CHAPTER-2

THEORETICAL BACKGROUND AND REVIEWS OF RELATED LITERATURE

2.1 Introduction

2.2 Introduction to multiple intelligence
    2.2.1 Concept of multiple intelligence

2.3 Components of multiple intelligence

2.4 Difference between Traditional Method and Multiple Intelligence

2.5 Approaches Related with Intelligence
    2.5.1 Psychometric Approach
    2.5.2 Developmental Progressions Approach
    2.5.3 Psychobiological Approach

2.6 Assessment of Multiple Intelligence

2.7 Education implication by Howard Gardner’s philosophy
    2.7.1 Classroom Implication of Multiple Intelligence

2.8 Review of The Literature
    2.8.1 Meaning of Review of The Literature
    2.8.2 Definition of Review of Literature
    2.8.3 Two Phase of Review of Literature

2.9 Objectives of review of literature

2.10 Importance of the review of the related studies

2.11 Need of review of related literature

2.12 Multiple Intelligence Theory
2.12.1 Intelligence Theories Based on an IQ Perspective
2.12.2 Intelligence Theories Based on a Multiple Perspective
2.12.3 Multiple Intelligence Theory
2.12.4 Principles and Importance in Education
2.12.5 Multiple intelligences teaching

2.13 General guidelines for the source of the previous studies
2.14 Descriptions of the previous studies
2.15 Reviews of the previous studies
2.16 Significance of the present study
2.17 Conclusion
2.1 INTRODUCTION

The purpose of this chapter is to introduce with Multiple Intelligence provided in chapter-1. This chapter provides the details about the concept of Multiple Intelligence details about the different methods of the assessment of Multiple Intelligence and educational implications of the Multiple Intelligence.

2.2 INTRODUCTION TO MULTIPLE INTELLIGENCE

Multiple Intelligence is one of the latest buzzwords in educational psychology. It has been over 30 years since the notion of Multiple Intelligence was introduced into the field of psychology by Howard Gardner in 1983. Research activity in Multiple Intelligence began with Howard Gardner, who is considered to be the ‘father of the field’ and thereafter a considerable amount of empirical and theoretical research dealing with Multiple Intelligence can be registered.

There are three main areas of research in which Multiple Intelligence has prominent role: developmental psychology, with emphasis on theory of Intelligence; experimental psychology, focusing mainly on IQ testing; and educational psychology, with emphasis on self-regulated learning. However, there is also another line of research connects Multiple Intelligence with EQ and SQ, as well as with co-regulation and other regulation of behaviour and Intelligence. The variety of areas and perspectives through which Multiple Intelligence is being studied is due to the fact that Multiple Intelligence is inextricably woven with awareness of mental states and with consciousness.

2.2.1 CONCEPT OF MULTIPLE INTELLIGENCE

The Multiple Intelligence theory was developed by Howard Gardner in 1983 when he wrote his first book named - “Frames as of Mind” about multiple Intelligence. In which he introduce components of Intelligence and about how to teach them in different way in regular classroom.
Gardner¹ (1983) defines,

"An intelligence as a bio psychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture"

This definition concludes that Multiple intelligence is related with body as well as with mind and it activated in cultural setting to solve problems.

Multiple Intelligence is a cognitive mental ability. It is a package of plenty of skills, abilities and talents. Each and Every person has it in equal or greater or lesser form. Gardner introduced Nine types of intelligence and Role of it in the use to develop child’s life.

Gardner² (1983)

"It is of the utmost importance that we recognize and nurture all of the varied human intelligences, and all of the combinations of intelligences. We are all so different, largely because we all have different combinations of intelligences. If we recognize this, I think we will have at least a better chance of dealing appropriately with the many problems that we face in the world"

As Criticism is the base to improve every literature. So as in the beginning of 21st theory and claimed that multiple Intelligence practical intelligence and also they argued that gardner have no sold psychological evidence about the existence of nine forms of intelligence. And later about the argument Gardner replied that each and every aspects of human life is ordered with intelligence and purely associated with the particular part of the human brain.

Gardner’s multiple Intelligence theory has became an effective part in classroom teaching. Through the help of multiple Intelligence theory teachers can know the capabilities and skills of the pupils. It is related with the everyday experience of teacher and classroom atmosphere of the school. Gardner’s theory is clearly based on the intelligence of a person
and concerning with field of education. It is also related with the intelligence of students and teachers.

Gardner’s multiple Intelligence theory helps teacher to make able himself/herself to understand students more perfectly and help them to give clear and perfect guidance to the students. The multiple Intelligence theory is generally focusing on the values related to the human beings and through the various components of multiple Intelligence and expert or a teacher can make better conceptual framework of well organised curriculum.

Gardner’s multiple Intelligence theory is focusing on the skills and capacities, talents and abilities and creativity and problem solving. Gardener defines that an intelligence is one kind of capacity or ability of a person that he/she generally use in to solve the problems, in day to day life.

2.3 COMPONENTS OF MULTIPLE INTELLIGENCE

Dr. Howard Gardner, professor of education at Harvard University. It suggests that the traditional notion of intelligence, based on I.Q. testing, is far too limited. Instead, Dr. Gardner proposes eight different intelligences to account for a broader range of human potential in children and adults. These intelligences are:

1. Linguistic Intelligence (“word smart”):
2. Logical-mathematical Intelligence (“number/reasoning smart”)
3. Spatial Intelligence (“picture smart”)
4. Bodily-Kinesthetic Intelligence (“body smart”)
5. Musical Intelligence (“music smart”)
6. Interpersonal Intelligence (“people smart”)
7. Intrapersonal Intelligence (“self smart”)
8. Naturalist Intelligence (“nature smart”)
1. **VERBAL/LINGUISTIC**:

   Learning through the spoken and written word, this intelligence was always valued in the traditional classroom and in traditional assessments of intelligence and achievement. These “word smart” people learn best through language including speaking, writing, reading and listening. They are able to verbally or in writing explain, convince, and express themselves. They enjoy writing and creating with words. They would also enjoy e-books, interactive books on CD-ROM and other text-based software. They are Strong in reading, writing, telling stories, memorizing dates, thinking words.

**Roles:**

   They enjoy being the secretary, taking notes, and using the word processor. They would enjoy organizing the group’s text and putting the project together. They enjoy the researching, listening, reading, and writing aspects of a research project.

- **Possible career interests**: Poet, journalist, writer, teacher, lawyer, politician, translator etc

- **Learns Best Through**: Reading, hearing and seeing words, speaking, writing, discussing and debating

Teacher/Parents can help thus,

- Read with a child
- Listen intently to child’s questions, concerns and experiences
- Provide books for a child to read and paper for writing
- Encourage a child to tell you about the story he/she read or to share with you something he/she has written (a tape recorder is a helpful aid)
- Provide opportunities to visit the public library and local bookstores.
- Play games such as Spelling games, Scrabble and Boggle
• **Famous Examples**: T.S. Eliot, Maya Angelou, Virginia Woolf, Abraham Lincoln

2. **MATHEMATICAL/LOGICAL**:

   Learning through reasoning and problem solving. Also highly valued in the traditional classroom, where students were asked to adapt to logically sequenced delivery of instruction. These “number smart” people learn best through numbers, reasoning, and problem solving. They like to weigh, measure, calculate, and organize data. They use other intelligences in their sharing of data such as making an analogy or debating an issue. They are Strong in math, reasoning, logic, problem-solving, patterns.

   **Roles**:

   They enjoy collecting data, conducting experiments, and solving problems. Creating spreadsheets, databases, charts, and other data organization and calculation projects would be their contribution to a group. They enjoy problem solving, measuring, sequencing, predicting, experimenting, classifying, and data collection aspects of a research project.

   • **Possible career paths**: Scientists, engineers, computer programmers, researchers, accountants, mathematicians

   • **Learns Best Through**: Working with patterns and relationships, classifying, categorizing, working with the abstract

   Teacher/Parents can help thus

   • Let a child experiment

   • Invite a child to help you bake a cake or make new colors by mixing paints

   • Show a child how to use a calculator

   • Ask a child to help set the table, sort clothes or organize the desk drawer
• Play games such as checkers and chess

• **Famous Examples**: Albert Einstein, John Dewey, Susanne Langer.

3. **VISUAL/SPATIAL**:

   Learning visually and organizing ideas spatially, seeing concepts in action in order to understand them. They have the ability to “see” things in one’s mind in planning to create a product or solve a problem. These “picture smart” people learn best visually and tend to organize their thinking spatially. They like to think and create pictures. They are also drawn to information that is presented in a visual form. They like to make visual metaphors and stories. They are Strong in reading, maps, charts, drawing, mazes, puzzles, making images, visualization.

**Roles:**

They would enjoy illustrating the project, identifying the visuals, color-coding the presentation, and creating the storyboard for the project. They enjoy identifying project visuals and visualizing aspects of a research project.

• **Possible career paths**: Navigators, sculptors, visual artists, inventors, architects, interior designers, mechanics, engineers

• **Learns Best Through**: Working with pictures and colors, visualizing, using the minds eye, drawing

**Teacher/ Parents can help thus**

• Allow a child to create with various arts and crafts

• Give a child opportunities for solving puzzles or inventing

• Let a child design a “play corner” in his/her room

• Visit art museums

• Let a child use a camera to take pictures of family and friends
• Provide a variety of art mediums such as paints, crayons and magic markers for your child to use

• Play games such as Picture cards

• **Famous Examples**: Pablo Picasso, Frank Lloyd Wright, Georgia O'Keeffe, Bobby Fischer

4. **BODILY/KINESTHETIC**:

Learning through interaction with one's environment, this intelligence is not the domain of “overly active” learners. It promotes understanding through concrete experience. These “body smart” people learn best through physical activity such as dance, hands-on tasks, constructing models, and any kind of movement. They are able to manipulate and control objects, as well as express their ideas through movement. They are strong in athletics, dancing, acting, crafts, using tools.

**Roles:**

They like to create and move around. They get involved with gathering and organizing physical materials, keyboarding, acting out roles, or manipulating objects. They would like to run the camera, operate the mouse, or take the pictures.

• **Possible career paths**: Athletes, physical education teachers, dancers, actors, firefighters, artisans

• **Learns Best Through**: Touching, moving, processing knowledge through bodily sensations

Teacher/Parents can help thus

• Involve a child in dancing, acting or sport activities

• Provide a variety of manipulative for experimentation

• Walk, jog, hike, play tennis, bowl or bike as a family
• Play games such as charades

• **Famous Examples:** Charlie Chaplin, Martina Navratilova, Magic Johnson

5. **MUSICAL/RHYTHMIC:**

Learning through patterns, rhythms and music, this includes not only auditory learning, but the identification of patterns through all the senses. These “music smart” people learn best through sounds including listening and making sounds such as songs, rhythms, patterns, and other types of auditory expression. They can choose appropriate music to go with a slide show, artwork, or poem. They like to draw patterns of music or write about music and sounds. They are Strong in singing, picking up sounds, remembering melodies, rhythms.

**Roles:**

They like to choose and compose music for multimedia presentations. They like to see and hear patterns, so they may be good at sequencing a presentation. They are good listeners, so ask them to look for things that might be missing after watching a videotape.

• **Possible career paths:** Musician, disc jockey, singer, composer

• **Learns Best Through:** Rhythm, melody, singing, listening to music and melodies

Teacher/Parents can help thus

• Allow a child to select a recording at the local music store

• Encourage a child to sing along or clap to the rhythm of music

• If possible, involve a child in some type of music lessons

• Provide opportunities to attend concerts and musicals

• Have sing-along
• **Famous Examples:** Leonard Bernstein, Wolfgang Amadeus Mozart, Ella Fitzgerald

6. **INTERPERSONAL:**

Learning through interaction with others, not the domain of children who are simply “talkative” or “overly social.” This intelligence promotes collaboration and working cooperatively with others. These “social smart” people learn best through interaction with other people through discussions, cooperative work, or social activities. They are able to create synergy in a room by being aware of the feelings and motives of others. They are strong in understanding people, leading, organizing, communicating, resolving conflicts, selling.

**Roles:**

They are good at rallying the group together and getting discussions going. They are good at teaching other members of the group and coordinating activities. In a group project, they are good at peer editing.

• **Possible career paths:** Counselor, salesperson, politician, business person

• **Learns Best Through:** Sharing, comparing, relating, interviewing, cooperating

Teacher/Parents can help thus

• Play family games

• Encourage a child to participate in group activities

• Encourage discussions and problem solving

• **Famous Examples:** Mohandas Gandhi, Ronald Reagan, Mother Theresa
7. **INTRAPERSONAL:**

Learning through feelings, values and attitudes. This is a decidedly affective component of learning through which students place value on what they learn and take ownership for their learning. These “self smart” people learn best by recognizing their own strengths and weaknesses, reflecting and analyzing themselves. They are aware of their inner feelings, desires and dreams. They can evaluate their thinking patterns, understanding their role in relationship to others. They are Strong in understanding self, recognizing strengths and weaknesses, setting goals.

**Roles:**

They are good at setting and pursuing goals for self and at assessing work. They are good at working independently toward a group goal. They are self motivated and like to keep to themselves.

- **Possible career paths:** Researchers, theorists, philosophers
- **Learns Best Through:** Working alone, doing self-paced projects, having space, reflecting

Teacher/Parents can help thus

- Give a child time to work or play alone
- Ask a child to make something for the whole family to enjoy
- Encourage a child to keep a diary or journal

**Famous Examples:** Eleanor Roosevelt, Sigmund Freud, Thomas Merton

8. **NATURALIST:**

Learning through classification, categories and hierarchies. The naturalist intelligence picks up on subtle differences in meaning. It is not
simply the study of nature; it can be used in all areas of study. These “nature” people learn best through the interactions with the environment including outdoor activities, field trips, and involvement with plants and animals. They see the subtle meanings and patterns in nature and the world around them, appreciating the beauty of flora and fauna. They are Strong in understanding nature, making distinctions, identifying flora and fauna

Roles:

They could enjoy field trips that involve observation and recording the world around them. They are good at making connection, classifying, integrating the phenomena of the world.

Possible career paths:

Environmental scientist, biologist, expert in aquariums & botanical gardens, forest rangers, landscape designer, marine biologist, wild life expert, zoo keeper

Learns Best Through:

Working in nature, exploring living things, learning about plants and natural events

Teacher/ Parents can help thus

- Help the child to care for plants and animal,
- Make the child work in the garden,
- Send him to trekking expeditions, nature walk etc.,
- Help to keep a journal of observations ,
- Help to compare weather phenomena,
- Train to use binoculars, microscopes,
- Watch the sky at night,

- Famous Examples: John Muir, Charles Darwin, Luther Burbank

Dr. Gardner says that our schools and culture focus most of their attention
on linguistic and logical-mathematical intelligence. We esteem the highly articulate or logical people of our culture. However, Dr. Gardner says that we should also place equal attention on individuals who show gifts in the other intelligences, the artists, architects, musicians, naturalists, designers, dancers, therapists, entrepreneurs, and others who enrich the world in which we live. The good news is that the theory of multiple intelligences has grabbed the attention of many educators around the country, and hundreds of schools are currently using its philosophy to redesign the way it educates children. The bad news is that there are thousands of schools still out there that teach in the same old dull way, through dry lectures, and boring worksheets and textbooks. The challenge is to get this information out to many more teachers, school administrators, and others who work with children, so that each child has the opportunity to learn in ways harmonious with their unique minds.

The theory of multiple intelligences also has strong implications for adult learning and development. Many adults find themselves in jobs that do not make optimal use of their most highly developed intelligences.

2.4 DIFFERENCE BETWEEN TRADITIONAL METHOD AND MULTIPLE INTELLIGENCE

Intelligence, as we know, is in-built in-birth capacity which powers human body and this mental ability develop a human life. Gardener gives us new theory of multiple Intelligence which is far better than the traditional way of teaching. There are actually, two different methods of intelligence that we believed. But now with the theory of multiple Intelligence we can achieved more clear and specific result in education. As comparing the traditional and multiple Intelligence method
### Table 2.1

**Difference between Traditional Method and Multiple Intelligence**

<table>
<thead>
<tr>
<th>Traditional Method</th>
<th>Multiple Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A person is born with controlled amount of Intelligence.</td>
<td>1. Each and every person have all kinds of intelligence and every person has unique combination of all kinds or components.</td>
</tr>
<tr>
<td>2. Intelligence is particularly related with logic and reasoning.</td>
<td>2. There are nine specific kinds of intelligence and a person can develop any one or two aspects by himself.</td>
</tr>
<tr>
<td>3. The specific level of intelligence does not change lifetime.</td>
<td>3. A person have all intelligence and if he wants he can/will improve these everyday by experience and facing various situation or by solving problems.</td>
</tr>
<tr>
<td>4. It can be measured by short answer test.</td>
<td>4. It can be measured by day to day solution of problem, by handling various situation.</td>
</tr>
<tr>
<td>5. Through traditional method a teacher teach only topic of a subject.</td>
<td>5. Through this theory teacher has to improve learning capability by using various activities and project work &amp; by theory of Learning by doing.</td>
</tr>
</tbody>
</table>

### 2.5 APPROACHES RELATED WITH INTELLIGENCE

#### 2.5.1 Psychometric Approach

The psychometric approach is developed with the aim to measure the cognitive level, and mental ability of a person or students. Currently, this approach is used in Education and through this approach we can compare two or more students or group of students with the another
group of students by their achievements. Some examples of the psychometric measurement tools were. Wechsler Scales, Binet’s test, memory test and some school achievement Tests.

2.5.2 Development Progressions Approach

The Developmental progressions approach is based on the theories of some psychologists and experts like piaget, Bruner, Vygotstsy and Feuerstein. This developmental progressions approach is developed with the aim to understand and develop as well as improve the life of a child.

As according to Bruner’s theory we can improve and judge to develop child by providing him/her greater, significant well-organized experience which makes him well developed persons who can think beyond the ideas. As, in concern with this approach according to Jean Piaget’s theory everything is based on the cognitive structure, which are sensorimotor stage, preoperational stage, concrete operations stage and formal operations stage and he viewed that these stages develops with the development and growth of child, and with it child’s cognitive structures differed with the development of structure a child understands the environment and try to adjust in it.

In the progression approach, Vygotsky viewed with the aim to develop cognitive level of a child he must has to interact with society. Vygotsky believes that social interaction plays major role in the cognitive development of a child. As according to Feuerstein theory, he viewed that a person’s cognitive ability could be changed with the experience. He believes that experience plays major role in the cognitive development of a child. Thus, Here in the Developmental progression approach, Bruner, piaget, vygotsky and Fenerstein introduced us with the way and methods to develop a cognitive level of a child with a different views.
2.5.3 **Psychobiological Approach**

The psychological approach is developed with the focus that environment or biological base effects cognitive level of a child. Cecil developed bioecological theory of intelligence and he viewed that each and every person has general intelligence and base on the biological factor every one response accordingly their experience and situations.

2.6 **ASSESSMENT OF MULTIPLE INTELLIGENCE**

Evaluation and assessment of an intelligence is really a very toughest and problematic task we have some tools to measure verbal. Linguistic and mathematical logical Intelligence. But measurement of every aspects of multiple Intelligence is very tough. We need to use some practical approach here. If teacher wants to achieve better result of the assessment of multiple Intelligence has to use specific tools but first he/she has to observe a student's ability and than assess their all over tearing process, the situations and the way to handle it by students the problems and the solutions that students can arrange and specifically the way in which they learn well. The theory of multiple Intelligence is mainly forms on learning by doing, thus the assessment of multiple intelligence is also based on performance test.

The assessment of multiple Intelligence should be for (1) Verbal/Linguistic intelligence is in oral and written work like to identify some words, to different words and to find different words from the others. (2) Mathematical/logical intelligence assess by logical reasoning, by problem solving, or solving any puzzle, and cause and effect relations. (3) Visual/spatial Intelligence assess by define, drawing or recognize charts or pictures and by solving puzzles of pictures. (4) Musical Intelligence assess by recognize the tune or words or wordings. It also can be assess by recognize the tune or words or wordings. It also can assess by recognizing the voice of different person, animal birds etc. (5) Bodily/Kinesthetic intelligence assess by drawing and use of hands with mind,
by acting, dancing, by use of selecting recognizing and drawing of structures. (6) Intrapersonal Intelligence can be assessed by person’s own learning experience and the reasoning related with experience. To choose right own way by selecting a particular arguments define or choose prejudice and beliefs (7) Interpersonal Intelligence assessment based on persons social interaction. Thus, it can assess by finding social connections, social aspects, words and blood relationships. (8) Naturalist Intelligence assess by observation of nature. Thus questions related with words, arguments and classification of natural prosperity helps to assess it. Thus in this way we can assess multiple Intelligence.

2.7 EDUCATION IMPLICATION BY HOWARD GARDNER’S PHILOSOPHY

As a teacher and role model, sensitive to and interested in the needs of each student for the total fulfillment of his/her potential, Gardner always help children to create reasonable and attainable goals whereby their potential can be developed to its fullest. He believes that all students should be provided with learning activities and opportunities, which help them reason and think logically. Gardner strives to promote, in each child, a willingness to assume challenges and responsibilities, to develop confidence and a positive self-image, to be well-prepared, and to be caring citizens who are sensitive to the needs of others. Gardner believes that learning must offer meaningful experiences and a desire for future learning. As Knowledge is power, and with it there are no limits.

2.7.1 Classroom Implication of Multiple Intelligences

Initially Gardner did not plan for his theory to be applied to education because it did not come with a program for educators to model in their classroom (Viadero³, 2003). At the time the theory emerged, educators were searching for ways to explain the dramatic differences they saw in students, and how they learned. “It [the MI Theory] seemed to answer many questions for experienced teachers who all had students who did not fit the mold, students were bright, but they did not excel on tests.” (Guignon⁴, 2004)
The Multiple Intelligence Theory proposes that children all learn material in different ways and it assists in understanding their strengths and weaknesses. Knowing children's learning strengths and weaknesses will help teachers encourage students to try new ways of learning. It will also aid teachers in planning according to the classroom's abilities. Students with different ways of learning are often labeled as learning disabled, ADD (attention deficit disorder) or simply underachievers, when their unique ways of thinking and learning are not addressed by a heavily linguistic or logical-mathematical classroom (Armstrong, 2000).

Gardner's (2006) statement in his book *Multiple Intelligences, New Horizons*, explains why this is true. "My theory can reinforce the idea that individuals have many talents that can be of use to society that a single measure is inappropriate for determining whether a student graduates has access to college, and the like, and that important materials can be taught in many ways" (p.84). The Multiple Intelligences classroom helps students realize how smart they are by providing them with different outlets of learning. More time in planning and preparation might be necessary when using Gardner's theory. The Multiple Intelligences classroom looks different than the typical a few important ingredients such as: "administrative support, student choice in planning, and patience and persistence in working through initial resistance to MI activities by both students and colleagues" (Shearer, 2004, p.10; Shepard, 2004, p. 210). How does an educator discover in which intelligence(s) each student's strengths lies in order to create the appropriate MI classroom? Howard Gardner" (2006, p.84) presents two suggestions,

"Take them on outings to a children's museum or to some other setting that provides a rich experience, like a playground with many kinds of games and watch them carefully. Second, give a short questionnaire about their strengths to the students and their parents and if possible their teachers from the previous year"
From research as well as this case study it is seen that, “It is impossible, as well as Impractical, for a teacher to accommodate every lesson to all of the learning styles found within the classroom.” (Fogarty, 2005, p. 13) So, if that is not the answer, then how are Multiple Intelligences implemented in the classroom? Specific objectives need to be planned out and expressed to the students. With the MI theory there are several ways of meeting that objective. Each of these ways may be different, but they are just as important as the traditional ways. Some teachers prefer instead to look at Multiple Intelligences and “isolate each intelligence into particular activities” (Hopper, 2000, p.27; Great performances, 2002). Linda Campbell author of Teaching & Learning through Multiple Intelligences describes the following five approaches to adding Multiple Intelligences into the classroom.

1. **Lesson design.** Some schools focus on lesson design. This might involve team teaching (“teachers focusing on their own intelligence strengths”), using all or several of the intelligences in their lessons, or asking student opinions about the best way to teach and learn certain topics.

2. **Interdisciplinary units.** Secondary schools often include interdisciplinary units on certain topics.

3. **Student projects.** Students can learn to “initiate and manage complex projects” when they are creating student projects.

4. **Assessments.** Assessments are devised which allow students to show what they have learned. Sometimes this takes the form of allowing each student to devise the way he or she will be assessed, while meeting the teacher’s criteria for quality.

5. **Apprenticeships.** Apprenticeships can allow students to “gain mastery of a valued skill gradually, with effort and discipline over time.” Gardner feels that apprenticeships “…should take up about one-third of a student’s schooling experience” (Guignon, 2004).
In using these five ideas, students may decide to express his or her knowledge of that content in one of many different ways (i.e., puppetry, model making, classroom demonstrations, songs, and plays). “The vast amount of time now dedicated to meeting local, state, and national mandates makes it very difficult for even the most ingenious practitioners to devote much time to MI activities. The challenge, at least in the short run, is to absorb MI thinking into the daily routine, rather than to devote extra time that few have to such pursuits” (Great performances, 2002; Gardner, 2004, p.215).

2.8 REVIEW OF THE LITERATURE

A review of the literature was undertaken for the purpose of determining what information had been previously documented about the broad topics of Multiple Intelligences Theory and determining multiple intelligences. The literature review was organized around four main themes in relation to allowing the reader to comprehend what is meant by intelligence and its related terms. The main themes were as follows; historical background of intelligence, multiple intelligences theory, methodological perspectives toward intelligence testing and determining multiple intelligences, research studies on various uses of multiple intelligences in different areas and levels of education.

In this chapter researcher will discuss about review of related literature. Review of related literature is an essential part of an investigation as it provides the knowledge of field in advance; the investigation would be contemplating to study. In previous chapter has already explained and discussed about the objectives, hypothesis, importance, need and limitations which covered the entire research area. The researcher has also planned to precede the entire work of research in different chapters. Review of related literature helps the researcher to carry out different methodology for the said research. The researcher also comes across various hurdles of the same field. In planning of any research work it is very important to view careful review of the researches
as that helps the present researcher to follow the actual steps which is required and that will help the researcher to ahead. Review of related literature in its simple form means the similar or related studies made up previous research works in the same field. Study of related literature implies locating, reading and evaluating reports of the research as well as report of casual observation and opinion that are ignorant about the research works which has been made before hand and imitates learning beneficial of the existing literature, but a one, certainly provides new opportunities to our knowledge. So, the researcher must know the past adequately, so that he can design further study what is unknown. This chapter deals with review of past studies carried out in the field of psychological testing and studies related to multiple intelligence. Such review can provide guideline for planning and execution of the present research work.

2.8.1 Meaning of Review of Literature

The ‘Review of Literature’ consists of two words: ‘Review’ and ‘Literature’. The term ‘Review’ means to organize the knowledge of the specific area of research to evolve an edifice of knowledge to show that the proposed study would be an addition to this field. In research methodology the term literature refers to the knowledge of a particular area of investigation of any discipline which includes theoretical practical and its research studies. The task of review of literature is highly creative and tedious because the researcher has to synthesis the available knowledge of the field in unique way to provide the rational for his study.

The very words ‘review’ and ‘literature’ have quite different meanings in the historical approach. In historical research, the research does much more than only review already published material. Researcher seeks to discover and to integrate new information which has never been reported and considered. The concept and process implied in the term ‘review of literature’ have different meanings in historical and experiment research.
2.8.2 Definition of Review of Literature

According to Good, Barr and Scares\(^\text{a}\)(1954),

"The competent physician must keep abreast of the latest discoveries in the field of medicine.... Obviously the careful student of education, the research worker and investigator should become familiar with location and use of sources of education information".

According to Borg\(^\text{b}\)(1963),

"The literature in any field forms the foundation upon which all future work will be built. If we fail to build the foundation of knowledge provided by the review of literature our work is likely to be shallow and naive and will often duplicate work that has already been done better by some one else".

In survey and experimental research the review of the literature serves a variety of background functions preparatory to the actual collection of data. In these approaches, the literature is reviewed to create the context from the past for the new study to be conducted with new subjects and newly gathered data in the historical approach one can not ignore the past and therefore in review of the literature the term ‘LITERATURE’ is used in the broadest possible sense. The sources used are the ‘SUBJECT’ of the research and the material reviewed subject of the ‘DATA’. Hence, the primary function of the review of literature in the historical research is to provide the research data.

2.8.3 Two Phase of Review of Literature

Reviewing the literature has two phases,

1. **Identification and Reading**: It includes identifying all the relevant published material in the problem area and reading that part of it with which we are not thoroughly familiar. One develops the foundation of ideas and result on which his own study will be built.

2. **Writing**: The second phase of the review of literature involves writing this foundation of ideas in to a section of the research report

36
for the joint benefit of the research and researchers. For the researcher, it establishes the back-ground in the field. For the readers it provides a summary of the thinking and research necessary for them to understand the study.

2.9 OBJECTIVES OF REVIEW OF LITERATURE

The review of literature serves the following purposes in conducting research work:

1. It provides theories, ideas, explanation of a hypothesis which may prove useful in the formulation of a new problem.

2. It indicates whether the evidence already available solves the problem adequately without requiring further investigation. It avoids the replication.

3. It provides the sources for hypothesis. The researcher can formulate research hypothesis on the basis of available studies.

4. It suggests method, procedure sources of data and statistical techniques appropriate to the solution of the problem.

5. It locates comparative data and findings useful in the interpretation and discussion of the results. The conclusion drawn in the related studies may be significantly compared and may be used as the subject for the findings of the study.

6. It helps in developing experts and general scholarship of the investigator in area of Investigated.

2.10 IMPORTANCE OF THE REVIEW OF THE RELATED STUDIES

The search for related material is a time consuming but fruitful phase of any research programme. It helps research worker to find what is already known, what others have attempted to find out, what methods of attack have been promising and what problems remain to be solved.
Wiersma\textsuperscript{10} (1976) states that,

"Educational research is not or at least should not be, carried out in an informational vacuum."

purposes of the survey of related literature according to Good, Barr and Scats\textsuperscript{11} (as cited in Sukhia & Mehrotra, 1996) are as follows:

1. To show whether the evidence already available solves the problem adequately without further investigation and thus to avoid the risk of duplication.

2. To provide ideas, theories, explanations or hypotheses valuable in formulating the problem.

3. To suggest methods of research appropriate to the problem.

4. To locate comparative data useful in the interpretation of results.

5. To contribute to the general scholarship of the investigator.

A review of related literature not only helps researcher for planning of research work, but also provides a degree of familiarity to the researcher with past work done, as well as inputs to the research the vast knowledge pool that has already been tapped. Hence, it becomes extremely crucial to locate, reveal and evaluate the past research reports.

2.11 NEED OF REVIEW OF RELATED LITERATURE

The review of literature is essential due to the following reason.

The review of related literature enables the researcher to define the limits of his fields. It helps the researcher to delimit and define his problem. By reviewing the related literature the researcher can avoid unfruitful and useless problem areas. He can select those areas in which positive findings are very likely to result and his endeavors would be likely to add to the knowledge on a meaningful way. The researcher can avoid unintentional duplication of well established findings. It is no use to replicate a study when the stability and validity of its result have been
clearly established. It gives the researcher an understanding of the research methodology which refers to the way the study is to be conducted. The review of literature is essential due to the following reasons:

1. The review of related literature enables the researcher to define the limits of his fields.

2. It helps the researcher to delimit and define his problem.

3. By reviewing the related literature the researcher can avoid unfruitful and useless problem areas. He can select that area in which positive findings are very likely to result and endeavors would be likely to add to the knowledge on meaningful way.

4. The researcher can avoid unintentional duplication of well established findings. It is no use to replicate a study when the stability and validity of its result have been clearly established.

5. It gives the researcher an understanding of the research method which refers to the way the study is to be conducted.

6. It helps the researcher has to know about the tools and instruments which proved to be useful and promising in the previous studies.

7. The advantage of the related literature is also to provide insight to the statistical methods through which validity of results is to be established.

8. The final and important specific reason for reviewing the related literature is to know about the recommendations that previous researchers listed in their studies for further research.

The review of literature indicates the clear picture of the problem to be solved. The scholarship in the field can be developed by reviewing the literature of the field.

The research draws maximum benefit from the previous investigation, utilized the previous findings, takes many hints from the designs and
procedures of previous researchers matches his conclusions with the conclusion with the conclusion earlier and tries to add from his side line or two to the existing store of knowledge. The researcher gets the knowledge about different variables, the past researches and thus adds to himself. On the meant research also there are some variables needed to be clarified.

2.12 MULTIPLE INTELLIGENCE THEORY

When Howard Gardner’s book, Frames of Mind: The Theory of Multiple Intelligences first came out, it answered many questions for experienced teachers. There always has existed students who didn’t fit the mold; Teachers know these students are bright, but they often didn’t excel on tests. Gardner’s claim that there are several different kinds of intelligence gave teachers and others involved with teaching and learning a way of beginning to understand those students. It helps people start to look at what these students could do well, instead of what they could not do.

For the last thirty years, Howard Gardner has worked closely with the Harvard Graduate School of Education through a research initiative known as Project Zero, where he has continued his development of Multiple Intelligence theory along with other methods of understanding the learning process. From 1972 to 2000 Gardner served as the co-director of Project Zero, and has since continued to contribute through a position on its steering committee. The following Information on the Theory of Multiple Intelligences is adapted and excerpted from The Project Zero Classroom: New Approaches to Understanding, a publication based on Project Zero’s 1996 Summer Institute presentations:

Howard Gardner’s Theory of Multiple Intelligences challenges the traditional view of intelligence as a unitary capacity that can be adequately measured by IQ tests. Instead, this theory defines intelligence as an ability to solve problems or create products that are valued in at least one culture. Drawing upon findings from evolutionary biology, anthropology, developmental
and cognitive psychology, neuropsychology, and psychometrics, Gardner uses eight different criteria to judge whether a candidate’s ability can be counted as an intelligence:

1. Potential isolation by brain damage
2. Existence of savants, prodigies, and other exceptional individuals
3. An identifiable core set of operations—basic kind of information-processing operations or mechanisms that deal with one specific kind of input
4. A distinctive developmental history, along with a definite set of “end-state” performances
5. An evolutionary history and evolutionary plausibility
6. Support from experimental and psychological tasks
7. Support from psychometric findings
8. Susceptibility to encoding from a symbol system

When he introduced the theory in *Frames of Mind*, Gardner suggested that each individual possesses at least seven such relatively independent mental abilities or intelligences. Core operations are among the eight criteria he uses to evaluate one or another candidate’s intelligence. According to his definition, a core operation is a basic information processing mechanism—basically, something (like a neural network) in the brain that takes a particular kind of input or information and processes it. In *Frames of Mind* and his more recent writings on the naturalist intelligence, Gardner asserted that intelligence should have one or more of the following core operations:
<table>
<thead>
<tr>
<th>Intelligence</th>
<th>Core Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linguistic</td>
<td>syntax, phonology, semantics, pragmatics</td>
</tr>
<tr>
<td>Musical</td>
<td>pitch, rhythm, timbre</td>
</tr>
<tr>
<td>Logical-mathematical</td>
<td>number, categorization, relations</td>
</tr>
<tr>
<td>Spatial</td>
<td>accurate mental visualization, mental transformation of images</td>
</tr>
<tr>
<td>Bodily-kinesthetic</td>
<td>control of one’s own body, control in handling objects</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>awareness of others’ feelings, emotions, goals, motivations</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>awareness of one’s own feelings, emotions, goals, motivations</td>
</tr>
<tr>
<td>Naturalist</td>
<td>recognition and classification of objects in the environment</td>
</tr>
</tbody>
</table>

In Gardner’s theory, the word intelligence is used in two senses. Intelligence can denote a species-specific characteristic; homosapiens is that species which can exercise these eight intelligences. Intelligence can also denote an individual difference. While all humans possess the eight intelligences, each person has his/her own particular blend or amalgam of the intelligences.

The following definitions of the intelligences, adapted by White and Blythe (1992), from the originals presented in Frames of Mind, list occupation, professions, disciplines, areas and directions an intelligence can take. But these are by no means the only examples; nor do any of these examples or end states represent the use of anyone intelligence to the exclusion of all others. Individuals are never endowed solely with intelligence. Rather, all brain-unimpaired people possess all the intelligences, which they blend in various ways in the course of creating something that is meaningful or performing a meaningful role or task.
1. **Linguistic intelligence** allows individuals to communicate and make sense of the world through language. Poets exemplify this intelligence in its mature form. Students who enjoy playing with rhymes, who pun, who always have a story to tell, who quickly acquire other languages - including sign language - all exhibit linguistic intelligence.

2. **Musical intelligence** allows people to create, communicate, and understand meanings made out of sound. While composers and instrumentalists clearly exhibit this intelligence, so do the students who seem particularly attracted by the birds singing outside the classroom window or who constantly tap out intricate rhythms on the desk with their pencils.

3. **Logical-mathematical intelligence** enables individuals to use and appreciate abstract relations. Scientists, mathematicians, and philosophers all rely on this intelligence. So do the students who “live” baseball statistics or who carefully analyze the components of problems – either personal or school-related – before systematically testing solutions.

4. **Spatial intelligence** makes it possible for people to perceive visual or spatial information, to transform this information, and to recreate visual images from memory. Well-developed spatial capacities are needed for the work of architects, sculptors, and engineers. The students who turn first to the graphs, charts, and pictures in their textbooks, who like to “web” their ideas before writing a paper, and who fill the blank space around their notes with intricate patterns are also using their spatial intelligence. While usually tied to the visual modality, spatial intelligence can also be exercised to a high level by individuals who are visually impaired.

5. **Bodily-kinesthetic intelligence** allows individuals to use all or part of the body to create products or solve problems. Athletes, surgeons, dancers, choreographers, and crafts people all use bodily-kinesthetic intelligence.
The capacity is also evident in students who relish gym class and school dances, who prefer to carry out class projects by making models rather than writing reports, and who toss crumbled paper with frequency and accuracy into wastebaskets across the room.

6. **Interpersonal intelligence** enables individuals to recognize and make distinctions about others’ feelings and intentions. Teachers, parents, politicians, psychologists and salespeople rely on interpersonal intelligence. Students exhibit this intelligence when they thrive on small-group work, when they notice and react to the moods of their friends and classmates, and when they tactfully convince the teacher of their need for extra time to complete the homework assignment.

7. **Intrapersonal intelligence** helps individuals to distinguish among their own feelings, to build accurate mental models of themselves, and to draw on these models to make decisions about their lives. Although it is difficult to assess who has this capacity and to what degree, evidence can be sought in students’ uses of their other intelligences—how well they seem to be capitalizing on their strengths, how cognizant they are of their weaknesses, and how thoughtful they are about the decisions and choices they make.

8. **Naturalist intelligence** allows people to distinguish among, classify, and use features of the environment. Farmers, gardeners, botanists, geologists, florists, and archaeologists all exhibit this intelligence, as do students who can name and describe the features of every make of car around them.

In a recent article, “Are there additional intelligences?” Gardner examined two more candidate intelligences, naturalist, and spiritual, but ended up rejecting spiritual—at least for now—because it does not meet the eight criteria named earlier. He is still amassing evidence for other suggested intelligences. For example, existential intelligence-manifest in somebody who is concerned
with fundamental questions of existence—does not, as yet, seem to meet all criteria. If decisions about intelligences are to be taken seriously, Gardner believes, they must depend upon examination of the available data.

2.12.4 Principles and Importance in Education

The principles of multiple intelligences offered by Gardner are:

1. Emphasis on the development of certain intelligences;
2. Utilizing of all intelligences in developing different teaching methods;
3. Based on the concept of multiple intelligences, instructors should review lesson plans and ensure they have variety (J. C. Xie, R. L. Lin, 2009) fairness and richness;
4. Provide students with the opportunity to choose learning activities and assessment methods;
5. Provide students with the opportunity to use the dominant intelligences to develop the weaker intelligences;
6. Use the intelligences to fully comprehend broad subjects (Gardner, 1983).

2.12.5 Multiple intelligences teaching

Multiple intelligences teaching involves:

1. **Comprehension:** The teachers can recognize dominant intelligences in both himself/herself and the students
2. **Application:** The teacher should utilize his/her own intelligence to guide students in their learning and encourage their strengths.
3. **Stimulation:** The teacher should constantly stimulate students’ dominant intelligences and multiple intelligences.

Some components of multiple intelligence teaching are, (1) Critical thinking; (2) Passion and enthusiasm for the surrounding; (3) Courage to try new things; (4) Creativity and skills; (5) Generosity and tolerance; (6) Keen observation (Rockwood, 2003)
Additionally, teachers should first evaluate their own intelligence before carrying out multiple intelligences teaching, and use their dominant intelligence in planning materials and lesson plans. They should also keep track of student performances with observations and written records. This can help to assess each student’s intelligence and provide support accordingly. Gardner thought physics, biology, humans, products, self-understanding and understanding of the world are very important educational objectives.

Therefore teachers should make clear the lesson’s key points and contents and teach with practical and interesting material to enrich the lessons and reinforce learning. Lastly, there is neither right nor wrong with the multiple intelligences theory itself; the key is to understand and adopt the most beneficial method for students. (Seechak, 2008)

2.13 GENERAL GUIDELINES FOR THE SOURCE OF THE PREVIOUS STUDIES

The concept of Multiple Intelligence is in its infant stage in the field of Psychological testing. In developing country like India, researches regarding Multiple Intelligence are very few in numbers. Specifically in Gujarat State there is not any standardized tool available to measure the construct Multiple Intelligence. In such situation, the investigator has to depend upon the international resources available from the internet for the reviews of the past research done in this field.

The investigator has downloaded the scholarly articles and research papers from the internet with the help of INFLIBNET center, Ahmedabad.

INFLIBNET - Information and Library Network Centre (www.Inflibnet.ac.in or mirror at www.Inflibnet.ernet.in) is an Autonomous Inter University Centre (IUC) of University Grants Commission (UGC) involved in creating infrastructure for sharing of library and information resources and services among Academic and Research Institutions. INFLIBNET works
collaboratively with Indian university libraries to shape the future of the academic libraries in the evolving information environment.

Further more, some articles and research papers which are not freely downloadable from the INFLIBNET centre were purchased online from their publishers.

2.14 DESCRIPTIONS OF THE PREVIOUS STUDIES

2.14.1 Study-1

Title: Multiple Intelligence Levels of Physical Education and Sports School Students

Researcher: Ekici Summani

Year: 2011-12

Publication Date: Dec 2011

Source: Educational Research and Reviews, v6 n21 p1018-1026

Dec 2011

The purpose of this research is to analyze the multiple intelligence levels of academies of physical education and sports students according to some demographic factors. To obtain data about multiple intelligence levels in the research, the multiple intelligence inventory, developed by Ozden (2003).

It was applied to a total of 1,199 students, of which 541 are girls and 658 are boys. For resulting evaluation of the data, the frequency in SPPS program was applied, for independent groups the t-test and one-way analysis of variance (ANOVA) was applied and to find the origin group of the differences, Scheffe-F test was applied. According to the multiple intelligence levels results between the sexes in the study, significant differences were found in the subscales of visual (p=0.000) and rhythmic intelligence (p=0.000).
As for the results of the multiple intelligence levels between sections, the averages of multiple intelligences at inter-departmental levels are not statistically significant (p less than 0.05) although there occurred averages in favor of the Department of Physical Education Training in the results obtained from lower dimensions.

2.14.2 Study-2

Title : In the Context of Multiple Intelligence Theory, Intelligent Data Analysis of Learning Styles was Based on Rough Set Theory, Learning and Individual Differences

Researcher : Narli Serkan, Ozgen Kemal, Alkan Husenvin

Year : 2011

Publication Date : 2011-12

Source : Learning and Individual Differences, v21 n5 p613-618 Oct 2011

The present study aims to identify the relationship between individuals' multiple intelligence areas and their learning styles with mathematical clarity using the concept of rough sets which is used in areas such as artificial intelligence, data reduction, discovery of dependencies, prediction of data significance, and generating decision (control) algorithms based on data sets.

Therefore, first multiple intelligence areas and learning styles of 243 mathematics prospective teachers studying at a state university were identified using the “Multiple Intelligence Inventory for Educators” developed by Armstrong and the “Learning Styles Scale” developed by Kolb. Second, the data was appropriated for rough set analysis and we identified potential learning styles that a student can have based on the learning style s/he already has.
2.14.3 Study-3

Title : On “Effect of Multiple Intelligence Theory Practice on Students Success by Bloom’s Taxonomy”

Researcher : Uzunoz, Abdulkadir

Year : 2011

Publication Date : 2011-12

Source : Educational Research and Reviews, v6 n18 p952-960

November 2011

In this study, it is aimed to determine the effects of the “Multiple Intelligence Theory” on the retention and achievement of the students according to Bloom Taxonomy.

This study is a research as an experimental model. Research in academic year of 2008/2009 in Foca Izmir Lesbos Reha Country High School 9 Class is conducted on students. In this school, 9th grade class has 72 students. 50% of these students were male and 50% of the female students.

For testing the effects of Geography Education supported by “multiple intelligence theory and traditional geography education” on retention and achievement of students, controlled pre-test and post-test is used.

2.14.4 Study-4

Title : Multiple Intelligence of Students at Jordanian University

Researcher : Khataybeh, Abdalla, Al-sheikh, Kholoud

Year : 2011

Publication Date : 2011-12

Source : Journal of International Education Research, v7 n4 p83-94 2011
The present study aimed at investigating different intelligence types among Jordanian students at different public and private universities in Jordan. To achieve such aim, it sought to identify and rank multiple intelligences that characterize students at Jordanian universities, and to identify and rank the differences in multiple intelligences according to some variables: the gender, university (public or private), the students’ averages, the students’ specializations and the academic year.

This study has used a survey as an instrument of collecting data. The study sample consisted of (1436) students from the University of Jordan, Yarmouk University, Al-Hashemaya University, the University of Sciences and Technology, Petra University, Al-Zarqa University, Amman Arab University, Al-Isra’ University, Al-Zaitunah University and Philadelphia University.

The students estimated their own IQ scores on each of Gardner’s 7 multiple intelligences: logical\ mathematical IQ, musical IQ, interpersonal IQ, Kinesthetic IQ, Intra-personal IQ, Linguistic IQ and Spatial IQ. After analyzing the data, T-Test indicated that interpersonal intelligence is the highest and the most common intelligence among Jordanian students. Following are Intrapersonal, Kinesthetic, Linguistic, Spatial, logical\ mathematical, and musical, respectively. There were significant differences among Jordanian students in the linguistic and interpersonal intelligence in favor of the females. There were significant differences in the logical intelligences in favor of the governmental universities. There were no significant differences in the multiple intelligences that can be attributed to the averages of the students. There were significant differences in the musical intelligence in favor of the graduates.

2.14.5 Study-5

Title : “Multiple Intelligences: The Most Effective Platform for Global 21st Century Educational and Instructional Methodologies”
This paper examines the theory of Multiple Intelligences (MI) as the most viable and effective platform for 21st century educational and instructional methodologies based on the understanding of the value of diversity in today’s classrooms and educational institutions, the unique qualities and characteristics of individual learners, the opportunities that arise from applying the ideas of multiple intelligences, the need for flexibility and adaptation in a global society, and the increasing demand for accountability at all levels of education. Several definitions of intelligence are presented and the author examines the theories of Sternberg and Goleman as supportive of the philosophy of multiple intelligences being the most effective for 21st century educational and curricular platform.

The author sees the value of MI theory as broad enough to facilitate 21st century understanding of education and intelligence in so much as diversity and technology have fueled changes in the definitions and requirements of individuals with regard to pedagogy. In putting forth a strong argument of multiple intelligences (MI) being a strong platform for effective educational and instructional methodologies in 21st century classrooms and schools, the author also examines opposing views and attempts to counteract such with supporting literature, examples, and ideas.

2.14.6 Study-6

Title : “Intelligence Assessment: Gardner Multiple Intelligence Theory as an Alternative”
In the multiple intelligence framework, newer and more contextualized cognitive tasks are suggested as alternative to more traditional psychometric tests. The purpose of this article is to examine whether or not these two types of instruments converge into a general factor of cognitive performance.

Thus, the Battery of General and Differential Aptitudes (BAdyG: reasoning, memory, verbal aptitude, numerical aptitude and spatial aptitude) and a set of Gardner’s multiple intelligence assessment tasks (linguistic, logical, visual/spatial, bodily-kinesthetic, naturalistic and musical intelligences) were administered to 294 children aged 5 to 7.

The confirmatory factor analysis points out the absence of a common general factor considering both batteries, indicating instead the existence of two general factors, which gather the tests that encompass them. Also, these two general factors correspond to traditional and multiple intelligence assessments and show a statistically moderate correlation between them.

2.14.7 Study-7

Title : “The Representation of Multiple Intelligences Types in the Top-Notch Series: A Textbook Evaluation”

Researcher : Razmjoo, Savyed, Ayotollah, Jozaghi, Zahra

Year : 2010

Publication Date : 2010
This study aims at evaluating Top-Notch series through a checklist devised by the researchers based on the elements of the Multiple Intelligences (MI) theory proposed by Gardner (1998). With the shift from teacher-centered classrooms to learner-centered one, more and more research is needed to be done in the realm of students’ need analysis. One of the undeniable needs of the students to be fulfilled is for them to learn through the intelligence they are most capable at while the educational system mainly addresses students’ verbal intelligence.

This study has evaluated Top Notch series in terms of taking the nine intelligences into consideration through answering these two questions: 1. To what extent does Top-Notch series represent the MI features? 2. How frequently each of the eight intelligences is used in each book of the series? The results confirm that Top Notch is rich in addressing verbal intelligence followed by the visual, logical, musical, interpersonal, bodily, and intrapersonal one while to some extent poor in representing natural and existential intelligences. It also shows that there exists a pattern of some of the intelligences-addressing through different levels, for example unlike visual intelligence, verbal-intelligence-addressing enhances as the books grow in level.

The comparison of the results with that of Interchange series evaluation illustrated that Top Notch is more representative of the intelligences and that it is a suitable alternative to the Interchange in terms of addressing the elements of MI principles or as Lezear (1991) puts it “Ways of Knowing”.

2.14.8 Study-8

Title : “The Relationship of Motivation and Multiple Intelligence Preference to Achievement from Instruction Using Web quests”
Finding teaching models and strategies that benefit learners while incorporating skills students will need in the future, such as using technology, is important. This study examined the problem of whether Webquests, an inquiry-based teaching strategy where much of the information is found online, are a beneficial way to integrate technology into the curriculum for all learners.

The purpose of this study was to further knowledge about the Webquest model and the use of Webquests with students of different ability levels and multiple intelligence preferences. The Attention, Relevance, Confidence, and Satisfaction (ARCS) model of motivational design; the self-determination theory; and multiple intelligences theory comprised the theoretical bases of this study. A concurrent triangulation design of mixed methods research was used to gather quantitative data including pretest-posttest scores, a motivation survey, and the Multiple Intelligences Development Assessment Survey (MIDAS-KIDS). Qualitative data gathered included daily learning logs, rubrics from the final Webquest project, researcher observations, and participant interviews. SPSS software was used to test for correlations between achievement, ability, multiple intelligences, and motivation.

The key findings of this study showed that only the gifted and average ability groups had significant gains from the Webquest instruction. No correlation was found between multiple intelligences preference and achievement or motivation. In addition, no ability group was significantly more
motivated by the Webquest instruction than another. Results showed that the Webquest was useful form of instruction for gifted and average students, but was not as useful for at-risk learners, who have learning needs that were not met by the Webquest instruction. From this research, positive social change could result if teachers make changes in Webquests to better support the needs of at-risk learners.

2.14.9 Study-9

Title : “The Effects of Multiple Intelligence Teaching Strategies on Achievement in Reading and Mathematics”

Researcher : Harriman, Vanessa

Year : 2010

Publication Date : 2010

Source : ProQuest LLC, Ed.D. Dissertation, Trevecca Nazarene College


Today’s educators must use research-based teaching strategies that increase achievement levels of students. Howard Gardner’s Theory of Multiple Intelligences is scientifically-based. The current model suggests eight different areas in which a person can demonstrate intelligence.

This study compared reading and math assessments score of elementary students in classrooms using primarily traditional teaching strategies with classrooms using primarily multiple intelligence strategies mixed with traditional teaching strategies. Student assessment scores improved in both reading and math regardless of the chosen teaching strategy on most of the assessments. Some showed a significant difference but in favor of the classrooms using primarily traditional teaching strategies.
2.14.10 Study-10

Title : “The Perceptions of Community College Students to Foreign Language Acquisition Grounded in Multiple Intelligence Theory”

Researcher : Wallace, Richard Le Roy Wayne

Year : 2010

Publication Date : 2010

Source : ProQuest LLC, Ph.D. Dissertation, Capella University


The purpose of this qualitative study was to examine and gain a clearer understanding of the perceptions of foreign language learning of adult foreign language learners attending a South-West Missouri community college. This study was based on the Multiple Intelligence (MI) theory of Howard Gardner.

It examined the perceptions of adult language learners where instruction was grounded in MI. This was an important aspect of the study because it sought to explore the perceptions of adult foreign language learners where instruction was grounded in MI and to offer insight into the factors that affect language learning, specifically in the context of incorporating MI in foreign language learning.

2.14.11 Study-11

Title : “On the Relationship of Multiple Intelligences with Listening Proficiency and Attitudes among Iranian TEFL University Students”

Researcher : Naeini, Massoumeh Bemani, Pandian Ambigrapathy

Year : 2010
Gardner’s’ (1983) Multiple Intelligences Theory (MIT) has been found to have profound implications in teaching English as a foreign language (TEFL) in that it provides a way for teachers to recognize learners’ individual cognitive and affective differences by providing favorable motivational conditions for learning. However, little investigation has focused on the domains of cognition and affect in a single study. Therefore, this study investigates two facets: the relationship of Multiple Intelligences (MIs) with listening among Iranian TEFL university students and the possible relationship between the type of intelligence the students fall into and their attitudes toward learning English.

In this study, McKenzie’s’ (1999) MI Inventory was used to identify 60 participants’ preferred intelligences. The participants comprised an intact group randomly assigned to the experiment. A Likert-type questionnaire was employed to elicit data about participants’ levels of personality traits that accounted for their attitudes to language-learning. Also, the participants’ listening comprehension proficiency was measured using the listening section of a retired TOEFL test. Data analysis using Pearson correlation revealed no significant relationship between the score of listening and any of the MIs. Similarly, the results indicated no significant difference between MIs and attitudes.

2.14.12 Study-12

Title : “The Effects of the Cooperative Learning Method Supported by Multiple Intelligence Theory on Turkish Elementary Students’ Mathematics Achievement”

Researcher : Isik Dailek, Tarim Kamuran

Year : 2009
In the present experimental study, the effects of the cooperative learning method supported by multiple intelligence theory (CLMI) on elementary school fourth grade students’ academic achievement and retention towards the mathematics course were investigated. The participants of the study were 150 students who were divided into two experimental (used CLMI) and two control groups (used traditional method). “Mathematics Achievement Test,” “Teele Inventory for Multiple Intelligences” and “Personal Information Form” were used as the measurement instruments of the study.

The findings of this research have indicated that CLMI has a more significant effect on academic achievement than the traditional method. Yet, regarding the retention scores, CLMI has not significant effect on retention.

2.14.13 Study-13

Title : Multiple Intelligences, Judgment, and Realization of value

Researcher : Blomberg, Doug

Year : 2009

Publication Date : 2009

Source : Ethics and Education, v4 n2 p163-175 Oct 2009

In the theory of multiple intelligences, Howard Gardner proposes a scientific justification for a more pluralistic pedagogy, while denying that science can determine educational goals. Wearing an educator’s hat, however, he favors a pathway in which students come “to understand the most fundamental questions of existence ... familiarly, the true, the beautiful, and the good.” Yet Gardner claims to exclude the realm of values from an intrinsic role
in any of the intelligences; furthermore, the intelligences have no role to play in respect to values.

The best we can hope is that some people are able to yoke these “scientifically and epistemologically separate” realms together. This dichotomy is detrimental to Gardner’s educational goals. An integral conception, acknowledging both that normativity is essential for the operation of intelligence and that pursuit of values is itself an intelligent undertaking, would better support Gardner’s educational vision with a more comprehensively pluralistic view of knowing.

2.14.14 Study-14

Title : Adaptive versus Learner Control in a Multiple Intelligence Learning Environment

Researcher : Kelly, Declan

Year : 2008

Publication Date : July 2008


Within the field of technology enhanced learning, adaptive educational systems offer an advanced form of learning environment that attempts to meet the needs of different students. Such systems capture and represent, for each student, various characteristics such as knowledge and traits in an individual learner model.

Subsequently, using the resulting model it dynamically adapts the learning environment for each student in a manner that attempts to best support learning. However, there are some unresolved issues in building adaptive educational systems that adapt to individual traits. For example in what way should the learning environment support users with different learning
characteristic and what advantage does adaptive control have over learner control. This paper describes an experiment using the Multiple Intelligence based adaptive intelligent educational system, EDUCE, that explores how the learning environment should change for users with different trait characteristics.

In particular it explores the effect of using different adaptive presentation strategies in contrast to giving the learner complete control over the learning environment. Results suggest that students who do not explore alternative resources beyond the first presented resource have most to benefit from adaptive presentation strategies and that surprisingly learning gain increases when they are provided with resources not normally preferred.

2.14.15 Study-15

Title : The Effects of Teaching Activities Prepared According to the Multiple Intelligence Theory on Mathematics Achievement and Permanence of Information Learned by 4th Grade Students

Researcher : Temur, Ozlem Dogan

Year : 2007

Publication Date : Oct 2007


The aim of this research is to reveal teaching activities which are designed according to the Multiple Intelligence Theory to have effects on the student’s success in mathematics and on the permanence of the knowledge learned.

This research has been carried out with the fourth graders at Gazi University Foundation Private Primary school. Among all the classes, two of them were selected, 4-A was selected as an experimental group and 4-B as a
control group considering their pre-test points. The groups attending to the research were applied a permanence test which examines the behaviors that have to be gained before the subject to be taught, after the subject and the month after the completion of the subject. The points acquired from pre-test were used in order to balance the groups and final test points were used in order to determine the success points and permanence test was used in order to bring up the level of oblivion.

It is found out that the average of the final test’s points of the experimental group who studied in accordance with Multiple Intelligence Theory was 18.08, whereas the average of the final test’s points of the control group was 15.95. The t point was determined as 2.55 in the analysis of t test. Because of the fact that the table t point in the level 0.5 was 2.06 it is understood that the result is to the advantage of the experimental group.

2.15 REVIEWS OF THE PREVIOUS STUDIES

In the present report researcher has presented fifteen reviews of the researches done in this field. Surveying the work done in the direction of Intelligence testing, it can be seen that every test has its speciality. Most of the tests in India are adaptations of foreign tests or conversion of some verbal tests into mother tongue. From the reviews, the investigator came to know the essential factors to be considered while planning, constructing and standardizing the test.

The Investigator also understood the procedure of constructing test items and standardizing. In this scientific era no country can afford to ignore the best possible use of human potentialities of citizens for the development of the nation. Of all the abilities the field of intelligence testing has been most widely explored.

The psychological tests help in making decisions about the placement of
individuals for school and work, in the facilitation in the learning, in the process of counseling, in improving instructions in education, in formulating educational and social policies. They are also useful for classification of children with reference to their abilities. Now it is important to measure total intelligence of secondary school students, they are growing generation of the country. It will help teachers to guide students to choose their career also. It helps teacher students to solve their adolescents' period problems. Therefore must needed mental testing, it causes to the development of an individual as well as whole, for the progress of the country. This study concerning to develop a tool to measure intelligence of the adolescents of Gujarat state. This tool is made for adolescents the age group of 12-16 years of age and studying in the classes 9 to 10.

2.16 SIGNIFICANCE OF THE PRESENT STUDY

In India, Multiple Intelligence is in its infant stage. In Gujarat State, only few researchers have started doing research in this field. Furthermore, until today there is not any standardized tool available in Gujarati language for the assessment of Multiple Intelligence. So that in this context this study to prepare a standardized tool is very significant. Furthermore, following are some points, which make this study more significant in comparison with past researches done in the field.

- Present study covered the secondary schools of Gujarat State.
- Sample was selected through stratified cluster sampling technique.
- The reliability of the scale will be checked by different methods.
- The validity of the test will be calculated by using the systematic Procedure.
- In the present study, norms will establish.
2.17 CONCLUSION

In chapter-2, we had discussed, about Introduction to Multiple Intelligence, Concept of Multiple Intelligence, Components of Multiple Intelligence, Difference between traditional method and Multiple Intelligence, Historical roots of Multiple Intelligence and also discussed review of the literature which was studied in past. In chapter-3, we will discuss about design of the present study.
References


