass through.
- Has plausible roots in evolutionary history.

Gardner’s theory argues that intelligence, as it is traditionally defined, does not encompass the wide variety of abilities humans display. In fact, he challenges the traditional, narrower views of intelligence. Previously accepted ideas of human intellectual capacity contend that an individuals, intelligence is a fixed entity throughout his lifetime and that intelligence can be measured through an individuals logical and language abilities. According to Gardner’s theory, an intelligence encompasses the ability to create and solve problems, create products or provide services that are valued within a culture or society.
The key points of Gardner’s theory are

- All human beings possess all nine intelligences in varying degrees.
- Each individual has a different intelligence profile.

According to him, a child who masters the multiplication table easily need not be more intelligent than the child who struggles to do so. The second child, who is not able to master multiplication table easily need not be more intelligent than the child who struggles to do so. The second child, who is not able to master tables, may be stronger in another kind of intelligence and therefore, learn the tables through another approach or may excel in a field outside Mathematics.

Gardner’s Catagories of Intelligences

Originally, the theory accounted for seven separate intelligences. Which Gardner identified in his book – “The frames of Mind-The theory of Multiple Intelligences”. Subsequently with the publishing of Gardner’s “Intelligences reframed” [1999], two more intelligences were added to the list. The intelligences are:

They are explained in detail in the next paragraphs

1. Verbal - Linguistic Intelligence
2. Logical - Mathematical Intelligence
3. Visual – Spatial Intelligence
4. Bodily – Kinesthetic Intelligence
5. Musical – Rhythmic Intelligence
6. Interpersonal Intelligence
7. Intrapersonal Intelligence
8. Naturalistic Intelligence
9. Existential - Spiritual Intelligence
10. Moral – Ethical Intelligence

1. Verbal - Linguistic Intelligence

Gardner has described Verbal - Linguistic Intelligence as the sensitivity to spoken and written language and the ability to use language to accomplish goals, as well as the ability to learn new languages. According to Gardner (1993), lawyers, public speakers, writers, and poets all possess high levels of linguistic intelligence. People with linguistic or verbal intelligence have a large vocabulary facility with words
language. They are typically good at reading, writing, telling stories, memorizing dates and words. They tend to learn best by reading, taking notes and listening to lectures via discussion and debate. They are also skilled at explaining, teaching and are very good orators. They learn a number of languages very easily especially foreign language. As they have high verbal memory and recalling capacity and an ability to understand and manipulate syntax and structure.

**Careers:** They become very good writers, politicians, teachers, Journalists, Media Persons, etc.

2. **Logical – Mathematical Intelligence**

Gardner described Logical - Mathematical intelligence as the ability to study problems, to carry out mathematical operations logically and analytically, and to conduct scientific investigations. Gardner identified mathematicians, logicians, and scientists as persons who would possess high levels of this hypothesized intelligence.

This area has to do with logic, abstractions, inductive and deductive reasoning and numerical activities. Those with this intelligence naturally excel in mathematics, computer sciences, chess, etc. They are very good at reasoning capabilities abstract pattern recognition, scientific thinking and investigation, and the ability to perform complex calculations.

**Careers:** Which suit this intelligence include scientists, mathematicians, lawyers, doctors and philosophers.

3. **Visual – Spatial Intelligence**

Gardner defined Visual - Spatial intelligence as the ability to recognize both large and small visual patterns. He suggested that navigators and pilots would possess high levels of spatial intelligence, as would sculptors, surgeons, chess players, and architects. This area has to do with vision and spatial judgment. People with strong visual – spatial intelligences are typically very good at visualizing and mentally manipulating objects. They have a strong visual memory and are artistically inclined. They also have a very good sense of direction and possess hand and eye co-ordination.

**Careers:** Which suit them are artistic field, engineering, architecture, driving, pilots.
4. Bodily – Kinesthetic Intelligence

Gardner (1999) described this intelligence as the potential of using the whole body or parts of the body in problem-solving or the creation of products. Gardner identified not only dancers, actors, and athletes as those who excel in bodily-kinesthetic intelligence, but also craftspeople, surgeons, mechanics, and other technicians.

This area has to do with movements and doing. In this category, people are generally good at physical activities. They may enjoy acting or performing and in general they are good at building and making objects. They often learn best by physically doing something, Learning-by-doing, rather than reading or hearing. They use what is called muscle memory (i.e., they remember things through their body, than words or images). They also possess skills and dexterity for fine motor movements, such as those required for dancing, athletics, surgery, craft making etc.

**Careers:** Which suit those with this intelligence include athletics, dance, acting, comedians, builders, artisans, typists and surgeons.

5. Musical – Rhythmic Intelligence

Gardner (1999) suggests that Musical - Rhythmic intelligence is parallel in structure to Verbal - Linguistic intelligence, and that it is reflected in the performance, composition, and appreciation of musical patterns.

This area has to do with rhythm, music and hearing. Those who have musical intelligence display greater sensitivity to sounds, rhythms, tones and music. They normally have a good pitch, and are able to sing, play musical instruments and compose music.

**Careers:** Which suit them are Musicians, singers, conductors and composers.

6. Interpersonal Intelligence

According to Gardner (1983), an individual who is high in interpersonal intelligence understands the intentions, motivations, needs, and desires of others, and is capable of working effectively with them. Gardner stated that teachers, clinicians, salespeople, politicians, and religious leaders all use interpersonal intelligence. This area has to do mainly with the interactions with others. They empathize and
communicate easily with others, they become leaders or followers. They are usually extroverts, and are categorized by their sensitivity to others’ moods, feelings, temperaments and motivations.

**Careers:** They become Politicians, Managers, social workers, diplomats, sales personnel, receptionists, etc.

7. Intrapersonal Intelligence

Gardner (1999) described Intrapersonal intelligence as the ability to understand and to have an effective working model of oneself. Intrapersonal intelligence, as conceptualized by Gardner, includes the awareness of one’s own desires, fears, and abilities, and also using this information to make sound life decisions. This area has to do with oneself. Those who are strongest in this intelligence are typically introverts, and prefer to work alone. They are usually highly self aware and capable of understanding their own emotions, goals and motivations. They have an affinity for thought based pursuits such as philosophy, psychology, theology, etc.

**Careers:** Which suit them are philosophers, psychologists, theologists, & writers.

8. Naturalistic Intelligence

Gardner (1999) described a naturalist as one who is able to recognize and classify objects. According to Gardner, hunters, farmers, and gardeners would have high levels of naturalistic intelligence, as would artists, poets, and social scientists, who are also adept at pattern-recognition. Newest of the Intelligence not as widely accepted as others. This has to do with nature, nurturing and classification. Those with this intelligence are said to have greater sensitivity to nature. They have the ability to nurture and grow things. They have a greater ease in caring for, taming and interacting with animals.

**Careers:** They become good scientists, naturalists, conservationists, gardeners, farmers, agriculturist, etc.

9. Existential – Spiritual Intelligence

Gardner (1999) considered existential intelligence as the intelligence of understanding in a large context or big picture. It is the capacity to tackle deep questions about human existence, such as the meaning of life, why we die, what my.
role is in the world. This intelligence seeks connections to real world and allows learners to see their place in the big picture and to observe their roles in the classroom, society and the world or the universe. Existential intelligence includes aesthetic, philosophy, and religion and emphasizes the classical values of beauty, truth and goodness. Those with a strong existential intelligence have the ability to summarize and synthesize ideas from across a broad unit of study. People with this kind of intelligence, have the capacity to raise and reflect on philosophical questions about life, death and ultimate realities.

**Careers:** Which suit them are Philosophers, Spiritual leaders, theologists etc.

**10. Moral – Ethical Intelligence**

They tend to have an intelligence to understand and reflect ideas about moral and ethical ways. These two are yet to be given a status, they are still under consideration.

The present study is mainly focussed on this Multiple Intelligence theory, and the researcher is trying to find what kind of relationship it has with Creativity and Achievement Motivation.

**The Multiple Intelligences Wheel**

![Multiple Intelligences Wheel](image)

**Fig. 1.1 : Depicts the Multiple Intelligences by Dr. Howard Gardner**

Briefly, the eight intelligences can be grouped into three overarching ways of knowing [Gardner, 1983]. The first one of these groups is

1. **Object related Intelligences**: Which are based on the concrete shapes, patterns, colours, images, designs and objects in the external world that we come into contact with and interact with on daily basis. It is the very existence of these so-called objects that “triggers” the related intelligences. In other words, without them the intelligences would have nothing to do. This group contains four intelligences.
   - **Visual – Spatial Intelligence**: deals with such objects as shapes, images, patterns, designs, colours and textures that we observe with our eyes as well as those we can visualize in our “minds eye”.
   - **Bodily – Kinesthetic Intelligence**: deals with the “stuff” or objects of the human body: our extremities, internal organs, facial expressions, postures, and the ability to express thoughts and feelings in and through our bodies, for example in dance, drama, mime, and our “body language”.
   - **Logical – Mathematical Intelligence**: deals with understanding the relationships of concrete patterns and objects observed in the world. Although mathematics and logic often seem to be very abstract, their abstractions are always rooted in the concrete world of objects.
   - **Naturalistic Intelligence**: focusses on the objects of nature; the flora and fauna, the physical world, weather patterns and conditions – all of the “objects” of our environment as opposed to the humanly created world.

2. **Object-free Intelligence**: Unlike the object-related intelligences, do not rely on objects, real or imagined, that exist independently in the external world or that of the imagination.
   - **Musical – Rhythmic Intelligence**: deals with the auditory realms of tones, vibrational patterns, rhythms and beats, and music.
   - **Verbal – Linguistic Intelligence**: deals with the mystery and wonder of human language and communication. Written and spoken words can transport us to other times and places or to realms of fantasy. They can persuade us to change our opinions, values and beliefs. They can move us to action, they can give expression to profound levels of our beings.
3. **Personal Intelligence**: Are grounded primarily in our own “personhood” and in all distinctive aspects of our lives as humans, namely our lives in relation to each other, on the one hand, and our lives as solitary individuals on the other. In some ways these intelligences are two sides of one coin.

- **Interpersonal Intelligence**: deals with our capacities to work with others, to collaborate, to function effectively in a team effort, to empathize with others, to deeply communicate with each other, and to be sensitive and responsive to other’s moods, motives, temperaments, and feelings.

- **Intrapersonal Intelligence**: is rooted in the unique capacity human beings possess to be introspective and reflective. These capacities allow us not only to engage in a full range of metacognitive processes, such as thinking and about improving our thinking and being aware of and taking charge of our emotional beings, but also to explore the so-called “big questions” of our existence – questions of meaning, purpose, significance and what really matters ultimately.

Further the Multiple Intelligences are classified into three different domains by (McKenzie, 2002) which are as follows:

**Multiple Intelligences Domain**

Multiple Intelligences Domain Multiple intelligences consist of three domains: the analytical, introspective and interactive domains. These three domains serve as an organizer for understanding the fluid relationship of the intelligences and how the intelligences work with one another. Teachers can plan lessons and units which effectively address all of the intelligences in the classroom (McKenzie, 2002). Figure 1.1 presents the three domains

![Multiple Intelligences Domains](image)

**Fig. 1.2 : Multiple Intelligences Domains**

What follows is a presentation of each domain and its sub-branches in details.
The Analytical Domain

According to McKenzie (2002), the analytic domain consists of the logical, musical and naturalist intelligences. These are the intelligences that promote analysis of knowledge that is presented to the learner. These three intelligences are considered analytic because they promote the processes of analyzing and incorporating data into existing schema, even though they may have other components. The analytical intelligences are by their nature heuristic processes.

The Interactive Domain

McKenzie (2002) indicates that the interactive domain consists of the linguistic, interpersonal and kinesthetic intelligences. These are the intelligences that learners typically employ to express themselves and explore their environment. These three intelligences are regarded as interactive because they typically invite and encourage interaction to achieve understanding. Even if a student completes a task individually, s/he must consider others through the way s/he writes, creates, constructs and makes conclusion. The interactive intelligences are by their nature social processes (McKenzie, 2002).
The Introspective Domain

![Introspective Domain Diagram]

Fig. 1.5: The Introspective Domain

The introspective domain consists of existential, intrapersonal, and visual intelligences. These are the intelligences that have a distinctly affective component to them. These intelligences are characterized as introspective because they require a looking inward by the learner, an emotive connection to their own experiences and beliefs in order to make sense of new learning. The introspective intelligences are by their nature affective processes (McKenzie, 2002).

Benefits of Multiple Intelligences

Using multiple intelligences theory in the classroom has many benefits. The theory was not originally designed for use in classroom application it has been widely embraced by educators and enjoyed numerous adaptations.

- As a teacher and learner you realize that there are many ways to be “smart”.
- All forms of intelligences are equally celebrated.
- By having students create work that is displayed to parents and other members of the community. The school could see more parent and community involvement.
- A sense of increased self-worth may be seen as students build on their strengths and work towards becoming an expert in certain areas.
- Students may develop strong problem-solving skills that they can use in real life situations.

Approaches for Integrating Multiple Intelligence Into the Curriculum

The Intelligence Curriculum [Lazear, 1992] share four models that represent four different approaches to integrating these intelligences into the curriculum. The four models have been adapted from approaches used in various schools and districts in North America. The goal of each model is to embed the various capacities of the intelligences into the existing curriculum.
Yearlong MI curriculum journey: This approach works with a matrix in which the year’s curriculum content is listed across the top of the matrix and the intelligences are listed down the side. The various capacities for each intelligence are then dragged across the curriculum. The task is to find a home for the various capacities in all areas of the curriculum.

Multiple Intelligences unit stretching: The fundamental intent of this approach is to work with the plans for an existing unit of study or for a theme that is to be explored. Begin with an inventory of the unit, using the screen of the multiple intelligences capacities. The goal of this approach is threefold: 1] to recognize the intelligence capacities that are already being addressed in the unit; 2] to note the intelligences that have a weak showing, have been avoided altogether, or are represented only superficially; and 3] to stretch the unit to incorporate the capacities of weak and neglected intelligence areas in teaching the content.

MI stations/learning centers: In this model, the teachers set up learning centers, with intelligence appropriate tasks in each station or center. The tasks provide students an opportunity to process the information in unity in a variety of unique and creative ways. Students are provided with whatever introductory materials is necessary to get them started. Then they are divided into teams, and the remainder of the unit [including the learning] tasks place in a very hands on fashion as the teams visit each of the stations, exploring, discovering and interacting with the curricular material by performing the learning tasks.

Schoolwide or departmentwide MI focus: The goal of this model is to provide time for teachers and students to zero in on the development of the full range of capacities for targeted intelligences in and through a given unit of instruction. Within the allotted time frame, make sure students have ample opportunities to practices using the various capacities of the focal intelligence in their learning of the curricular material. Also, make sure that teachers are held accountable for using capacities in their instruction throughout the week. This model is probably one of the best for implementing a project – based and a problem solving based approach to teaching and learning.
Giles E. et al., in their paper have put forward many ways to incorporate Multiple Intelligences Theory into the curriculum and there is no set method by which the theory can be incorporated. Some teachers set up learning centers with resources and materials that promote involving the different intelligences. Some of the ways in which Multiple Intelligence can be introduced in the classroom are:

1. Creating an area with art supplies.
2. Designing simulations that immerse students into real life situations.
3. Project based models
4. Collaborative learning
5. Inquiry – based models.

It is important for teachers to carefully select activities that not only teach to the subjects intelligences, but also realistically mesh with the subject matter of the lesson or unit. Multiple intelligences theory should enhance, not detract from what is being taught.

Disney’s website entitled “Tapping into Multiple Intelligences, suggests two approaches for implementing multiple intelligences theory in the classroom.

1. **Teacher centered approach**: Is an approach in which the instructor incorporates materials, resources, and activities into the lesson that teach to the different intelligences.

2. **Student centered approach**: In which the students actually create a variety of different materials that demonstrate their understanding of the subject matter. The student centered approach allows students to actively use their varied forms of intelligence. In a student-centered lesson, the instructor may incorporate aspects of project-based learning, collaborative learning, or other inquiry-based models. In such a case, activities involving all nine intelligences may be presented as options for the class, but each student participates in only one or two of the tasks.

**Identifying multiple intelligence in your students**

- Talk with other teachers and school personnel.
- Conference with parents
• Ask students to tell you about their strongest intelligence through:
  Checklists, Journal, Autobiography, Art activity, Discussion groups, Projects,
  One-to-one interviews, Use questionnaires and checklists, Observe behaviours and
  misbehaviours, Document performances, Look at school records; grades, test
  scores, comments, etc., Set up special activities, interest areas – designed to give
  information.

1. Students need to recognize or discover the various intelligences in themselves.
   They need to learn that they have at least eight ways of knowing but that not all
   eight ways are equally developed. Some tend to be stronger. Others may be in
   various states of latency. Nevertheless, since all of the intelligences are part of our
   biology and neurology as human beings, each of them can be further developed,
   enhanced, strengthened, and amplified [Gardner, 1983].

   In my experience, students are generally enthralled with knowing about the eight
   intelligences. The learning tends to open many new realms of self-understanding.
   Knowledge about the intelligences is also a great boost to self-esteem. Some of
   the very areas in which students are feeling badly about themselves are those in
   which they attempted to use one of the so-called “nontraditional” intelligences and
   were put down by their peers, a parents, or a teacher. However, once they have the
   knowledge about the intelligences, they can often become advocates for
   themselves in such situations.

2. Students need to be taught to recognize, honor, respect—even celebrate—the various
   intelligences in their classmates. The truth is that most students have intuitively
   known about the various ways of knowing, both in themselves and each other, for
   many years, but without consciously recognizing and naming them. Once they are
   named, however, they can be embraced and become a conscious part of students’
   regular daily repertoires, both in school and beyond.

3. Students need to be given regular opportunities to exercise all eight of the
   intelligences, along with many occasions that challenge.

   In the present study an attempt was made to identify Multiple Intelligences
   among the secondary school students. It is being studied in relation to creativity. Its
   relation is also studied on the achievement motivation of students.
1.2.2 Creativity

The Concept of Creativity

The next aspect of the present study is creativity. Here we are trying to see how creativity is expressed by the secondary school students. Is creativity related to intelligence? [i.e., anyone of the kind of Multiple Intelligences] or is creativity a independent entity etc.

Creativity is the most valued attribute of the human mind. Human creative power is responsible for the emergence of human socio-cultural and intellectual accomplishments. Creativity is a boon to man, one of the most prized, yet baffling human assets. Creativity is a unique human phenomenon but essentially human. It is creativity, which distinguishes humans from the nonhuman animals and machines. Creativity is the production of an action, idea or object that is new and valued (MIT Encyclopedia of the Cognitive Sciences 1999).

Whenever it is considered from the viewpoint of its effects on the society or as one of the expressions of the human spirit, Creativity stands out as an activity to be studied, cherished and cultivated. According to Kundu (1996), “if we are to survive international competition, the most promising solution for this nation is to encourage and support the identification and development of its creative talent. “Developed countries as well as developing countries are equally interested in the study and the development of creativity because their survival depends upon the creative vision and creative striving of the masses. Creative thinking is a procedure in which men hope him achieve dignity and sense of super human attribution. Creativity is considered to be identical with the expansion of the universe and main task of man on this planned. Creativity from all aspects is the pathway of evolution of human civilization from the prehistoric age and industrialization from the Stone Age. The renowned Psychologist Cognitivist and Factorialist J.P. Guilford in his “General Psychology” expressed, his wonder asking “How different the world would be if one could eliminate from it the results if human invention and construction” All the thing, except nature are creations of human brain. They were present in thought before they appeared in tangible form”.

32
Basically speaking we have come across many creative personalities in our society who have also excelled, with good intelligence capacities to name a few. T.S. Eliot [poet], Albert Einstein [Scientist], Mahatma Gandhi [freedom fighter], Sigmund Freud [Psychologist], M.F. Hussain [Artist], M.S. Subbalaxmi, A.R.Rehman [Music], etc. In day-to-day life we have also come across pupils who are extremely creative, but they might be possessing average or below average intelligences. At the same time their achievement scores are also not satisfactory.

Creativity is a process of producing something original and valuable when solving problems creative people are insightful and tend to do divergent thinking, developing a variety of unusual, new responses. Important factors related to creativity include motivation, intelligence, knowledge, personality and environment.

**Definitions**

There is no one definition of creativity that everyone can agree with. Creativity researches mostly from the field of psychology usually claim that being creative means being novel and appropriate. Subsumed under the appropriateness criterion are the qualities of fit, utility and value.

A simple definition of creativity: Is the action of combining previously uncombined elements. From art, music and invention to house hold chores; this is part of the nature of being creative.

Howard Gardner: defines creativity as follows: “People are creative when they can solve problems, create products or raise issues in a domain in a way that is initially novel but is eventually accepted in one or more cultural settings.

Galton proposes that creativity has been recognized as a “trait”. Though the experimental studies on creativity were first conducted by Patrick. The major scientific attempt which showed that “Creativity is a function of intellect”, was that of Gillford [1950].

Numerous studies explain creativity in many ways, since it is a complex construct (Bolden, Harries & Newton, 2009). Torrance (1974) defines creativity as a product of fluency, flexibility and originality. According to Gil, Ben-Zvi and Apel
fluency is the ability of producing many ideas, while flexibility refers to the number, the degree and the focus of approaches that are observed in a solution. The term originality refers to the possibility of holding extraordinary, new and unique ideas (Gil, Ben-Zvi & Apel, 2007).

The world we live is enriched, endowed and made so luxurious, comfortable to live and enjoy are the accomplishments of the creative human beings.

The Basic nature of creativity

Presents two basic principles, along with corollaries, that identify critical points to understand when teaching creativity. The first principle holds that creativity is best understood through a multifaceted perspective; the second principle states that the generation of novel perspectives is a fundamental element of creativity.

In maintaining that the multifaceted principle is as important as its more obvious novelty counterpart, we are not trying to avoid defining creativity. Instead, we wish to highlight the necessity for dealing realistically with the complex and dynamic interactions behind a creative act. A simple, brief definition cannot serve well in all circumstances; however, frameworks and schemas that classify definitions by their common characteristics can be very useful in understanding what definition to use for a particular purpose [Dacey, 1989; Davis, 1998; Gowan, 1972; Treffinger, 1996; Treffinger, Isaken and Firestien, 1983].

For example, many scholars [MacKinnon, 1978, Mooney 1963, Rhodes, 1961, Stein, 1968] agree that the multifaceted nature of creativity involves at least four discrete elements. These are [a] the characteristics and skills associated with the creative person; [b] the stages of thinking that are involved in the creative process; [c] the qualities of the creative product and [d] the nature of an environment that is conducive to creative thought. So like the parable of the four blind men and the elephant, there are at least four distinct ways of describing elephant, there are at least four distinct ways of describing creativity [Ornstein, 1972]. Taken independently, these four elements provide a glimpse into creativity, but they do not illuminate the full image nor depict the interactions that facilitate or inhibit the appearance of creative behavior. To truly understand the nature of creativity, one must consider the whole elephant.
Basic principles about the Nature of Creativity

1) Multifaceted principle: The content that defines the domain of creativity is not limited to one theory, model definition, concept or approach. The most effective understanding of it is obtained through dynamic, multifaceted perspective.

- **Contextualization corollary:** Recognizing nurturing, and applying the multifaceted phenomenon of creativity, and queries awareness and understanding between novel or useful information in relation to past and current knowledge and practice in particular settings. Contextualizing is a dynamic, social operation that provides a perspective on ‘what works for whom under what circumstances’.

- ** Explicitness corollary:** Despite multiple definitions theories and approaches it is possible and beneficial to identify, construct and use concrete frameworks that organize the understanding of the parts of creativity in relation to its whole and to examine and use specific definitions within these categories.

2) Novelty principle: The production of new and different perspectives is an essential element associated with creativity.

- **Usefulness corollary:** There is potential value in what may initially appear to be unique, original or irrelevant Obtaining novelty and making it useful is a dynamic process that requires the developing ideas and in implementing them

- **Diffusion corollary:** it is possible to communicate novel outcomes in such a way as to gain external understanding of and acceptance for them. (M.C. Murdock, 1995)

There has always been a linkage between the multiple intelligence and creativity. Here an attempt is made to probe into the different areas of intelligences and creativity. Creativity can be understood in terms of uses of Multiple Intelligences to generate new and even more revolutionary ideas. When we are involved in a creative endeavor we are probably not aware that our creativity rises from multiple forms of intelligence. Our varied talents reflect these intelligence.

The Multiple Intelligences theory paved way for myriad intelligences. It encourages novel and different ways of teaching and learning. Creativity is universal in nature and is assumed to be present in every child. Children tend to lose interest in educational pursuits because of its monotonous rigid curriculum that is heavily focused on Verbal – Linguistic and Logical – Mathematical intelligences only. Those
who possess this kind of intelligences are promoted and the others are considered a failure. The teachers have to identify the individual difference in the children and foster their uniqueness and creativity. This can be made possible by understanding Dr. Howard Gardner’s Multiple Intelligences and thereby nurture creativity in accordance to the type of intelligences. Therefore we can say that Multiple Intelligences theory is a boon to the educators.

Interestingly, Gardner does not isolate a creative intelligence, unlike Buzan and Keene, in “Buzan’s book of Genius” [2000]. The creative vein does weave through all of Gardner’s intelligences. This means that recognition of our strengths and weaknesses in different intelligences impinges directly on our ability to generate creative outcomes in various domains.

As Gardner opines creativity cannot be separated as a whole it weaves through all of Gardner’s multiple intelligences. The extraordinary strengths in a particular domain of Intelligence ensures the individual to generate or reflect the epitome of creativity. In his book, “Creating minds”. An Anatomy of Creativity [1993] Gardner has selected seven individuals, each one’s life lending significance to creativity and intelligence.

The Verbal - Linguistic Intelligence: consists of the ability to think in words and to use language to express and appreciate complex meanings. Authors, poets, journalists, speakers, and news casters exhibit high degrees of linguistic intelligence.
Example: T.S. Elliot.

Logical – Mathematical Intelligence: Makes it possible to calculate, quantify, consider propositions and hypotheses, and carry out complex mathematical operations. Scientists, mathematicians, accountants, engineers and computer programmers all demonstrate this kind of intelligence in some degree.
Example: Albert Einstein

Bodily – Kinesthetic Intelligence: Enables one to manipulate objects and finely tuned physical skills. It is evident in athletes, dancers, surgeons and crafts people.
Example: Martha Graham

Musical – Rhythmic Intelligence: Is evident in individuals who possess a sensitivity to pitch, melody, rhythm and tone. Those demonstrating this intelligence include composers, conductors, musicians, critics, instrument makers, as well as sensitive listeners.
Example: Igor Stravinsky
**Visual – Spatial Intelligence**: Instills the capacity to think in two and three-dimensional ways as do sailors, pilots, painters and architects. It enables one to perceive external and internal imagery, to recreate, transform, or modify, to navigate oneself and objects through space, and to produce or decode graphic information.

Example: Picasso.

**Interpersonal Intelligence**: Is the capacity to understand and interact effectively with others. It is evident in successful teachers, social workers, actors, and politicians.

Example: Abraham Lincoln

**Intrapersonal Intelligence**: refers to the ability to construct an accurate perception of oneself and to use such knowledge in planning and directing one’s life. Some individuals with strong intrapersonal intelligence specialize as theologians, psychologists, philosophers, mediators.

Example: Sigmund Freud

**Naturalistic Intelligence**: This intelligence has to do with observing, understanding and organizing patterns in the natural environment including sensitivity to seasonal and even daily changes. A naturalist is one who shows expertise in the recognition and classification of plants and animals. This could be anyone from a molecular biologist to a traditional medicine man using, herbal remedies.

Example: Charles Darwin

According to M. Ferrando et al [2005], the relationship between creativity and intelligence is low. It could be argued that there is a positive relationship between creativity and multiple intelligences. This finding can be explained as the evaluation tasks for MI, are much open and dynamic than those for the IQ tests. In terms of Guilford, the measure of an IQ test focuses in the convergent thinking [only one correct solution], whereas Gardner allows the use of divergent thinking [various solutions can be correct for one problem].

Research has shown enduring differences between Intelligence and creativity. The Intelligent person excels at convergent thinking, or thinking with the goal of recognizing or remembering specific information or solving information or solving traditional problems for the correct answers, and the creative person at divergent thinking, or thinking that is imaginative and seeks variety, novelty and uniqueness.
Although highly creative people tend to be above average in intelligences, greater psychometric intelligence does not predict greater psychometric creativity. Others disagree, however, that these two phenomena can be so neatly separated. However, clearly, the true relationship between creativity and intelligence is yet to be determined. One thing people do agree on however is that both are desirable characteristics. Gardner’s investigations are also being directed to the role played by different intelligences, and different combinations of intelligences, in the highest orders of human creative achievement [Gardner’s 1998].

Amir Chion [2005], says there are many models and techniques that aim to help people come up with creative ideas. In his article, he describes an original way of using Howard Gardner’s theory of Multiple Intelligences as a helpful pattern for generating a wide range of ideas in any subject. He says the way he uses it is to examine how any subject, that one thinks may be expressed or enhanced through each of these intelligences types. He has provided a detailed examples, that helps to enhance the creativity among children in day to day activities.

**General Characteristics of creativity**

- Creativity is universal.
- Creative abilities are natural endowments.
- New or novel production is present.
- Creative expression is the source of joy and satisfaction for the creator.
- Creative expressions involve egos.
- Creative thinking is not closed thinking.
- The field of creative expression is very wide and it covers all the aspects of human accomplishments.
- Creativity has certain components like ideational fluency, originality, flexibility, elaboration, divergent thinking, persistence, self confidence, sensitiveness, ability to see relationships and make associations, etc.
- Creativity also possess intelligence, trust not always essential.

Torrance has identified 84 characteristics describing a person possessing creative abilities; among them some of the important ones are listed in the following page along with Torrance’s work. Work from a great number of psychologists have studied deeply the creative persons and found out various traits.
General Characteristics of their personality

- Creative persons are inventive, imaginative, and perceptive and possess a good sense of humor and are also playful.
- They possess strong self-image, fine recalling capacities, oedipal anxiety and uneven ego development.
- They are unconventional in responses, unreal in perceptions, fanciful, imaginative, rational in thinking; independent from environmental influence and sensitive by nature.
- They give less importance to parental value, experience unadjusted marriage, and have strong Oedipus complex.
- They are fascinated by wild and silly ideas. Their ideas are off the beaten track.
- They lack rigidity, and are open to experience and are very independent.
- Highly creative children make stimulus-free themes, unexpected endings. They enjoy risks and uncertainty of the unknown.
- They are rebellious, self-aware, ambitious more tolerant and emotional.
- They are cognitively complex, innovative, curious, risk-takers, adventurous, original, imaginative, constructive, discontented, independent of judgment, never-bored, self confident and sincere.
- They have a desire to excel varied interest.
- They are enthusiastic, less worrying, less inhibited they seek change and follow their own system.
- They are inclined to sloppiness and disorganization. They change plans quickly, question rules and authority. They incline to be friendly with strangers, think of people as individuals. They are open minded and are ready to learn. They have faith in goodness and are disdain conformists. They discipline themselves and act impulsively.
- They have maturity of sensations, verbal fluency, flexibility facility, they are bohemian and radical.

Gardner says “His definition of creativity has revealing parallels with and differences from his definition of intelligence”. “People are creative when they can solve problems, create products or raise issues in a domain in a way that is initially novel but is eventually accepted in one or more cultural settings.”
Nurturing Creativity using Multiple Intelligence

Barbara Abromitis [2009] suggests that young children innate abilities and creative tendencies need nurturing to develop to their full potential. Children’s natural talents may be better enhanced by avoiding many of these items, and opting instead for simpler play-based and child centered activities designed to nurture child’s multiple forms of intelligence.

The traditional concept of intelligence have only encompassed two of Gardner’s identified domains [i.e., linguistic and logical-mathematical Intelligence] the creative arts typically refer to only musical or visual-spatial intelligence. Encouraging creative exploration and play across all the seven domains will help young children feel more confident when trying new activities or when combining elements of several domains into an activity that is uniquely theirs. The following are some ways to foster creativity in each domain.

1. **Verbal - Linguistic Intelligence**: Linguistic creativity is fostered through oral and written word play, such as nursery rhymes, finger plays, storytelling, early writing, making books, and the use of strategies such as the Language Experience Approach.

2. **Logical - Mathematical Intelligence**: Creative use of the logical-mathematical intelligence is fostered by the use of real processes such as measuring, estimating, counting, and figuring when shopping, cooking or building something with young children.

3. **Visual - Spatial Intelligence**: Visual – spatial creativity is fostered through the use of a variety of artistic techniques and materials to create drawings, paintings, collages, fabric art, mosaic, sculpture, and structures built from blocks or other building toys.

4. **Bodily - Kinesthetic Intelligence**: To foster creativity in this domain, try dancing to a variety of genres of music, playing charades or Simon says, acting or role-playing people or animals, and practicing simple athletics. In addition, give children the opportunity to physically manipulate objects and art materials as they create or build from their imaginations.

5. **Musical – Rhythmic Intelligence**: Musical creativity is fostered by listening to different music, singing, playing with musical instruments, and even drumming – a technique by which the listener taps out and even embellishes the rhythm of a song on a drum or other hard surface.
6. **Interpersonal Intelligence**: Creative use of interpersonal intelligence ["people-skills"] can be encouraged through any form of interactive, imaginative role-playing, such as playing house, store, or restaurant.

7. **Intrapersonal Intelligence**: Intrapersonal intelligence [knowing oneself] can be fostered simply by talking with young children about their likes and dislikes, asking their opinion and why they feel a certain way, and encouraging them to ask themselves questions about the choices they make each day.

**Creativity in the classroom**

Creativity is easily encouraged in fine arts and languages but it is also equally important to enlarge the scope to include social studies and science subjects at school level. It is within the responsibility of the school teachers to evolve novel ways of teaching social science and general science as an integrated subject and not as two discrete subjects. Science can be taught not as an awe-inspiring subject from a textbook but as something that is around us [Richards 1972].

The colour of the sky, colours of flowers, stars and planets, rivers and oceans, the machines and gadgets of the modern world etc., can be made interesting topic of discussion in science should allow the children to explore, extrapolate, hypothesize and arrive at conclusions. Should also give them an opportunity to express themselves creatively in the specific areas of their passion and interest.

**Fostering creativity among children**

Creativity is present universally even the moderate and below averages can also become creative persons. Hitherto it becomes essential for the teachers and parents to provide the needed nourishment for the individuals to bloom into fully developed creative persons. These are some of the ways in which the teachers, parents and some institutions that can facilitate in fostering creativity among children.

- Freedom to responses
- Opportunity for ego development.
- Encouraging originality and flexibility and fluency.
- Removal of hesitation and fear.
- Providing appropriate opportunities and atmosphere for creative expression.
• Developing healthy habits among children.
• Using the creative resources of the community.
• Providing self-example as being a role model.
• To promote intellectual flexibility.
• To enhance motivation power, brain storming ability, and vision of thinking beyond problem.
• To avoid too much rigidity in time tables

In the present study we are further trying to find out the level of achievement motivation possessed by these creative students.

1.2.3 Achievement Motivation

One of the most important factors that lead one to their goals is the drive. This drive is known as motivation. It is a zest and determination with a kind of excitement that leads one to persevere to reach greater heights, in no matter what avenue of their life; be it – personal or professional. The drive may come from an internal or external source. The individual determines this. The factors that motivate an individual keep changing as one climbs the ladder of age and maturity. And also, achievement of one goal sets the ball rolling for another one to be achieved. Thus, to be motivated is a constant need. There are times when one faces a period of de-motivation and everything seems bleak. It is then that they need to find what would motivate them back into action (Singh, K., 2011).

Achievement Motivation has significant relation to individual development as well as to the progress of the nation. For an individual, achievement motivation is an important psychological system that inspires self-achievement and promotes individual development. At the same time, it is one of the key elements that will determine the success of an individual. For a society, the achievement motivation of its people, together with national economy growth, accumulation of social treasures and the improvement of technology, is considered as important index of social prosperity and progress (Liu and Zhu, 2009).
The word motivation is coined from the Latin word "movere", which means to move. Motivation is defined as an internal drive that activates behavior and gives it direction. The term motivation theory is concerned with the processes that describe why and how human behavior is activated and directed. It is regarded as one of the most important areas of study in the field of organizational behavior. There are two different categories of motivation theories such as content theories, and process theories. Even though there are different motivation theories, none of them are universally accepted.

Achievement motivation refers to that a person is willing to do things that he or she considers important or valuable and endeavors to achieve perfect results. A person with achievement motivation will lay high requirement on him or herself and endeavor for success. The level of achievement motivations has significant meanings to individual development as well as to social progress. For an individual, achievement motivation is an important psychological system that inspires self-achievement and promotes individual development. At the same time, it is one of the key elements that will determine the success of an individual. For a society, the achievement motivations of its people, together with national economy growth, accumulation of social treasures and the improvement of technology, is considered as important index of social prosperity and progress. According to the views of psychologists, the main motivations for students studying are reflected on achievement motivation and researches show that achievement motivation is the key element that influences students’ self-monitoring capacity and study efficiency (Liu & Guo, 1993).

Achievement motivation is a widely researched topic in both the fields of psychology and education. Achievement motivation can best be understood by examining the meanings of “achievement” and “motivation” separately. Achievement typically stresses the importance of accomplishment and attainment with effort involved (Mandel & Marcus, 1988). Motivation relates to an individual’s reason for engaging in an activity, the degree to which an individual pursues the activity, and the persistence of the individual (Graham & Weiner, 1996).
Achievement Motivation is the moving force that instills within a child desire to accomplish or achieve. Achievement Motivation can be classified into intrinsic motivation and extrinsic motivation. Children who possess intrinsic motivation have the eagerness to learn and curiosity to discover. The child is ready to learn for learning’s sake. Extrinsic motivation work towards a goal and strives for reward. The child has the will to learn in order to get a reward or benefit from learning. Individuals who have the inner urge to achieve tend to engage in tasks that finds them interesting and satisfying. Achievement Motivation may also be due to entice of the rewards, to avoid punishments, or autocracy from higher officials and competition with peers.

The term achievement has a much broader meaning and refers to the acquisition of all the behavioural changes belonging to the cognitive, affective, and psychomotor domains.

- It also means to accomplish difficult tasks to rival and surpass others.
- Characteristic of general achievement is the concern to do better, to improve performance.

Achievement in the teaching-learning context refers to the performance of learners in a testing condition after they have been taught the particular subject / discipline/area. They show how well a student has understood the concepts. It measures the knowledge, understanding and skills obtained by the students in a particular subject.

From a teacher’s perspective, intrinsic motivation would be the ideal form of motivation. Getting children to motivate themselves to learn because they want to, not because they are required to is the ultimate goal. Ironically, new teachers are more likely to use rewards and punishments to motivate students [Newby, 1991].

Jenkins 1997 say’s “Children are born motivated to learn. Children enter kindergarten still processing this enthusiasm for learning. Educators need not motivate children to learn; this was accomplished at birth. The responsibility of the educators is not to eliminate the loss of innate enthusiasm”. Keefe and Jenkins (1993) Continue, “Most children begin school with enthusiasm for learning. School is firmly fixed in their positive system of values. Overtime, however, the importance begins to diminish as school experiences fail to connect with their lives.
Marsh [2007] considered that human motivation could be understood in terms of needs, but emphasized the importance of social needs, rather than psychological or basic activity. The two needs which he particularly identified in this aspect were the need for achievement and the need for affiliation. Marsh proposed that Achievement Motivation was the reason why some seem to do well, while others seem to be reluctant to make an effort, and do mind whether, they are worth or not.

It is important to define the term Achievement Motivation it is the “moving force that instills within a child the urge/need to accomplish or achieve”. In an academic environment, this would be the enthusiasm for learning, the eagerness to acquire knowledge and grow in self improvement. Intrinsic motivation would be the ideal form of motivation. Getting children to motivate themselves to learn because they are required to is the ultimate goal. Ironically new teaches are more likely to use rewards and punishments to motivate students [Newby 1991].

There is a positive side to having peer influence in Achievement Motivation. Classmates are likely to influence classroom climate viz the norms that are modeled and valued [Nelson and De Backer, 2008], this means that a student is affected when he or she sees how their classmates are involved in the classroom. When surrounded by positive, hard-working classmates, the student is more engaged in class work [Sage and Kinderman, 1999].

Originally the theory of Achievement Motivation was proposed by Atkinson and Feather C (1966). They stated that a person’s achievement oriented behaviour is based on three parts: the first part being the individual’s predisposition to achievement, the second part being the probability of success, and third, the individual perception of value of the task. Atkinson and Feather C (1966) state “The strength of motivation to perform some act is assumed to be a multiplicative function of the strength of the motive, the expectancy (subjective probability) that the act will have as a consequence the attribute incentive, and the value of the incentive: Motivation = f (Motive x Expectancy x Incentive)
Some individuals need to achieve is overwhelmed by their fear of failure. They are so concerned that they will not be able to succeed at the task; they do not even attempt the task. They feel that if the task is not attempted, it cannot be failed. These individuals have a hard time dealing with their shortcomings, or their fear failing in front of their peers. So they avoid situations where the opportunity to fail exists or where things are out of their control (Atkinson, 1974).

Atkinson and Feather (1966) further state, “when the probability of success is high, as in confronting a very easy task, the sense of humiliation accompanying failure is also very great. However, when the probability for success is low, as in confronting a very difficult task, there is little embarrassment in failing.” On the other hand, the person in whom the motive to avoid failure is stronger should select either the alternatives or should be extremely speculative and set his goals where there is virtually no chance for success. These are activities, which minimize his anxiety about failure.”

Most of the students are influenced by a need to achieve. It makes them to aspire for success at whatever task they attempt but each student is affected to different degrees. For some students, the desire to achieve overwhelms other factors that could cause failure, such as, lack of skills, lack of experience, lack of ability, or lack of time. The individual does whatever, it takes to work through or eliminate these setbacks (Atkinson, 1974). Studies conducted by Atkinson (1999) showed a percentage of students will work hard to achieve a task they do not enjoy, solely to maintain their high grade paint average or high class rank.

Aldermen (1999) adds that some individuals feel that success is based on ability and failure is caused by a lack of ability. When competitive situations occur, many of these individuals often feel a need to protect themselves from failure or a perceived lack of ability, so they develop strategies such as with holding effort or setting unrealistic goals (too higher too low). Atkinson and Feather (1999) state: In summary, the person in whom the achievement motive is stronger should set his level of aspiration in the intermediate zone where there is moderate risk. Carefully measuring where they will get the best pay off not too easy but yet not too difficult.
Simon (1988) adds, “you need to believe in yourself. If you think that you can do no better, then, that thinking will limit you. If you believe that you can, you will succeed, if you do not believe if you can, you will fail.” Our self esteem and how competent we feel is what causes certain behaviours and establishes certain goals. Some people like to try new experiences and set more challenging goals, others prefer to stay in their comfort zones and be happy with what they know they can accomplish. But it is all based on our view of our self (Haasen and Shea, 1979).

Studies done by Vanzile – Tamsen and Livingston (1999) showed that students who value the outcome put forth more effort and try more strategies to achieve the outcome high achievers work harder and will try different means to accomplish success. Studies by Senecal et al., (1995) show that even when all possibilities of failure are removed from a situation, many students will procrastinate, quit, or not attempt the task if the outcome has no perceived value.

Motivation is one of the elements of learning. It takes a major seat in the expression of intelligence. Achievement motivation, learning, creativity and multiple intelligences are all inter-related. Margaret Cluck and Diane Hess [2003] opined that students should be self-motivated for effective learning. However, teaching curricula of traditional school practices targeted the individual learning styles. If students do not fit into two learning styles, which are verbal / linguistic and logical / mathematical, their abilities in successful learning are negative. Often students are labeled as “at risk, low achievers, or unmotivated learners because they do not find learning fun.

The Multiple Intelligences based curriculum is good for increasing the effectiveness of learning because it stimulates students intrinsic motivation. Rewards and punishments have been used to motivate students in traditional schools, but it only achieves temporary compliance [Cluck & Hess, 2003]. Lumsden suggests that moving from extrinsic motivation, such as rewards and punishments, to a involvement in classroom learning may promote student motivation. Thus, teachers should motivate students not just by recognizing them, but also by providing an environment which enhances intrinsic motivation. Here is an example of successful application of multiple intelligences theory to the erstwhile curriculum teachers tried to develop each students potential by giving them a choice to chose [Cluck & Hess – 2003].
In order to construct creative and nurturing school environments, schools should be independent from traditional school curriculum. Teachers’ role is very significant in providing students diverse approaches to learning because they are assessed by evaluating minds in terms of multiple intelligences theory. By acknowledging each student’s strong intelligences, teachers can motivate them to take the opportunity to succeed in schools and society. Gardner’s goal of Multiple Intelligences theory is to create a relevant learning environment for children. This means that students possess skills and develop character in ways that will positively influence them. Teachers have students internalize the lessons the lesson that they learned at school in order for them to apply in classroom. For knowledge to be gained, students must successfully apply it in new situation, Gardner calls this, education for understanding [Gardner, 1999].

A committee on increasing high school students engagement and motivation to learn at Washington D.C. [2004] after their study recommended that teachers capitalize on students cultural knowledge, but that teachers teach in a way that allows all students to learn. Gardner’s [1983] multiple intelligence theory suggests that students learn through different modalities or “Intelligences”. To be highly effective, instruction must include activities that reflect various intelligences from reading and writing to drawing and action.

Atkinson supported the need for an objective self-report device, and suggested that such a measure be based on the empirical findings of previous research that identifies causal factors influencing people to score high or low on need for achievement (nAch). Researchers using self-report measures of motivation have apparently done little substantial work on theoretical variations of such self-descriptive motives in an attempt to discover how one happens to be a high or low scorer. Later, objective instruments having items on an a-priori or theoretical basis was developed and then determined the validity of the instrument on the basis of correlation with standard projective measures or designed achievement behaviour. A more appropriate tactic may be used to build a scale empirically selecting items that differentiate between people who perform a task with high AM. Factor analysis of objectively scored instruments initiated the construct of AM as having multiple factors 4,7-9. The four factors of the Helmreich & Spence model10 of AM were: 1) Desire to work hard; 2) To seek intellectual challenge; 3) To succeed in competitive situations; and 4) To avoid negative consequences of success.
Achievement motivation is an important determinant of aspiration, effort and persistence. When an individual expects that his performance will be evaluated in relation to some standard of excellence, such behaviour is achievement oriented. There is a universal tendency in man to strive, to excel and succeed and to win and go ahead of others. This tendency can be called the self assertion or the motive to achieve.

The contemporary theory of Achievement Motivation proposed by Eccles (1983) and Wigfield (1994) shows how the students cognitive process and perceptions of their environment works in an achievement situation.

Motivation is generally regarded as the drive to achieve targets and the process to maintain the drive. Motivation provides an important foundation to complete cognitive behavior, such as planning, organization, decision-making, learning, and assessments (Pintrich & Schunk, 1996). Spence and Helmreich (1983) defined achievements as task-oriented behavior. Performances of individuals are often compared against standards or with others for assessments. The differing perspectives Study of Achievement Motivation in Relation 163 of scholars result in various definitions of achievement motivation. The original definition of achievement motivation was from Atkinson (1964), who defined it as the comparison of performances with others and against certain standard activities. Atkinson and Feather (1966) suggested that achievement motivation is a combination of two personality variables: tendency to approach success and tendency to avoid failure. Bigge and Hunt (1980) defined achievement motivation as the drive to work with diligence and vitality, to constantly steer toward targets, to obtain dominance in challenging and difficult tasks and create sense of achievement as a result. This definition consists of three elements: the stimulation of personal capabilities, constant efforts with drive and obtaining of sense of satisfaction.

Helmreich & Spence (1978) consolidated the theories concerning achievement motivation and compiled the Work and Family Orientation Questionnaire (WOFO). Meanwhile, they conducted a factor analysis and argued that achievement motivation consists of four elements, i.e. mastery of needs, work orientation, competition, and personal unconcern. After further studies, they found that the interaction of the first
three elements is the key reason that contributes to excellent performance of individuals. It is highly related to personal achievements (Spence & Helmreich, 1983).

1. Mastery of needs: An individual prefers jobs that are challenging, intellectually demanding, and thought-oriented. He or she enjoys playing a leadership role in groups and is able to complete tasks already started.

2. Work orientation: An individual takes a proactive attitude toward work and loves what he or she does. He or she obtains sense of satisfaction from work and pursues self-realization and growth.

3. Competition: An individual hopes for victory and has the desire to win over others.

4. Personal unconcern: An individual does not consider success or stellar performance to be the cause of being rejected by others. In other words, there is no fear of success.

According to the above literature, achievement motivation is a subjective and internal psychological drive, enabling individuals to pursue work they perceive to be valuable and prompting them to reach their goals. Meanwhile, achievement motivation is also a mentality to compete and compare with others.

According to definitions, as proposed by the previously mentioned scholars, achievement motivation is a subjective, internal, and psychological drive, enabling individuals to pursue work they perceive to be valuable and eventually achieve their goals. Sparrow (1998) found that motivations have influence on the formation of psychological contracts. Motivations include meaningful work, job security, and a sense of achievement, promotional channels, and opportunities.

Over the years, behavioral scientists have noticed that some people have an intense desire to achieve something, while others may not seem that concerned about their achievements. This phenomenon has attracted a lot of discussions and debates. Scientists have observed that people with a high level of achievement motivation exhibit certain characteristics. Achievement motivation is the tendency to endeavor for success and to choose goal oriented success or failure activities.
Achievement motivation forms to be the basic for a good life. People who are oriented towards achievement, in general, enjoy life and feel in control. Being motivated keeps people dynamic and gives them self-respect. They set moderately difficult but easily achievable targets, which help them, achieve their objectives. They do not set up extremely difficult or extremely easy targets. By doing this they ensure that they only undertake tasks that can be achieved by them. Achievement motivated people prefer to work on a problem rather than leaving the outcome to chance. It is also seen that achievement motivated people seem to be more concerned with their personal achievement rather than the rewards of success.

Achievement motivation is a drive to excel in learning tasks combined with the capacity to experience tried in accomplishment (Eggen, Manchak, 1994, David Mc Clelland and Atkinson were the first one to concentrate on the study of achievement motivation. Mc Cleland, Atkinson, Clark and Lowell, (1953). People who strive for excellence in a field for the sake of achieving and not for some reward are considered to have a high need for achievement. This need has labeled n-achievement for convenience.

Achievement motivation is a stable learned characteristic in which satisfaction comes from striving for and achieving a level of excellence.

The latest approach in Achievement Motivation is an integrative perspective as lined out in the "Onion-Ring-Model of Achievement Motivation" by Heinz Schuler, George C. Thornton III, Andreas Frintrup and Rose Mueller-Hans on. It is based on the premise that performance motivation results from the way broad components of personality are directed towards performance. As a result, it includes a range of dimensions that are relevant to success at work but which are not conventionally regarded as being part of performance motivation. Especially it integrates formerly separated approaches as Need for Achievement with e.g. social motives like dominance. The Achievement Motivation Inventory (AMI) (Schuler, Thornton, Frintrup & Mueller-Hanson, 2003) is based on this theory and assesses three factors (17 separated scales) relevant to vocational and professional success.

After the researcher evaluates their Achievement Motivation researcher is trying to link it up with the Multiple Intelligences and Creativity.
1.3 NEED AND IMPORTANCE OF THE STUDY

The multiple intelligence theory has been a cynosure for the eyes of the educators in the recent times, as they find it is a challenge to teach a vast variety of children with different kinds of individual differences, among which the intelligence creativity and achievement motivation of the students are of ample importance during the teaching-learning sessions.

The basic need for this study emanates from the fact that it gives a correlation between multiple intelligence, creativity, and achievement motivation which constitute the major factors of school education.

Cognitive studies related to multiple intelligence creativity, achievement motivation are any day a welcome in the arena of school education as they help the students to develop better intellectual abilities, and skills to adjust finely to the school environment and eventually force well in order to mould themselves as better citizens of tomorrow.

This study has been tailored on the pivotal importance that tapping the different kinds of intelligences hidden in the child as a motto, rather than cling on to the age old concepts which emphasize only on few factors. In the earlier version of intelligences theories, the actual intelligence of the child [as they do not measure does not come to the light of the day and the child and forced to take up the disciplines, routes and ways in which he / she may not be possessing any intelligence and ruin their career’s and further their lives.

This study is focused largely on the Multiple Intelligences, as studies on the same are in the nascent stage and is evolving gradually. Therefore a research study on this topic is a worth while endeavor. The goal of the study is to find the operational nature to the existing knowledge.

Therefore there is an immense need to make a study in depth on Multiple Intelligences in order to find the kind of intelligence, an individual possess and there by shape and mould the individual accordingly in the best way.
Gardner has reported that Multiple Intelligences is a minor industry. There are about 500 books on the topic and probably the same number of people who make living partly from giving talks on the subject [Davies 1996] such is the importance of studies related to Multiple Intelligences. In the area of cognitive studies, there has been tremendous changes in the concept of intelligences are being reframed strive and work towards innovative educational reformations.

In an era of global village concept, we do come across new school practices, theories which are more efficient, effective and child centered. So they need to be introduced in our society in our education system. In order to tailor it to our culture we need to construct a tool that suits our students in this context a Multiple Intelligence tool is prepared and tested for internal consistency.

The preliminary review of literature available exposes the lacunae in the scientific research arena about Achievement Motivation, Multiple Intelligences and Creativity.

Research involves an active, diligent and systematic process of inquiry aimed at discovering interpreting and revising knowledge. Research investigations lead to a greater understanding of events, behaviour or theories and make practical applications through policies, laws and theories. There are many theoretical and practical dimensions to research. They are outlined in this section and are briefly discussed.

The Multiple Intelligence theory stands as a ray of hope to the students who achieve less in classrooms as it assures that “Everyone is gifted in at atleast one of the intelligences”. According to a 4th grade English teacher “Leslie Owne” A sentiment uttered with the best of intentions, but not accurately.

In 1994, at Green bay, Wisconsin, at a conference Howard Gardener himself exclaimed that his academic peers and the scholarly psychological community had been less than enthusiastic to his multiple Intelligences theory [Gardner 1983] Gardner went on further to express his surprise and amazement as to the immense success and popularity of concept among educators. The above statement may be justified by the fact that the educators are always in an eternal search to find ways, as
how to tap the potentialities of a child, and guide them towards progress. In this dimension, the Multiple Intelligences theory has come in the form of a boon for the teaching and research faculties.

The practical application of the Multiple Intelligence theory and much research input is of utmost importance in the educational scenario because research is increasingly demonstrating that our definition of intelligence is too narrow to describe most students. Many students are suffocated in the heavily burdened school curriculum focusing on only verbal-linguistic and mathematical logical intelligence those who do not possess this kind of intelligence are branded as ‘misfit’ or a failure in the field of schooling, education. These students in turn feel disheartened and disillusioned probably to the extent of committing suicide, such incidents are happening mainly because our educational system does not cater to all the abilities possessed by the individual. The practical application of the theory of multiple intelligences varies widely. The core of the theory according to Gardner is the notion that at the core of our cognitive or intellectual abilities every human being possess the bio, neuro-, and psychological potential for knowing for acquiring information for understanding and for learning in at least eight distinct but interrelated ways – what he called “intelligences” or “frames of mind”.

It is important to recognize that Multiple Intelligences is not a quick fix or a magic bullet. It will not provide answers to every problem or challenge we face in the renewal of our schools today. However, I believe that the findings about our “many ways of knowing” bring some very significant pieces to the larger discussion of educational restructuring [Lazear D. G.]

The need of practical implementation of the theory for today’s educational tasks is not a very easy job. A few words from Gardner [1995] are in order before proceeding.

“Multiple Intelligences theory is in no way an educational prescription. There is always a gulf between psychological claims about how the mind works and educational practices and such a gulf is especially apparent in a theory that was developed without specific educational goals in mind. Thus, in educational discussions, I have always taken the position that educators are in the best position to determine the uses to which Multiple Intelligence theory can and should be put”.
Given these words of caution, I believe that the cutting edge of Multiple Intelligences research, as it applies to the task of educating, is the wide variety of practical implications of the theory that are currently underway in hundreds of schools, school districts and school divisions around the world. In my view, these locations are the new research laboratories for the next stage of Multiple Intelligences development namely: How can we use the findings of Multiple Intelligences research to make a defiance in the lines of the students who inhabit our class-rooms day in and day out?

The enthusiastic researchers should take initiative to conduct some remarkable work in this field and should introduce innovative approaches to teaching using multiple intelligences. The studies on the same will definitely rejuvenate the students urge to learn. It is in this background that the present study is aimed at introducing a new contemporary topic. It is conducted with the anticipation that Multiple Intelligences theory bridges the gap between the intelligent and dull students. We firmly believe that the studies will be highly motivating and intriguing to students. Present study on Multiple Intelligence and its promotion in educational system gives freedom to the children suffocated in the heavily burdened school curriculum based only on the scholastic intelligences. The present study also tries to find a relation between Multiple Intelligence and Creativity. There are numerous studies on Creativity.

Galton proposes that creativity has been recognized as a “trait”. Though the experimental studies on creativity were first conducted by Patrick. The major scientific attempt which showed that Creativity is a function of intellect”, was that of Gillford [1950].

Numerous studies explain creativity in many ways, since it is a complex construct (Bolden, Harries & Newton, 2009). Torrance (1974) defines creativity as a product of fluency, flexibility and originality. According to Gil, Ben-Zvi and Apel (2007) fluency is the ability of producing many ideas, while flexibility refers to the number, the degree and the focus of approaches that are observed in a solution. The term originality refers to the possibility of holding extraordinary, new and unique ideas (Gil, Ben-Zvi & Apel, 2007). The world we live is enriched, endowed and made so luxurious, comfortable to live and enjoy are the accomplishments of the creative human beings.
Research in the discipline of education has always indicated fascination for achievement motivation as it is directly related to students performance. Motivation to learn or Achievement Motivation has been the subject of numerous. Research studies that focused its impact on learning and academic performance [Atkinson and Feather, 1966; Dweck and Elnniot [1983], Lumsden, 1994].

Researchers, considered Achievement Motivation as a viable research construct in the early 1950’s. It is a widely researched topic in both the fields of education and psychology of the ways to increase achievement but not much on what could be a important issue affecting achievement motivation itself. McClelland demonstrated repeatedly that adult business people could develop achievement motivation. Alschuler and Decharms found that class room treatment procedures could yield increased student achievement motivation.

The study of motivation gained importance since early fifties with the efforts of McClelland and his associates at Wesleyan University, USA. The term motivation refers to any organismic state that mobilizes activity which is in some sense selective or directive. According to Newcomb (1964) achievement motivation is the acquired tendency and one of the most important social needs. It has been defined by McClelland and his associates (1953) and also by Decharms (1968) as a disposition to strive for success in competition with others with some standard of excellence, set by the individual. Motive to achieve requires an act of some norm of excellence, long term involvement and unique accomplishment. These are the criteria set by McClelland and his associates (1953): In fact, this is one of the most important manifest and social needs and personality variable enlisted by Murray (1938). Therefore the present study on Multiple Intelligences, Creativity and Achievement Motivation is a worthwhile endeavor.

1.4 STATEMENT OF THE PROBLEM

The changing conception about intelligence is one of the most powerful and radical force ever to influence the restructuring of education and society. There are many theories developed with respect to the Multiple Intelligences. Of all these theories, one of the most hopeful and revolutionary theories that have influenced the restructuring and renovation of education is the theory of Multiple Intelligences propounded by Dr. Howard Gardner, Co-director of Harvard’s Project Zero.
Whatever is novel, unique, unconventional and original is considered creative, creativity is an activity, which results in a new product of definite social value. Creativity refers to a complex cognitive ability, which every one has. Achievement Motivation is one of the most interesting studies in the field of Teaching-learning as it throws light on what motivates students towards excellence.

The present study is entitled “A STUDY OF MULTIPLE INTELLIGENCES, CREATIVITY AND ACHIEVEMENT MOTIVATION, AMONG THE SECONDARY SCHOOL STUDENTS OF MYSORE CITY”

1.5 OPERATIONAL DEFINITION

An operational definition specifies the operation or characteristics, necessary to identify the variable or condition being defined [Wiersma and Jugs, 2005]

An operational Definition
1. Is stated in terms of specific testing criteria or operations.
2. Must have empirical referents (i.e. we must be able to count, measure or in some other way gather the information through our senses)
3. Should specify the characteristics to be observed and how they are to be observed.
4. The criteria or operations should be so objective that any competent observer should be able to define a person, action, condition or attitude in a specific situation and secure the same results.

1. Multiple Intelligences

Multiple Intelligences are an array of different kinds of Intelligences. Gardner identified and introduced seven different kinds of intelligences, namely: Verbal-Linguistic Intelligence: a sensitivity to the meaning and order of words, Logical-Mathematical intelligence: ability in mathematics and other complex logical systems, Visual – Spatial intelligence: the ability to “think in pictures” to perceive the virtual world accurately and recreate [after] it in the mind or on paper, Bodily-Kinesthetic Intelligence: the ability to use one’s body in a skilled way, for self-expression or toward a goal, Musical-Rhythmic Intelligence: the ability to understand and create music, Interpersonal Intelligence: an ability to perceive and understand other individuals-their moods, desires and motivation, Intrapersonal Intelligence: an understanding of ones own emotions, Naturalistic Intelligence: understanding of nature etc. These intelligences are inherent in human beings, by the support of which they perceive, understand and relate to every aspect in life, which will be tested using Multiple Intelligences scales constructed by the researcher.
2. Creativity

Is considered as a multidimensional attribute possessed by certain individuals, which includes the factor of fluency, flexibility, originality, and elaboration. This will be revealed by the creative expression of the students by tools used for measurement.

3. Achievement Motivation

Achievement motivation is the inner urge of an individual to accomplish very well or well or nil in the classroom and will be predicted using appropriate instruments.

1.6 OBJECTIVES

The objectives formulated for the study are as follows.

1. To study the level of Multiple Intelligences in total and type wise among the secondary school students of Mysore city.
2. To study the level of Creativity among the secondary school students of Mysore city.
3. To study the level of Achievement Motivation, among the secondary school students of Mysore city.
4. To study the difference in the level of Multiple Intelligences in total and type wise between the following categories of secondary school students of Mysore city:
   - Boys and Girls
   - Students of Government and Private School
   - Students of Urban and Rural Schools
   - Students of Kannada and English Medium
5. To study the difference in the level of Creativity between the following categories of secondary school students of Mysore city:
   - Boys and Girls
   - Students of Government and Private School
   - Students of Urban and Rural Schools
   - Students of Kannada and English Medium
6. To study the difference in the level of Achievement Motivation, between the following categories of secondary school students of Mysore city:
   - Boys and Girls
   - Students of Government and Private School
   - Students of Urban and Rural Schools
   - Students of Kannada and English Medium
7. To study the relationship between Multiple Intelligences and Creativity among the secondary school students of Mysore city.

8. To study the relationship between Multiple Intelligences and Achievement Motivation among the secondary school students of Mysore city.

HYPOTHESIS

- **Hypothesis – 1**: There is no significant difference in the level of Multiple Intelligences in total and type wise between the Boys and Girls studying in the secondary schools of Mysore city.

- **Hypothesis – 2**: There is no significant difference in the level of Multiple Intelligences in total and type wise between the students of Government and Private schools studying in the secondary schools of Mysore city.

- **Hypothesis – 3**: There is no significant difference in the level of Multiple Intelligences in total and type wise between the students of Rural and Urban schools studying in the secondary schools of Mysore city.

- **Hypothesis – 4**: There is no significant difference in the level of Multiple Intelligences in total and type wise between the students of Kannada and English Medium studying in the secondary schools of Mysore city.

- **Hypothesis – 5**: There is no significant difference in the level of Creativity between the Boys and Girls studying in the secondary schools of Mysore city.

- **Hypothesis – 6**: There is no significant difference in the level of Creativity between the students of Government and Private Schools studying in the secondary schools of Mysore city.

- **Hypothesis – 7**: There is no significant difference in the level of Creativity between the students of Rural and Urban Schools studying in the secondary schools of Mysore city.
• **Hypothesis – 8**: There is no significant difference in the level of Creativity between the students of Kannada and English Medium studying in the secondary schools of Mysore city.

• **Hypothesis – 9**: There is no significant difference in the level of Achievement Motivation between the Boys and Girls studying in the secondary schools of Mysore city.

• **Hypothesis – 10**: There is no significant difference in the level of Achievement Motivation between the students of Government and Private Schools studying in the secondary schools of Mysore city.

• **Hypothesis – 11**: There is no significant difference in the level of Achievement Motivation between the students of Rural and Urban Schools studying in the secondary schools of Mysore city.

• **Hypothesis – 12**: There is no significant difference in the level of Achievement Motivation between the students of Kannada and English Medium studying in the secondary schools of Mysore city.

• **Hypothesis – 13**: There is no significant relationship between Multiple Intelligences and Creativity among the students studying in the secondary schools of Mysore city.

• **Hypothesis – 14**: There is no significant relationship between Multiple Intelligences and Achievement Motivation among the students studying in the secondary schools of Mysore city.

1.8 Limitation of the Study

1) The study would be limited to secondary school students only

2) The study is limited to the urban and rural schools of Mysore city, along with rural areas of 3 taluks viz., Nanjangud, T. Narasipura and K. R. Nagar.