

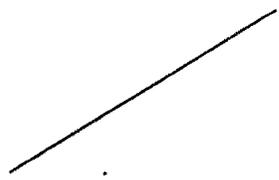
*"Intelligence is*

*the aggregate or global capacity of the individual*

*to act purposefully,*

*to think rationally,*

*and to deal effectively with his environment"*



# **CHAPTER -I**

## **THEORETICAL FRAMEWORK**

### **1.0 INTRODUCTION**

Parents, the world over, wish to see their children succeed in life. And this definitely is the most appropriate desire of any well wishing parent. To see their children well placed in life, they do enormous amount of sacrifices. They forego their personal comforts, work overtime, travel miles, cut down on their personal expenses, spend sleepless nights planning, often go hungry, reduce their number of holidays, and much more. They do all these in order to put together enough resources, so that their children get at least the opportunities which would enable them to do well in life. The poor wish that their children do not suffer from any deprivation like they did; the rich dream of even higher status. More, better, brighter, higher-these become the watchwords for them. These are the ends to which they aspire. To get to any of these, education is one of the sure means, or so they believe.

Admittedly education is one of surest paths that could help an individual reach his / her dream world. For centuries it has done this and extrapolating its prowess, one can safely conclude that in the future too it will help millions to attain their goals in life. Therefore, a large investment is made in education.

Education in its turn cannot be said to have let down the hopes and aspirations of people. People as we know today have amassed more wealth, are enjoying better lives, are confident of brighter prospects in life, and are proud to have attained higher societal status because of education. The poor can hope for a brighter tomorrow while the rich can strive for still higher. All these are possible today, thanks to education.

But, let us not be carried away by the successes in life that education has scripted. These need to be acknowledged gratefully. At the same time, even as we swim in the pool of great successes and achievements, let us not make the mistake of closing our eyes to the other side of the coin which is a little darker!

It is the reality today that there are thousands of educated who are unemployed. Or shall we say that education has made them unemployable! If it were so, then could it be said that education has failed them? Perhaps it has not. Rajput (2005) asks, "Can the education system be held solely responsible for shattering the dreams of the Indians? Even the strongest critics of the education system would find it difficult to assign all the blames to education alone." It is not the education system alone but the educators in it who have failed due to their inappropriate instructional strategy.

Going by the success stories of people, however, one cannot jump to the conclusion that it is education that is responsible for the

thousands of unemployed but educated youth. It is not the bath tub but the water in the bath tub that is dirty; it is the way, the system, the instructional strategy as a whole that needs to be blamed. Hence, it is not education as such but the instructional strategy that needs to be changed and purified.

### **1.1 INSTRUCTIONAL STRATEGY**

Instructional strategy includes both the art of teaching or imparting instruction as well as the whole process of evaluation. When we look at the dominant teaching process, the lecture method of teaching cannot escape our attention. Right from an early age children are exposed to a learning situation that is generally characterized by “teacher talk”, the lecture method. Without any fear of exaggeration one may say that the process of teaching learning has almost become one way. The lecture method of teaching of course has its own merits. Yet this caters or is suitable to only one group of students, that is, those who excel in linguistic intelligence. What is overlooked in the process is the fact that all students aren't linguistic learners. Today we know that people learn differently: while some are linguistic, others show preferences to either auditory or spatial or body kinesthetic or a combination of two or more of these processes. Admittedly therefore, since the students learn differently, the lecture method of teaching would definitely be rather ineffective. Hence, there is a need of adopting a process of teaching which would address variously styled learners. For without addressing the

fact of people/students showing different styles of learning, we run the risk of making the learning process not only ineffective but also uninteresting.

The second component the teaching – learning process is the process of evaluation. It is an integral part of any educational system. Whether we like it or not it will continue to remain ingrained in our educational system. Its forms might change over the years but its existence may not. And why should it? After all there is the question of huge investment. No one would like his/her investment to lie idle and unproductive. Therefore after the specified period of instruction is over, it is only right to carry out an evaluation. This evaluation is carried out generally with the help of the examination.

## **1.2 EXAMINATION**

An examination, Vernon (1971) opines, is employed as a test of achievement, to prove that an individual pupil has, or has not acquired a certain amount of knowledge of a subject; it is for assessing the efficiency of the teachers whose pupils are examined; it acts as a prognostic agent for predicting students' future achievement; it provides an opportunity for the manifestation of any hidden talent; it could also and in fact it must act as an incentive for stimulating students to work; and it is to facilitate the act of diagnosing students. Interestingly, if we examine the above functions of exami-

nation as propounded by Vernon closely what would strike us almost immediately is that irrefutably the last function stated by him occupies the centre-stage.

Examinations today are conducted largely for its diagnostic function. That is to say that the examinations today are conducted to ascertain how much students do not know! A deficit diagnosis is what is achieved. Students are made to take a two or three hour examination. After a certain period the results are published where marks are awarded to the students. And based on these marks the worth of an individual student is measured.

If marks reflect *only* academic achievement and are assigned consistently according to a system, such marks may be compared with considerable validity (as long as the system according to which the marks are assigned is made clear). But when a single mark represents a hodgepodge of factors (e.g., achievement, attitude, attendance, punctuality, or conduct) or systems (e.g., comparison with other students, comparisons with standards of effort, or improvement), interpretation or comparison of such marks becomes a hopeless task. Unfortunately, the latter case characterizes some marking practices today. (Kubiszyn & Borich, 2003, p 216).

And this undoubtedly is being very unfair to the students. What is even worse is that based on this deficit diagnosis (marks/percent-

age) a student is pigeonholed as intelligent, bright, smart, clever, weak, poor, 'good for nothing' etc. With the help of these marks it is claimed that the intelligence of students has been successfully measured. What is this intelligence and can this be quantified so as to be measurable?

In this research, therefore, the researcher dealt with both the teaching as well as the process of evaluation incorporating the theory of Multiple Intelligences. However, let us first deal with intelligence, its measurement, and the Intelligent Quotient (IQ).

### **1.3 CONCEPT OF INTELLIGENCE**

Philosophers over the years have attempted to answer this twin question, namely what is intelligence and how can this be measured. Intelligence, Socrates thought, was equal to knowing oneself because all men by their very nature desire to know. To confirm this view, Descartes said; "I think therefore I am". This leads to the belief that intelligence was synonymous with thinking. Intelligence therefore came to be considered as some sort of an inviolable capacity. Taking the cue from biology and having defined life as "the continuous of the internal relations to the external relations", Herbert Spencer believed that adjustment was achieved by virtue of intelligence in man (Guilford, 1967). But this did not satisfy all. More investigations were required.

After intensive investigations on the topic, Spearman (1927) came with the Two Factor theory of intelligence. According to this theory, intelligence of a person is composed of two factors, namely the general (g) and the specific (s) factors. Not satisfied with this, Thurstone (1938) proposed a family of nine primary mental abilities namely, Visual or Spatial, Numerical, Perceptual, Verbal, Memory, Induction, Deduction, Word Fluency and Problem Solving abilities with none preeminent among them. Even this did not survive the test of satisfaction. Then came the famous Structure of Intelligence by Guilford. He posited that human intelligence had a definite structure with four Contents, namely, Figural, Symbolic, Semantic, and Behavioural, five Operations, namely, Evaluation, Convergent thinking, Divergent thinking, Memory, and Cognition and six Products, namely, Units, Classes, Relations, Systems, Transformations and Implications (Guilford, 1967). This structure of intelligence, when seen in the light of the theory of Multiple Intelligences, does ring a bell of at least some of the Intelligences that Gardner talks about. For example, Guilford talks of Relations and Transformations as Products and Behavioural as Content which could be seen as related to Gardner's Interpersonal, Intrapersonal and Existential Intelligences. Similarly, what Guilford terms as Figural and Symbolic we might see them as Spatial Intelligence.

This satisfied the inquisitive mind about the concept of intelligence theoretically. But we were still very far from really defining intelligence on practical terms. Then emerged in the scene the Binet's

faculty theory of intelligence. According to this, intelligence was understood to be one of the faculties of mind. This could be developed to its maturity by resorting to specific exercise and specific training. Unfortunately, though both philosophically as well as theoretically this too turned out to be unacceptable, as the most crucial question of its measurement could not be ascertained. That is why Spearman (1927) called this faculty theory of intelligence of Binet “inconceivably illogical”. It was illogical because the theory did not help measure intelligence. Therefore there had to be some other way of defining intelligence.

#### **1.4 DEFINITION OF INTELLIGENCE**

Over the years, many eminent psychologists and educationists have made serious attempts in defining Intelligence. Yet there is hardly any one definition that could be taken as the definition of Intelligence. In fact there seems to be no agreement at all among the psychologists and the educationists as far as a single definition of Intelligence is concerned. Opinions such as, Intelligence is the ability to solve general human problems, is the ability to think in terms of abstract ideas, is the ability to learn, is the general mental adaptability to new situations, problems and conditions, is what the Intelligence tests test etc. are quite common. Dandekar (2002) says that Intelligence is **(i)** The ability to profit by experience. **(ii)** The ability to adjust to one’s environment. **(iii)** The ability to solve problems. **(iv)** The ability to perceive relations. **(v)** The ability to think in abstract terms; and **(vi)** The ability to learn.

Dandapani (2000) similarly summarizes various definitions / descriptions of Intelligence in terms of its predominant characteristic as: **(i)** Adaptation to novel situation. **(ii)** Abstract thinking. **(iii)** Purposive behaviour. **(iv)** Economy and efficiency of performances; and **(v)** Ability to retain and retrieve past knowledge.

Chatterjee (2000), after having thoroughly studied the meaning and implications of definitions/descriptions furnished by some of the well-known psychologists and educationists, has categorized them under five categories, namely: **(i)** Biological definitions. **(ii)** Physiological definitions. **(iii)** Educational definitions. **(iv)** Sociological definitions; and **(v)** Faculty definitions.

Each of these above-mentioned categories requires an explanation. Biological definitions of intelligence refer to those statements/ phrases that deal with the person's ability to adjust to various situations, conditions and environments. Those definitions / phrases that attempt to define intelligence as "the function of physiological process" such as that of the nervous system are called Physiological definitions. The Educational definitions are self-explanatory. All statements pertaining to learning would be called Educational definitions of Intelligence. There are still other statements/descriptions about Intelligence that speak of one's behaviour in the group, his/her relationship therein etc. These are called Sociological definitions. And finally, definitions related to abstract thinking are called the Faculty definitions.

However, all these earlier attempts of defining intelligence suffered from a serious weakness as “a definition that satisfies the needs of univocal communication must contain referents in the real world or must point unambiguously to something that points to referents in the real world” (Guilford, 1967, p.12). Boring (1950) for example defined intelligence “as the capacity to do well in an intelligence test”. In other words, what he implied here was that intelligence was what the intelligence tests test. That is, the content of the intelligence test is intelligence. Obviously, this way of defining intelligence is unacceptable. How can we know the content of an intelligence test’s question? Therefore there was a need of defining intelligence in terms that themselves needed no further explanations, which could be in terms of some observable and behavioural phenomena.

Satisfying these conditions, Wechsler (1958) provides the best working definition of intelligence. According to him, “intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment”. This is probably the best operational definition of intelligence we have. The three behavioural components of an individual namely, to act purposefully, to think rationally and to deal effectively with his environment are by far much simpler to understand as these are behavioural in nature. Intelligence hereafter will be used in this sense.

## **1.5 INTELLIGENCE TEST AND THE I.Q.**

Having thus defined intelligence operationally, the next important task at hand is to find ways and means to measure it. Various eminent psychologists have made numerous attempts in this regard. To mention some of the better known tests, we have the Simon Binet Intelligence Test, Wechsler Adult Intelligence Test (WAIS), Raven Progressive Matrices Intelligence Test, etc. Of these and many others, the one that has served the most is the Intelligence Quotient, (I.Q.), test, the final product of Simon Binet's intelligence tests – L and M forms. With the help of the I.Q. test a person's intelligence is being measured even today.

### **1.5.1 IQ – A SINGLE SCORE**

With the help of the IQ test a single score is obtained and based on that score an individual is labeled either as gifted or as moron, imbecile, stupid etc. depending upon where lies the score. What definitely seems to be emphasized in this process is the fact that intelligence of a person is a single entity which it is clearly not. Rather it is a multiple reality (Spearman's Two factor theory, Thurstone Family theory, Guilford' Structure of Intelligence etc.). Gardner (1983) refutes the concept of intelligence being a single entity. He says, "It becomes necessary to say, once and for all, that there can never be, a single irrefutable and universally accepted list of human intelligences". According to him, human intelligence is characterized by three things, namely;

- i. a set of skills that enable a person to solve genuine problems encountered in life,
- ii. the ability to create an effective product or offer a service that is valued in a culture, and
- iii. the potential for recognizing or creating problems, thereby establishing the necessity for the new knowledge.

Therefore, while measuring the intelligence of a person, it needs to be borne in mind that what is measured is a multiple reality and not a single entity as it is often mistakenly conceived.

### **1.5.2 INCONSISTENCY OF IQ**

There is the whole question of the very consistency as well as inconsistency of the IQ. Dandapani (2000), for example, asserts that the IQ of an individual determined during his/her infancy continues to be the same, that is, it remains unchanged as long as that individual continues to live in the similar environment. This leads us to believe that the intelligence of an individual is stimulus dependent. And so, as long as the environment/stimulus is similar the IQ of the individual is more or less constant. But with the change in the environment the IQ would also change. Chatterjee (2000) reinforces this stand:

- i. The IQ does not remain constant. The change in the environment may bring out a change in the IQ.
- ii. The IQ is the product of native endowment and training.
- iii. No test is completely reliable. Repetition of the same test on the same subjects may not give the same IQ.

- iv. Fluctuation occurring in the IQ stems from fatigue, lack of motivation and other personal factors of the tests and the personal equation of the examiner.
- v. IQ fluctuates in case of infants. But it relatively remains constant between ages 4 and 15.

Thus, one thing that becomes abundantly clear from the above discussion is that the IQ of a person cannot be determined once and for all. It needs to be accepted that although the IQ score of a person at any given moment of time is a valuable tool towards predicting the intellectual success of an individual, the person cannot be labeled for his / her whole life. The score is not a life time determinant. Let us then pry into the effects of the IQ score a little more.

### **1.5.3 NEGATIVE EFFECTS OF AN IQ SCORE**

Even while acknowledging the contribution of the IQ test in the field of education it is highly imperative for us not to close our eyes to the other side of the coin. Undoubtedly, the IQ test score does point to the individual's abilities. It is a label that is supposed **to predict** whether a person will be able to do certain work. In reality, it does predict to a large extent what **could be** the future of that individual. But what it does not say with definite finality is what **will be** the future of that individual. This latter aspect of the IQ score is sadly overlooked. Most often, it does become the final word. That is why Sternberg (2000) laments, "The predictor becomes more important than the achievement itself, and instead of acknowledg-

ing that there is something wrong with the test, we conclude that there must be something wrong with the person". According to him, the most unfortunate of all 'contributions' of the IQ test is the act of labeling of individuals based on their IQ test scores. Individuals are, as it were, marked/labeled almost once for and all. As a consequence of this labeling a number of other unfortunate and undesirable phenomena occur. So much so that these begin to appear very normal and even natural at times.

**i. Labeling**

The IQ test score becomes a handy tool for labeling a person. A person is labeled as per his / her scores in the test. The labeling varies in the spectrum from moron or genius. Once the person has been labeled he /she is pigeonholed and is almost condemned to a particular status for the rest of his /her life as this kind of labeling implies a host of other consequences. It opens, as it were, the Pandora box.

**ii. Expectation**

The first immediate consequent of the act of labeling is the expectations befitting the label. These expectations are from both the higher authorities as well as from the pupils themselves. And it need not be forgotten that expectations by their very nature are contagious. They affect the authorities, parents as well the individuals taking the IQ test. Their attitudes and perception of the

individuals get conditioned in line with the respective expectations. Even their very outlook and the treatments thereby of the individuals are affected. A teacher in the school, for example, would expect from his/her student only as much as the pupil's IQ score indicates and hence the corresponding label demands. A moron, for example, would hardly be expected to stand first in the class. A genius on the other hand cannot be expected to fail. If by chance either of these two did happen, then that would be considered unnatural, even to the extent of being something unbelievable if not impossible. In either case, the authority would tend to doubt the reliability of the evaluation criteria rather than the ability of the individual.

There are two kinds of expectations, both positive as well as negative. For the average and above in the spectrum of IQ rating scale, the expectations are positive as they continuously challenge the individuals to live up to their labeled standards. They are challenged all the time to perform better. This is good. However, those below average in the IQ rating scale, the expectations are negative as they hardly challenge the individuals. Everyone expects a moron, for example, to perform befitting a moron. He/ she is never expected to perform as a genius. And so when he/ she scores poorly in the evaluations, he /she is not blamed because that is what is expected of him/her. Neither the teachers nor the parents are disappointed. Yes, no one is disappointed as everything happened according to the expectations. This leads to another malady in the IQ world, the self fulfilling prophecy.

### **iii. Self Fulfilling Prophecy**

The expectations give birth to the philosophy of Self Fulfilling Prophecy among the individuals. Individuals begin to believe that if one is labeled as a moron, then he/she is a moron. Similarly if one is labeled as average, then he/she is just that. The same thing begins to happen to one who is labeled as a genius. Whatever be the labeling, individuals begin unconsciously to believe in their labeling. Consequently, they work exactly in accordance with their labeling and the expectations thereof. The genius work harder still to meet the expectations of their authority figures believing that they are capable. Very well! But those below average work only so much that would meet the expectations of the authority-figures believing that is what they are capable of. They begin to believe that they have nothing higher to aspire for. Ultimately thus the labeling become the self fulfilling prophecy of individuals.

### **iv. Drying up of Opportunities**

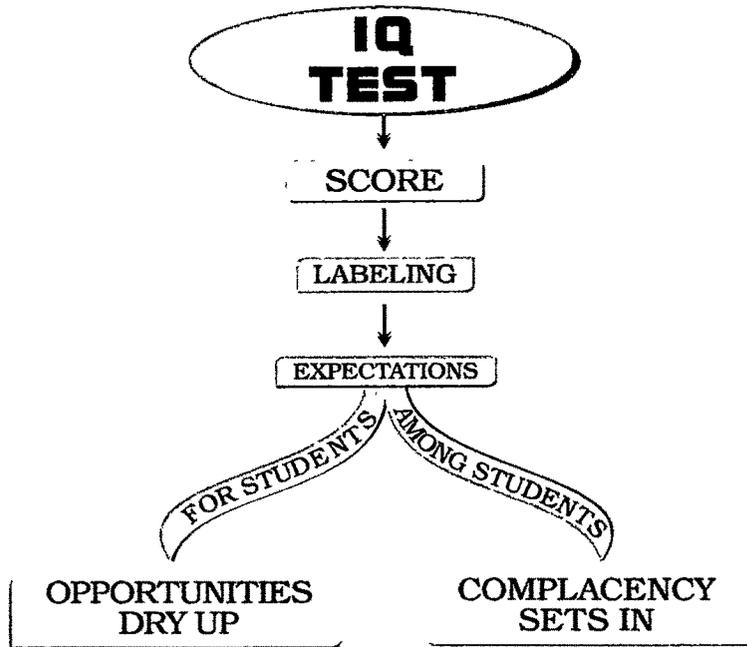
The expectations affect those labeled below average the most. They tend to work only as much as deemed sufficient to fulfill the expectations. And they seem to be perfectly comfortable and satisfied with that. The authorities too begin to provide them with opportunities to these individuals only so much that would be sufficient to meet their expectations. As a result, opportunities that could help these individuals to improve their performances dry up. They are not exposed to more challenging situations that could inspire the average and below to raise their standards. And indeed how could

they raise their standards if they are not provided with the opportunities.

**v. Rise in Complacency**

Finally, labeling leads to complacency among the individuals who are labeled average and below average. As they haven't to aspire for greater, higher, they are satisfied with the little. Hard work among them seems to be a thing alien. And why should they even think of working hard when everyone is satisfied with what they are performing? Their performance is perfectly in congruent with their labeling and expectations subsequently. On their part, since they have come to believe in their labeling they are comfortable with the little. Thus, their complacency kills the little genius inside them that may be fighting hard to show forth itself!

In short, the IQ score, instead of doing good to the average and below average individuals, ultimately proves to be their enemy that kills their creative potentials. While the gifted learners tend to become complacent, the low learners tend to remain satisfied with the little. And even that gradually extrapolates towards the minimum. Of course, the average learners do tend to maintain the status quo. Thus, in the long run, the IQ scores do not really help the individuals irrespective of the block they fall under. Schematically the negative effect of the IQ test may be shown as below:



**Figure 1.1 : The negative effect of the IQ test.**

Thus, the test that is intended to measure the intelligence of individuals may turn out to be contagious disease gradually killing the little genius! But the test itself can hardly be blamed for it. For, “If IQ rules, it is only because we let it. And when we let it rule, we choose a bad master. We got ourselves into the test mess; we can get ourselves out of it” (Sternberg, 2000).

## **1.6 SILVER LINING**

In spite of its potential disastrous consequence, the success, utility and importance of the I.Q. test had not been questioned till the

arrival of Howard Gardner and Daniel Goleman. With their arrival the silver lining had appeared. They were among the first ones to openly challenge the ultimate validity of the I.Q. test when they propounded the theories of Multiple Intelligences and the Emotional Intelligence respectively. Without going into the details of their differences, in a very simplistic way, these two contended that an individual's intelligence was far from being a single entity. Rather it is a multiple reality. They had arrived at this conclusion after years of serious research among the professionals. Today, in addition to these two there are also a third and a fourth contender among them, namely the Spiritual Intelligence and the Successful Intelligence. For the present study, however, the investigator was exclusively concerned with the Multiple Intelligences only.

## **1.7 MULTIPLE INTELLIGENCES**

In his career long research Howard Gardner realized that the I.Q. index although did provide an indication of one's general intellectual ability, it definitely was not the all of an individual's intelligence. How could such a complex reality as intelligence have been possibly measured with a single score? He further posited that the intelligence of an individual is a multiple reality. And so he at first proposed seven intelligences, namely, the Linguistic Intelligence, Logical Mathematical Intelligence, Spatial Intelligence, Bodily – Kinesthetic Intelligence, Musical Intelligence, Interpersonal Intelligence, and Intrapersonal Intelligence. To these seven he added an

eightth one, the Natural Intelligence and after his further exploration into the subject he has now added the ninth one also, namely the Existential Intelligence.

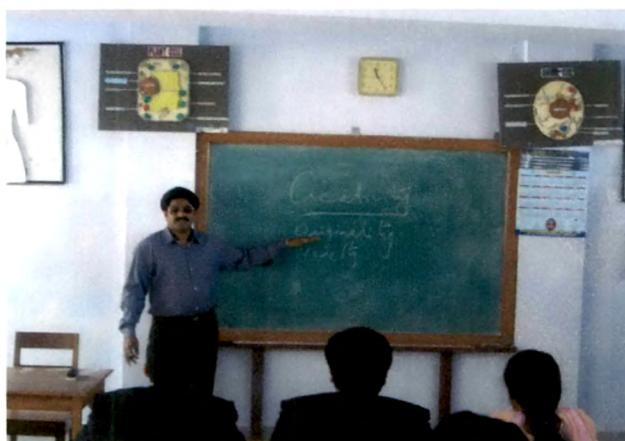
However, even as when he made this claim, at the starting point of his contentious journey, he honestly confessed, “the exact nature and breadth of each intellectual ‘frame’ has not so far been satisfactorily established, nor has the precise number of intelligences been fixed. But the conviction that there exist at least some intelligences, that these are relatively independent of one another and that they can be fashioned and combined in a multiplicity of adaptive ways by individuals and cultures, seem to me to be increasingly difficult to deny” (Gardner, 1983, pp. 8-9). This was his initial confession. Today, however, he asserts with a fair amount of confidence that human intelligence is definitely not a single entity. There are many intelligences. He has already propounded nine and in future there could be some more added to the list provided they pass the eight tests, which form the basis of Multiple Intelligences discussed in the next section. Let us now very briefly familiarize ourselves with these nine intelligences.

Rogers (<http://www.multiple.intelligences>) provides the summary definitions of each of the nine intelligences as follows:

### 1.7.1 LINGUISTIC INTELLIGENCE

Linguistic intelligence is the ability to use with clarity the core operations of language. It is the ability to use language to describe events, to build trust and rapport, to develop logical arguments and use rhetoric, or to be expressive and metaphoric. People with linguistic intelligence have sensitivity to the meaning of words – the capacity to follow rules of grammar, and, on carefully selected occasions, to violate them. At a somewhat more sensory level - sensitivity to sounds, rhythms, inflections, and meters of words – that ability which can make even poetry in a foreign tongue beautiful to hear. And a sensitivity

to the different functions of language- its potential to excite, convince, stimulate, convey information, or simply to please. The ability to mesmerize one's audience



whether with just a small speech or to keep them spell bound for hours together with practically no substance at all is possessed by the Linguistically intelligent persons. These can create new meanings with the same old words or phrases of a language. A language remains alive largely due to these people. This intelligence is manifested best among the storytellers, administrators, salespersons,

clergy, counselors, lawyers, philosophers, playwrights, orators, politicians, editors, journalists etc.

### **1.7.2 LOGICAL MATHEMATICAL INTELLIGENCE**

The Logical mathematical intelligence, primarily, is the capacity to use and manipulate numbers effectively and to excel in reasoning. It is the capacity to recognize the inherent logical patterns in things, events, etc. It is the ability to use numbers to compute and describe, to use mathematical concepts to make conjectures, to apply mathematics in personal daily life, to apply mathematics to data and construct arguments, to be sensitive to patterns, symmetry, logic, and aesthetics of mathematics, and to solve problems in design and modelling. It is the ability to discover the cause-effect relationships in the world. In other words, this intelligence ensures that reasoning must precede everything. Things must be logical and coherent. Thus, mathematicians, accountants, lawyers, scientist, computer programmers etc. exhibit this intelligence.

### **1.7.3 SPATIAL INTELLIGENCE**

Leonardo da Vinci, Rodin, M F Hussain and the like have left their indelible marks in human history. They have done with ease things which probably none will in future. They have created immortal masterpieces. They have transformed concepts that they conceived into physical realities. They were genius spatially. The Spatial Intelligence is characterized by the ability to perceive the visual-spa-

tial world accurately and to perform transformations on those perceptions. Further, special sensitivity to colours, forms, space, shapes and their relationships distinguishes this intelligence. The capacities to visualize viv-

idly with ease the verbal concepts and information tell us of the development of this intelligence. In other words, it is the ability to perceive and represent the



visual spatial world accurately, to arrange colours, lines, shapes, forms and space to meet the needs of others, to interpret and graphically represent visual or spatial ideas, to transform visual or spatial ideas into imaginative and expressive creations. The Fine Artists, people working in the field of advertising, interior and exterior decorators, sailors, engineers, surgeons, architects, painters, carpenters, masons, jugglers, theatre artists, sculptors etc. can be seen as possessing and to have developed this intelligence.

#### **1.7.4 BODILY-KINESTHETIC INTELLIGENCE**

Sergi Bubka soared to the heights that probably none would. Ben Johnson sprinted the hundred metre race within ten seconds. This again would remain an ever unbroken record! Magic Johnson's feat

in basketball will echo for ever in the minds and ears of the people of the world. Much in the same way, Pele will remain the idol of all footballers of the world. What did all these personalities have in common? Undoubtedly the ability to coordinate and manipulate the movements of the limbs of their bodies generating an awesome amount of perfec-

tion. This is the result of the bodily kinesthetic intelligence at its zenith. To be intelligent Bodily-kinesthetically means to deal with and to manipu-



late body movements effectively and meaningfully to express ideas and feelings. The ability to handle object skillfully is another characteristic of this intelligence. To perform specific bodily movements with proper balance and coordination of various parts of the body requires this intelligence. The performing artists, sports persons, even surgeons, craftsmen, instrumentalists, artisans etc. exhibit this intelligence.

### **1.7.5 MUSICAL INTELLIGENCE**

Over a period of time it was observed in a certain school that the students did very badly in mathematics. Year after year it was ob-

served that students fared poorly in mathematics. What intrigued the teachers most was that even those students who did very well in the other subjects could not score a first division marks in mathematics. Everything was tried. All possible helps and assistance were given to the students. Yet the result was the same. Students, year after year, almost had come to believe that mathematics was simply not their cup of tea. Teachers too tried various approaches to deal with the issue, but nothing seemed to work.

Then the science teacher of the school set himself on a course to tell the students that mathematics after all wasn't that difficult. He diagnosed the demon:

first, students did badly because they could not remember the mathematical formulae; second, the students were very good at folklores. So he personified each variable in all the school mathematical identi-



ties/formulae and composed them into folklores of the place and taught them in the class. And lo! Mathematical phobia had disappeared. Every time the students needed an identity/ formula, all that they did was to hum the tune of the folklore silently and it was in their finger tips. The result? Well, that is anybody's guess - there

was no failure in mathematics thereafter till this day. The Musical Intelligence of Howard Gardner had done the job.

The Musical Intelligence, as the name itself indicates, is the ability to handle, perceive, discriminate, transform, compose, and express musical tones. It is the ability to understand and develop musical techniques, to respond emotionally to music and to work together to use music to meet the needs of others, to interpret musical forms and ideas, and to create imaginative and expressive performances and compositions. Sensitivity to rhythm, pitch, etc. of music is the hallmark indication of this intelligence. A musically intelligent person is able to create melodious compositions out of individual musical notes. He /she is able to perceive the fine distinctions between notes. Further, he/she is able to relate mere prosaic presentations with more poetic ones. Facts and ideas he/she can put in musically which often becomes more pleasant not only for the purpose of their presentations to others but which also turn out to be easier for remembering.

#### **1.7.6 INTERPERSONAL INTELLIGENCE**

The Interpersonal Intelligence is the ability to perceive and make distinctions in the moods, intentions and feelings. This is to be sensitive to and recognize various bodily expressions such as facial, gestures, voice/tone etc. of another, to have the distinction of being attractive and magnetic and to be able to share/exchange these with another and even influence others effectively. It is the ability

to organize people and to communicate clearly what needs to be done, to use empathy to help others and to solve problems, to discriminate and interpret among different kinds of interpersonal clues, and to influence and inspire others to work towards a common goal. This intelligent is best manifested among



the administrators, managers, politicians, social workers, doctors, nurses, therapists, teachers, sociologists, psychologists, consultants, evangelists etc.

### **1.7.7 INTRAPERSONAL INTELLIGENCE**

Apart from being able to relate with others meaningfully, there is a greater need to know oneself. Self-knowledge, that is, to have an accurate knowledge of oneself is essential for a sustained interpersonal relationship. Intrapersonal Intelligence facilitates this process. It is the ability to assess one's own strengths, weaknesses, talents, and interests and use them to set goals, to understand oneself to be of service to others, to form and develop concepts and theories based on an examination of oneself, and to reflect on one's

inner moods, intuitions, and temperament and use them to create or express a personal view. To be aware of one's own moods, feelings, inner desires

and aspirations, motivations etc. not only enhance self-esteem but also at the same time enrich societal living. Intrapersonal intelligence is best manifested among



planners, businessmen, psychologists, artist, religious leaders. As stated above, a strong Intrapersonal intelligence is almost a prerequisite for strong interpersonal relationship. This is the binding force as it were of any relationship.

### **1.7.8 NATURALISTIC INTELLIGENCE**

One morning, Mr. Gyamy behaved rather strangely. He refused to do anything none knew why. Upon inquiry the administration of the institution learnt that the only yellow rose plant had gone missing from the garden. He neither ate nor spoke to anyone till he had found the missing yellow rose plant from his garden and subsequently was assured that the stolen rose plant was going to be well looked after. Much in the same way, Mr. Padam cried silently the whole day when he found that the old cow in the farm was no more.

Mr. Biswas paid an unthinkable price of Rupees eight thousand for a piranha that weighed less than a kilogramme. Some would call these acts of sheer madness. But these acts weren't so. These were the manifesta-



tions of love for nature. They are examples of naturalistically intelligent persons. The Naturalistic Intelligence is exhibited in one's expertise in understanding, recognizing, relating to, distinguishing and classifying the flora and fauna of one's environment. Further, to show special love and sensitivity to nature and the natural phenomena one needs Naturalistic Intelligence. Biologists, Environmentalist, Geologists, farmers, hunters etc. require this intelligence.

### **1.7.9 EXISTENTIAL INTELLIGENCE**

This intelligence is the newcomer among the above-mentioned eight intelligences. It is the ability to recognize, uphold, share, and impart values (social, religious, human) of life. This is concerned with human's living and not merely existing. Advocates of value education, for example, need their existential intelligence developed more!

## **1.8 BASIS OF MULTIPLE INTELLIGENCES**

The theory of Multiple Intelligence has not yet been fully appreciated and their potential exploited in the educational process. Simple questions like, what is new about this? How are they different from talents or skills or competencies or aptitudes? What is the basis for this? etc. have already been asked by the people. That is to say that the theory has not been accepted as having universal application. Yet Gardner hasn't been discouraged. He is fully aware of the objections raised regarding the authenticity and universal applicability of Multiple Intelligences. Despite these he consciously prefers to call these 'intelligences' and not simply be satisfied by calling them talents or aptitudes. "I am deliberately being somewhat provocative. If I'd said that there are seven kinds of competencies, people would yawn and say 'Yeah, Yeah'. But calling them 'intelligences', I am saying that we have tended to put on a pedestal one variety called intelligence, and there's actually a plurality of them, and some are things we have never thought about as being 'intelligence' at all " (Weinreich-Haste, 1985, p. 48). He then calls these intelligences because these pass the eight tests / evidences, namely:

1. Potential isolation by brain damage.
2. The existence of Savants, Prodigies, and other Exceptional Individuals.
3. A distinctive development history and a definable set of expert "End State" performances.
4. An evolutionary history and evolutionary plausibility.

5. Support form psychometric findings.
6. Support form experimental psychological tasks.
7. An identifiable core operation or set of operations, and
8. Susceptibility of encoding in a symbol system.

Armstrong (2000) has dealt with these eight evidences in detail. These are clearly beyond the scope of this research report. Hence the investigator would not dwell on them.

### **1.9 DEVELOPMENT OF MULTIPLE INTELLIGENCES**

As stated above, these intelligences can be developed to an adequate level of competency. Given an opportunity each of these nine intelligences can be developed by all. Therefore, at any given moment of time Gardner would hesitate to say that this one or that one is either the weak or strong intelligence in someone. Who knows that the one considered as weak intelligence of someone, some day in a more appropriate condition that might not turn out to be his/her strongest! This appropriate condition according to him can be the following three factors:

1. Biological endowment including hereditary or genetic factors and the accidental factors like brain injuries before, during and after birth. For example, a lame or a fat boy cannot possibly be a good athlete or a dancer. (Exceptions in rare cases not ruled out!)
2. Personal life history of an individual too plays a significant role in the development of his/her intelligences. Parents,

teachers, guides coaches, peers, friends -all can help an individual develop his/her intelligences significantly. The opposite too can be the case.

3. Cultural and historical background of an individual too can either accelerate or retard the development of intelligences. The economics too is not ruled out.

The development of any of the intelligences would depend mainly on two factors, namely, the Crystallizing or Paralyzing experiences. These experiences often take place very early in one's life and act like turning points for the individual. While the crystallizing experiences enhance the development of intelligences the Paralyzing experiences retard the development of them. In fact, the crystallizing experiences of an individual almost set a platform, as it were, for the development of that/those intelligences. Quite, on the contrary, the Paralyzing experiences almost draw the curtain for an individual. After a Paralyzing experience an individual almost certainly comes to a full stop as far as the development is concerned. The development of intelligences also depends on certain situational factors, such as, access to resource person/persons or mentors, the historical/cultural atmosphere, geographical, and familial factors. A coach for, example, may spot certain talents of an individual in a particular field or area of the game of which the player him/herself was never aware. Upon coach's guidance the individual may start working on it. And who knows one day that individual may even

excel beyond anybody's imagination! Similarly, in an era or a race or a nation where the study of music or art is culturally valued, it is likely that the children of that era or race or nation would develop their musical or spatial intelligences more than the other intelligences. Much in the same way the normal, familial atmosphere play a great role in the growth and development of intelligences of individuals.

Further Gardner (1993) adds that as far as the distribution of the intelligences among the two sexes is concerned, these are distributed evenly. There is no evidence at all to assert that these are distributed among the two sexes in any preferential manner. Neither the males nor do the females enjoy any kind of advantages.

### **1.10 PRINCIPLES OF MULTIPLE INTELLIGENCE THEORY**

From the above discussion on the theory of Multiple Intelligences it is possible to condense the whole theory itself into some basic principles. These principles could provide a bird's eye view to the entire theory; one does not have to conduct a study of the theory of Multiple Intelligences to know what it is. For the purpose of familiarizing oneself with the theory, these principles would suffice.

1. Human intelligence is not a singular entity; it is a multiple reality.
2. Every person is a unique blend of dynamic intelligences.

3. Intelligences vary in their development, both within and among individuals.
4. All intelligences are dynamic.
5. Multiple Intelligences can be identified and described.
6. Every person deserves opportunities to recognize and develop the multiplicity of intelligences.
7. The use of one of the intelligences can be used to enhance another intelligence.
8. Personal background, destiny and dispersion are critical to knowledge, belief, and skills in all intelligences.
9. All intelligences provide alternate resources and potential capacities to become more human, regardless of age or circumstances.
10. A pure single intelligence is rarely seen.
11. Developmental theory applies to the theory of Multiple Intelligences.
12. Any list of intelligences is subject to change as we learn more about Multiple Intelligences.

Having thus familiarized ourselves with the theory of Multiple Intelligences, it is time now to come to the present study.

### **1.11 THE PRESENT STUDY**

The present study was an attempt to investigate the effects and implications of an instructional strategy which incorporated in it the theory of Multiple Intelligences.

## **1.12 RATIONALE OF THE STUDY**

More than ever before the human life has become increasingly complex. With the scientific developments new problems, new opportunities have arisen. In fact, without any fear of exaggeration, it may be stated that humankind today is in the era of specialization. Whether in the field of science and technology or in that of human relationships or even in that of our material needs, there is an urgent need of people with specialization. This is possible only if individuals' specific talents and intelligences are spotted in time and are provided thereafter with appropriate training. We can do this only if we know the persons with such orientations in right time. This ought to be function of education today.

According to M K Gandhi, the father of our nation, the aim of education is the all round development of man. It attempts to draw the best out of man/woman. If that is the aim of education, then we need to understand as much as possible, the human person as a whole. To achieve this aim of education, of course, the system of education does incorporate in itself the findings of various disciplines of learning.

To understand a child socially, for example, we employ the findings of Sociology. Fundamental concepts of Philosophy enables us to know the child's world-view. Whenever we wish to take a firm grip of the inner world of a child we turn to Psychology. Knowledge of Biology helps us understand the child in its course of physical de-

velopment and its superiority over the rest of the created world. Similarly the knowledge of the environment resonant with his/her personality, would his/her development be all round. These are there. However, in order that we provide an opportunity for the all round development of the child, we definitely need to know the child from all sides. We need to know the strengths and the weaknesses of the child. We need to understand the child exactly the way he/she is. For, as we know, every child is a bundle of enormous possibilities. Lest the child is led to frustration and total despair, in our educational system, it is imperative that we provide them with opportunities appropriate to their intelligences. Only when the child is in an environment resonant with his/her personality, would his/her development be all round. The prevalent system of education, sadly, does not fulfill this aim of education it professes. This is so because the present instructional strategies unfortunately are too general and are incapable of meeting the specific needs and aspirations of an individual.

The present instructional system comprises of mainly two major parts, namely the act of instruction and that of evaluation. And both of these must go hand in hand. The act of instruction, first, be such that it is in accordance with the reality of individual difference. Further, it must also be such that the individuals undergoing the instructions are evaluated appropriately for their learning outcomes. Now let us look at the prevailing practice of instruction.

The predominant method of teaching/instruction today is the lecture method. Those responsible for carrying out the act of teaching invariably most of the time resort to the lecture method. No doubt, given the average size of the class, teachers preferring the lecture method could hardly be blamed. They need to address a large number of students simultaneously. Also they are often preoccupied with the concern of "covering" the syllabus, (when, quite in the contrary, in fact, they ought to be preoccupied with the concern of "uncovering" the syllabus to the students!). This concern of covering the syllabus for the students leads them to undermine the reality of individual difference among the students, a fact that they are aware of very much and treat everyone as average.

Individual differences among the students are of different kinds. Apart from their physical and social differences, they are different in their learning style preferences; they are different in their intelligence levels. Today we know that students learn differently. While some are auditory learners, there are others who are visual, kinesthetic, tactile or a combination of two or more. When these are known to educators, it is hardly a justifiable practice that the lecture method should dominate the instructional field. No doubt the lecture method has its own merits. Yet, when the area of concern is the all round development of students, the lecture method alone is irrefutably inadequate. Students today need to be provided with opportunities for the optimum development of their interests, apti-

tudes, basic orientations - in all, their potentialities. Further, they need to be guided appropriately so that they are able to bloom wherever they are planted. But to guide a student meaningfully and appropriately, one must know the students. It is here the prevalent system of education clearly falls short.

The lecture method is inadequate because it does not cater to the needs of students showing their own preferential styles of learning. It fails to address to the needs of the students much less to challenge students for higher and better performance. What it definitely succeeds in achieving is the growing menace of disinterest and indiscipline among the students. And why should it not be so when they are denied of personal attention. The common standard method of instruction proves hardly capable of challenging the above average students. Therefore, they tend to remain passive in the classroom as their level of intelligence isn't challenged at all. Since they know already what is being taught, they do not feel the need of paying attention to the instruction. So they busy themselves in their own activities. Being the above average students, they are capable of more but since their potentialities and capabilities are hardly stretched for their optimum uses they remain satisfied with the minimum. Consequently, they do not make use of the opportunities available for excellence. On the contrary, at times they even resort to distracting activities in the classroom. The obvious conse-

quence then is the “indiscipline” in the classroom for no fault of theirs. Thus, on one hand the unsavory classroom “indiscipline” sets in, the priceless and rare commodity of intellectual excellence too is lost on the other. This is not only a personal but a national loss too. Could this be avoided?

Much in the same way, the lecture method adversely affects the below average or the weak/slow learners too. Since the lecture method generally is common for all students, it addresses the average students of the classroom. The below average ones find themselves at a loss as most of what is being taught go above their heads. In that event it is quite natural for them to feel being left out. When this happens almost all the time they begin to grow disinterested in the subject as well as in the whole process of learning itself. They tend to become less and less motivated to the extent that whatever little motivations they might have had initially, even that begins to fade away. This often, among other factors like, financial constraints and social pressures etc., leads to their dropping out from the formal educational institutions. In the context of the national concern of the universal retention of children, this definitely is like taking a step backward rather than forward. Cases of dropouts hurt the nation itself; it becomes a thorn in the flesh. An alternative instructional practice needs to be developed.

The other aspect of any instructional strategy is the act of evaluation. The present system of education being excessively preoccu-

ried with the examinations doesn't really cater to the individual's needs as per their capabilities. Too much importance is vested on the standardized evaluation of students even when the psychological findings make it abundantly clear that there exist no standard students. At the end of the teaching learning process, students are examined with stereotyped 'standard' examinations. This kind of standard examination often tends to examine how much the students don't know! Chengappa (2005) summarizes the views of experts in education on the present examinations very succinctly as, "the focus is on memory instead of understanding and thinking capability", "one size fits all doesn't have to be the case. There is strength in diversity", "Exams are made out to be monsters rather than stepping stones", "Class XII is seen as the end of the world. The Last Chance Saloon". Clearly, the experts do not uphold the present examination system because not much is achieved by this process. Hardly can it be said that the individuals are truly evaluated. Students are awarded marks/percentages. Based on these marks/ percentages they are labelled almost once for all leaving almost no room for the further development of their personalities as well as their success in life. These marks / percentages open the door to personal disasters - rise in emotional stress, (living a pressure cooker lives) leading to suicides (Saxena, 2005).

Around the time of declaration of Board/University examinations, headlines of students committing suicides fill the pages of newspa-

pers . 'Fear of failure' grips the minds of students. There is hardly anything that the students can hold on to. They begin to equate their worth with the percentage of marks. Students fail to realize that they worth much more than the percentage of marks that they are awarded. Consequently, securing low percentage seems to be the end of the road. It is as though they have hit a blind alley. This kind of 'marks' orientation clouds their vision so much that marks become synonymous to success and personal human worth. What they forget is that there is still a wide world open before them. But they cannot be blamed for this as they have not been exposed to all of intelligences in a serious manner. Their achieving low percentage hardly takes into account all the other ways they can be intelligent and score 'high percentages'. If only the theory of Multiple Intelligences found its place in the school instructional strategy, the number of pre and post result declaration suicides would, the researcher feels, definitely decrease.

The other harsh reality is the thousands of educated but sadly unemployed youth. The education they received has made them unemployable. These educated youth, in spite of years of formal education, still haven't recognized their strengths; they are yet to realize their worth. The educational system has failed in as much as it has not helped them train their particular proclivities. All along, like in a pipeline, students are being treated as standard students forgetting that each one of them is unique with a bundle of potenti-

alities. These tremendous amounts of possibilities remain 'covered', unexplored. Students go through the system as matters of routine. Consequently, at the end of it all, all we get is thousands of unemployable youth. What a waste! Should the educational system today, therefore, explore the possibilities of strengthening the natural talents and gifts of students? The researcher thinks it must.

Finally, the predominant instructional strategy today seems to be a one way traffic. The teachers talk and the students listen to them. For personal conveniences and situational constraints the lecture method of instruction has become almost a paradigm in today's educational system. Much in the same way the term/course end examinations too have come to be accepted as the only standard methods of evaluation. These two aspects of today's educational practices fail both to meet the particular needs of students during the whole process of instructions as well as at the time of overall evaluations of them. It is time that the students are instructed and evaluated wholesomely. There is a need of a paradigm shift in the process of instruction to as well as evaluation of students.

The theory of multiple intelligences offers us exactly that almost in a platter, as it considers the totality of a person. It shows us that one can excel, if not in one field then at least in the other. For example, those who cannot solve a mathematical problem can perhaps, who knows, mesmerize the world with their melodious voice. Those who cannot memorize the 'twinkle twinkle little star' may perhaps turn Michelangelo jealous of them! What really counts is

that they be offered with the possibilities, a chance. Should it happen, then, the educational system unlike today will churn out employable youth.

Thus, for both, the appropriate education of the individuals as well as for their true evaluations, we need to go beyond today's instructional strategies employed in our educational system. The theory of Multiple Intelligences offers us precisely that. As is evident from the exposition earlier, the theory of Multiple Intelligences definitely opens before us a door of enormous possibilities in the field of education. At the same time, it compels us see the process of education itself in a radically and tremendously challenging way. And because it shakes the very understanding of the human person, it becomes inherently challenging. The theory itself, though not in the present terminology, propounded way back in 1983 has neither been received enthusiastically nor has it been incorporated in the Indian educational system. Except for some Action Researches and works by the very advocates of the theory, no one has carried out any research as far as its implementations are concerned. After having realized the potentialities thrown before us, the researcher feels therefore challenged to explore the possibilities of the implementation of the theory in the actual teaching learning process, hence the present research.

### **1.13 TITLE OF THE STUDY**

The present study was titled: "A Study of the Development and

Implementation of an Instructional Strategy incorporating the theory of Multiple Intelligences”.

## **1.14 CLARIFICATION OF TERMS**

The phrase “instructional strategy incorporating the theory of Multiple Intelligence” is shortened as the MI Instructional Strategy. Hereafter, in the rest of the discussion it will be used as such.

### **1.14.1 DEVELOPMENT**

The phrase ‘development of the instructional strategy’ means the researcher familiarizing the subject teachers of the study with the theory of Multiple Intelligences. Having got them familiarized with the theory, he then helped them remodel the lesson plans incorporating the theory of Multiple Intelligences. The development of the instructional strategy therefore, includes processes of both the remodelling of lesson plans as well as developing of the evaluation techniques.

### **1.14.2 MI INSTRUCTIONAL STRATEGY**

The term instructional strategy is used here to mean both the teaching as well as the evaluation processes. In the MI instructional strategy, instead of the usual lecture method of teaching, students are instructed with the help of the remodeled lesson plans incorporating the theory of Multiple Intelligences. These remodeled lesson-plans incorporate elements that would meet the needs of students’

various learning preferences / styles so that students learn with ease. Activities like acting, hands-on exercises, group discussion, a minute of quiet reflection, singing, number games, drawing and sketching etc. are incorporated in the teaching process. These activities are intended to meet the needs of individuals who show a wide range of preferences in their learning styles. For the purpose of evaluating the performances of the students again, instead of the usual teacher made tests which generally are based on linguistic, logical mathematical and to a certain extent spatial intelligences, the modified teacher made tests would also include test elements from the domains of other intelligences like musical, bodily-kines-  
thetic etc.

### **1.14.3 MULTIPLE INTELLIGENCES**

Multiple Intelligences are not to be confused as being synonymous with abilities, special interests, or talents, or aptitudes. These are ways of understanding human intelligence in the context of various preferential styles of learning and knowing exhibited by individuals. Although these may be used in the classroom, these are not to be understood as a set of prescribed methods of teaching. Neither are these to be understood as some clearly defined curriculum or a bundle of techniques. On the contrary, in the classroom this may help teachers develop classroom activities that would address students' multiple ways of learning and knowing. As of now, these are the nine intelligences of a human person as recognized and being

popularized by Gardner. They are the Linguistic, Logical Mathematical, Spatial, Bodily-Kinesthetic, Musical, Interpersonal, Intrapersonal, Naturalistic and Existential Intelligences. In the future, there could be others too.

### **1.15 DELIMITATION OF THE STUDY**

The present study was delimited to the teachers of one school and the students of Standard VIII of the same school following the Indian Certificate of Secondary Education, (ICSE) syllabus situated in Namchi, the South district of Sikkim.

### **1.16 OBJECTIVES OF THE STUDY**

The present study was carried out with the following research objectives:

1. To map the Multiple Intelligences Profiles, (MIP), of teachers as well as those of the students.
2. To enable teachers carry out instructions using the MI instructional strategy.
3. To assess the achievement of the students following instructions in the Multiple Intelligence way.
4. To assess the Teachers' instructional behaviour as the result of the training in the theory of Multiple Intelligences.

### **1.17 RESEARCH QUESTIONS**

The research was conducted with the following research questions in mind:

1. Could the MIPs of teachers and students affect the teaching and learning processes?
2. How could the theory of Multiple Intelligences be implemented in the Instructional strategies?
3. Will there be any significant contribution of the theory of Multiple Intelligences in the teaching learning process?
4. Would there be any change in the perception and motivation of the teachers due to the implementation of the Multiple Intelligences theory in the teaching learning process?

### **1.18 CHAPTERIZATION**

The research report contains six chapters. The first chapter deals with the theoretical framework of the investigation. It explains the theory of multiple intelligences and goes on to state the title of the present study, clarification of the terms contained therein, objectives, research questions, and the rationale of the present study. Chapter two is devoted to the review of related literature. The methodology of the present investigation is dealt with in chapter three wherein the entire investigative procedure and tools for data collection are detailed. The development of the intervention programme of the investigation is presented in chapter four. Chapter five contains the data analyses and their interpretation. Finally, chapter six is the summary, which contains findings, suggestions for further investigation and the conclusion of the report.

\*\* \*\* \*