Chapter - III

Conceptual Framework
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CONCEPTUAL FRAMEWORK

Most children seem to learn the basics of reading, writing and arithmetic more or less through the regular instructional environment. However, children with Learning Disabilities need more direct, intensive and systematic inputs from the teacher, in order to learn. In the classroom, these students learn the same curriculum as their peers. In addition to the instruction they receive in the general classroom, students with Learning Disabilities benefit significantly from remedial instruction.

3.1 LEARNING PROCESS

To learn is to acquire knowledge or skill. Learning also may involve a change in attitude or behavior. Children learn to identify objects at an early age; teenagers may learn to improve study habits; and adults can learn to solve complex problem. This process can be quite complex because, among other things, an individual's background strongly influences the way that person learns. To be effective, the learning situation also should be purposeful, based on experience, multifaceted, and involve an active process. Although characteristics of learning and learning styles are related, there are distinctions between the two. Learning style is a concept that can play an important role in improving instruction and student success. It is concerned with student preferences and orientation at several levels. For example, a student's information processing technique, personality, social interaction tendencies and the instructional methods used are all significant factors which apply to how individual students learn. Initially, all learning comes from perceptions which are directed to the brain by one or more of the five senses: sight, hearing, touch, smell, and taste. Psychologists have also found that learning occurs most rapidly when information is received through more than one sense.
3.1.1 Domains of Learning

One of the more useful categorizations of learning objectives includes three domains: cognitive domain (knowledge), affective domain (attitudes, beliefs, and values), and psychomotor domain (physical skills). Each of the domains has a hierarchy of educational objectives.

The listing of the hierarchy of objectives is often called taxonomy. Taxonomy of educational objectives is a systematic classification scheme for sorting learning outcomes into the three broad categories (cognitive, affective, and psychomotor) and ranking the desired outcomes in a developmental hierarchy from least complex to most complex.

The cognitive domain, described by Dr. Benjamin Bloom, is one of the best known educational domains. It contains additional levels of knowledge and understanding and is commonly referred to as Bloom's taxonomy of educational objectives. The Cognitive Learning Domain is exhibited by a person's intellectual abilities. Cognitive learning behaviors are characterized by observable and unobservable skills such as comprehending information, organizing ideas, and evaluating information and actions. These skills are arranged into six hierarchical
levels, beginning from the simple and building to the most difficult. These six categories are arranged on a scale of difficulty, meaning that a learner, who is able to perform at the higher levels of the taxonomy, is demonstrating a more complex level of cognitive thinking.

**Fig 3.2**
Dr. Bloom's hierarchical taxonomic for the cognitive domain (knowledge) includes six educational objective levels.

The affective domain may be the least understood, and in many ways, the most important of the learning domains. A similar system for specifying attitudinal objectives has been developed by D.R. Krathwohl. Like the Bloom taxonomy, Krathwohl's hierarchy attempts to arrange these objectives in an order of difficulty. The Affective Learning Domain addresses a learner's emotions towards learning experiences. A learner's attitudes, interest, attention, awareness, and values are demonstrated by affective behaviors.
D.R Krathwohl’s hierarchical taxonomy for the affective domain (attitudes, beliefs and values) contains five educational objective levels.

These five categories can be thought of in a scaffolding manner, one must be learned in order to move onto the next category.

There are several taxonomies which deal with the psychomotor domain (physical skills), but none are as popularly recognized as the Bloom and Krathwohl taxonomies. However, the taxonomy developed by E.J. Simpson also is generally acceptable. The psychomotor domain refers to the use of basic motor skills, coordination and physical movement. Bloom's research group did not develop in-depth categories of this domain, claiming lack of experience in teaching these skills. However, Simpson (1972) developed seven psychomotor categories to support Bloom's domain. These physical behaviors are learned through repetitive practice. A learner's ability to perform these skills is based on precision, speed, distance, and technique.
3.2 DEVELOPMENTAL OBJECTIVES OF EDUCATION AT THE PRIMARY STAGE
Competencies: knowledge, Understanding, and skills

LC-1 Knows that school can give him much by way of useful knowledge.

LC-2 Understands the importance of learning in school.

LC-3 Possesses reading, writing, and computational skills.

LC-4 Is able to acquire information.

LC-5 Is able to listen carefully and with understanding.

LC-6 Is able to read with comprehension.

LC-7 Is able to memorise and retain facts.

LC-8 Is able to express himself in speech and in writing.

LC-9 Is able to express himself in are forms (drawing, painting, dance, and drama).

LC-10 Is able to observe accurately.

LC-11 Is able to classify information.

LC-12 Is able to analyse, relate and organize facts.
LC-13 Is able to interpret and draw conclusions.
LC-14 Is able to experiment with things and situations to find out solutions.
LC-15 Is able to use imagination.
LC-16 Is able to think independently and come out with ideas of his own.

Attitudes and appreciations
LA-1 Is eager to understand the physical and social phenomena and events in his environment.
LA-2 Is eager to ask questions.
LA-3 Is not deterred by initial difficulties in learning.
LA-4 Welcomes new ideas and enjoys discussing them with others.
LA-5 Likes originality and novelty in ideas and methods.
LA-6 Welcomes healthy and constructive criticism of his views by others.
LA-7 Uses constructive criticism of others for self-improvement.

Behaviours and Habits
LB-1 Uses acquired knowledge, skills and understanding in different situations of life.
LB-2 Engages himself in reading extra books, newspapers and magazines.
LB-3 Shares his knowledge with others.

3.3 DEVELOPING THE CHILD AS A LEARNER

We believe that learning is essentially a matter of developing certain skills, attitudes, and behaviours. Who is a good learner? To state briefly, a good learner is one who has learnt to make proper use of his innate abilities. Every child possesses certain qualities and traits in the form of abilities, skills, and attitudes which as a good learner he must possess. Besides competencies (skills, knowledge, and understanding) a good learner also possesses a number of attitudes which enable him to make the best possible use of those abilities and skills. Positive attitudes towards learning also create in him an urge to know more and more about things and sustain his interest in learning.
Besides reading and listening skills, the child should learn how to express himself in an effective manner through different media of expression like speech, writing, art, etc. Acquisition and retention of information cannot be the end of education, but its importance in the total process of thinking cannot be exaggerated. In order that the child is able to acquire new information from different sources and retain it.

Mere acquisition and retention of information however is not enough for the child’s development as a learner. He should be enabled to organize and classify the acquired information which he should also be able to relate to new experiences. This will result in better understanding on the part of the child. A good learner possesses the skill to keep a systematic record of the acquired information. A good learner does not remain content with information given in the textbook. He invariably tries to tap other sources of information too, and aims at acquiring knowledge from different sources including the immediate environment. The knowledge acquired by the pupil becomes meaningful and useful for him only when he is able to apply it in new situations. It is the use of knowledge rather than its mere acquisition, which is more important in the life of the individual. The child, who has adequately developed as a learner, will be in a position to make generalizations on the basis of logical analysis of specific situations.

A good learner is not content with only receiving new information. He grasps the ideas advanced by others and thus comes out with new ideas of his own. To develop this quality in the child, the teacher will do well to provide maximum possible opportunities to the child to come out with ideas of his own. The teacher should warmly receive any original idea given by the pupils, and should in no case ridicule them even if their ideas appear to be some what odd or off the beaten track.
Learning also depends on good study habits, some of which are more effective, whereas others may be less effective. The attitudes that the child has towards learning are also important. Therefore, the teacher should strive to develop such attitudes among pupils as are essential to make them good learners. Attitudes, it must be remembered, are not taught but caught. Teacher’s own attitudes towards learning, his enthusiasm and zeal for teaching, his effort to create a healthy climate for learning, and the interest that he shows in all learning activities will help in developing right type of attitudes towards learning. For the purpose of building positive attitudes towards learning, the teacher can also capitalize on those traits of the child which help in building such attitudes.

The primary stage of Education covers children from 6+ to 11+ studying in classes one to fifth. This period of child’s life is very important all his capacities both physical and mental can be nourished and nurtured at the stage the teacher should realize that the different subjects he teaches during this period must help in the development of his various capacities and potentialities.

3.4 HOW CHILDREN WITH DISABILITY LEARN

Children with Learning Disabilities (LDs) face enormous challenges learning to read. Many never reach a level of reading proficiency that allows them to build knowledge, acquire information, feed their interests, or enrich their lives. In some cases, their attempts to read result in such a degree of discouragement and frustration that reading subtract rather than add to their lives. For Children with Learning Disabilities, their early struggles in learning to read are a harbinger of dismal educational outcomes. Overall, Children with Learning Disabilities leave elementary school with severely deficient reading and writing skills (deBettencourt, Zigmond, & Thornton, 1989; Deshler, Schumaker, Alley, Warner, & Clark, 1982) and leave secondary school with little or no improvement in these areas (Zigmond, 1990), with many dropping out before graduation (deBettencourt & Zigmond, 1990).
By the end of grade IV, when the majority of Children with Learning Disabilities have been identified, these students already demonstrate pronounced deficits in word reading relative to their more skilled peers. The magnitude of this difference is illustrated in a study by Jenkins, Fuchs, Espin, van den Broek, and Deno (2000). These researchers asked fourth-grade students to orally read a passage of third-grade difficulty. Figure 2.1 shows the accuracy and fluency (i.e., mean number of words read in 1 minute) by Children with Learning Disability and more skilled peers (i.e., classmates who had average or above scores in reading comprehension).

Figure 3.5 Graph showing Accuracy and fluency of fourth graders

Fourth-Grade Fluency

In 1 minute of reading, skilled comprehenders read three times more words than did children with Learning Disability. Accuracy levels were 98% and 86%, respectively, for the skilled and LD groups. These kinds of results underscore how disadvantaged elementary school children with Learning Disability are in word reading. Comprehension is the immediate goal of reading. The most salient characteristic of these students is difficulty in acquiring efficient word-level reading skill. Accurate word reading is critical to reading comprehension because the meanings that readers construct from text come via the words. No words, no meaning. If individuals cannot read words accurately, their comprehension suffers. Children with this disability have trouble remembering things they have heard and find it difficult to express themselves
verbally along with difficulty in organizing information. It is not difficult to imagine how these children's inefficient word reading along with their haphazard approaches to learning might overload working memory, making it difficult for them to connect and integrate text ideas into a coherent meaning representation. It becomes doubly difficult when it comes to comprehending and understanding a subject such as science. Regarding academic strategies, students with LD devised unusual strategies and preferred additional oral explanations or visual explanations, whereas nondisabled students preferred more written examples (Heiman, Tali; Precel, Karen.2003).

3.5 WHAT IS SCIENCE?

Science is a part of our everyday experiences, from the time we turn off the alarm clock in the morning to when we watch the stars twinkle at night. Learning about science helps us to learn about the world around us. Science is a combination of process (how we learn about science) and content (the knowledge, concepts and understandings of science).

3.5.1 How Young Children Learn About Science

The National Science Education Standards emphasize use of inquiry skills as a way of learning about science. In early childhood programs, children learn inquiry skills as they:

- ask questions
- explore and investigate
- use tools and their senses to gather information
- make reasonable explanations
- represent what they've learned through drawings, constructions, writing, graphing, stories, or dramatizations

3.5.2 The Content of Science at primary level

Most of the content of science in early childhood can be categorized into three areas:
3.5.3 The Teacher's Role in Supporting Science Learning

The teacher plays a critical role in the development of inquiry skills as well as scientific knowledge. When he/she sets the stage for science discoveries and interact with children during their play in a way that extends their scientific thinking, he/she help them to do science. He/She should begin by setting up an environment that encourages scientific exploration and discoveries. This can be something as simple as having a classroom pet for the children to observe systematically over time or planting and growing seeds after talking about what seeds need to grow. When interesting objects from nature or textures are around the room, children will naturally ask questions. Allowing children to take apart an old clock will lead children to examine the gears and think about cause and effect.

Arranging the environment for science is not enough. It is teacher's interactions with children and his/her guidance during their investigations that will strengthen scientific understandings. He/She should make Think aloud and "I wonder" a part of their daily vocabulary. Teachers shouldn't be too quick with answers to children's questions. He/She should give them a chance to make predictions, test them out where possible, and generalize. He/She should be willing to admit when he/she doesn't know the answer and adopt a "let's find out together" attitude.

The National Policy of Education (NPE, 1986) states that “In the Indian way of thinking a human being is a positive asset and a precious national resource which needs to be cherished, nurtured and developed with tenderness and care, coupled with dynamism. Each individual's growth presents a different range of problems and requirements at every stage from the womb to tomb. The
catalytic action of education in this complex and dynamic growth process needs to be planned meticulously and executed with great sensitivity. Gowin, the author of the 'Theory of Educating' says, for each student the class room experience should be titillating and joyful because of good understanding. The meaning should be discovered by the learner in the classroom. The teacher and the learner should cooperate so that they conquer the monster of meaninglessness in learning.

The Kothari Commission Report (1960) states, 'If science is partly taught and badly learnt, it is little more than burdening the mind with dead information and it could degenerate even into new superstitions'.

Decline in the quality of instruction is one of the serious problems being faced by many third world countries and to check the quality erosion, there is a need to improve the quality of instruction which necessitates the introduction of new innovative approach in teaching.

Laik (1994) has commended that present educational systems need to be revamped and made more creative and stimulating with a sprit of scientific thinking in teaching and learning processes which necessitates the application of innovative instructional approaches.

3.6 LEARNING AND INSTRUCTION

Our major emphasis in education has so far been on instruction and the achievement of knowledge objectives alone. The teacher with the help of text books provides a fixed amount of knowledge to the child under a formal system of schooling. The child is required to learn what is taught to him by the teacher and then give evidence of having learnt his lessons by passing the examination at the end of the academic year. The teacher-dominated instruction, rote learning by pupils and information-based examination continue to dominate the scene, despite efforts to bring about reform in education. It is conceded that
education should aim at developing the child so that he may accelerate the process of national development. But in actual practice education continues to be synonymous with instruction. What is urgently required is that the child should be prepared for the different roles which he has to play in life. It is only by helping him to develop fully that the national development goals can be achieved.

At this point, it would be worthwhile to explain the term teaching-learning strategy. What is a teaching-learning strategy? It could be defined as a constellation of certain planned activities which would enable the teacher to teach and the child to learn a given type of content so that a set of developmental objectives are effectively achieved. A strategy helps to give meaning to what is being taught and makes for the use of appropriate skills and activities in teaching a given material. It can be easily concluded that there cannot be any one instructional strategy to teach all types of content and to achieve all the different types of educational objectives. One strategy may be suited for one type of content, but not for another. Moreover, because of its special specific orientation, a strategy may have the potentiality of achieving only some of the educational objectives and not others. For example, a certain strategy may be found suitable for teaching science and developing in the child problem-solving capacity but may turn out to be of little use in the teaching of language of certain aspects of social studies for developing citizenship qualities. That is why; curriculum builders have identifies a number of instructional strategies to suit the different types of content and for achieving different types of objectives. There have been several hindered studies comparing one strategy with another. The evidence to-date rules out the possibility of having a single multipurpose strategy. Thus, the teacher will have to select a combination of strategies for teaching the different types of content. He may find that one combination of strategies is suitable in one situation, whereas another combination is required in some other situation. Instead of making search for a single right way, he will have to concentrate on the possibilities of a rich variety of teaching strategies which may serve the purpose in hand. Moreover, he may find that he can perhaps never reach the
point of having exhausted all possible strategies. There will always remain some scope for evolving new strategies to meet the challenge of changing realities of classroom work. It is high time that the teacher should try to acquaint himself with some of those strategies which are important for the development of the child as a person and a learner.

It is worth noting here that selection of appropriate teaching-learning strategies will depend upon a number of factors, the most important being naturally the objectives of education. Teaching-learning strategies are always devised in the service of educational objectives. Educational objectives are generally stated in terms of skills, attitudes, knowledge, understandings, behaviours, and habits which the child is required to possess. This implies that teaching-learning strategies cannot be the same in respect of all the aspects of development. For instance to develop certain skills in the pupils, imitation, drill, practice, etc. will be more appropriate. For the development of attitudes, the techniques of behaviour modification will have to be made use of. To develop understandings among pupils, discovery techniques of learning, inquiry, methods of teaching and the application of acquired knowledge may, perhaps, be found more appropriate. To develop certain behaviours and habits in the pupils, the process of conditioning may have to be made use of.

While selecting instructional strategies, the capacities and capabilities of the child will have to be kept in mind. The fact of individual difference implies that different strategies will have to be used for pupils having different levels of intelligence. For instance, discovery techniques of learning may work very well in the case of children who are above average in intelligence, whereas techniques of direct communication may prove more effective in the case of average and below average children.

Availability of resources is another important factor which will have to be taken into account while selecting teaching-learning strategies. Some strategies
cannot be used without adequate support materials. Non-availability of these materials will imply that the strategies may not yield expected results.

Selection of teaching-learning strategies will also depend on the entry behaviour (present condition) of the child. With reference to a particular objective, there can be three possibilities of the child’s present condition. The child may be like a clean slate or there may be signs of the ‘objective’ having already been achieved in its mild form, or the child might have developed some quality which is contrary to the quality which we want to develop in him. This means that the negative influence of that quality will have to be removed before attempting to develop the desirable quality in him. For instance, a good learner is expected to have an attitude of tolerance towards his criticism. Suppose, there is a child who has developed an attitude of intolerance towards his criticism. The child will therefore have to be de-conditioned first and, then, a new conditioning will have to be established. The sequence of activities may go like this:-

I. The teacher asks the students to criticize the lesson which he has just taught.
II. The teacher asks a few students to narrate stories or make speeches in the class. Then the other students are asked to criticize the students who have told the stories or made speeches.
III. The teacher asks the students to criticize the performance of a particular child in some area.
IV. Feed-back is given to him immediately, whenever he shows signs of tolerance or intolerance of his criticism.
V. The process of repeated a number of times. In the end, it may be found that the pupil has developed an attitude of tolerance towards his criticism.

The selection of teaching-learning strategies will also depend on the type of organizational climate prevailing in the school and the classroom. Discovery techniques of learning, field explorations, discussions, organization of functions, celebration of events, etc. may be selected if the school climate is more
permisive. On the other hand, formal methods like lecturing, drill, explanation, demonstration, etc. will be preferred if the school climate is formal in nature.

The selection of teaching-learning strategies also depends on the quality of teacher preparation. The teacher must by very imaginative, creative, and tolerant, if he has to use discovery techniques of teaching and learning. On the other hand, for formal methods of teaching such qualities in the teachers are not so essential. He should have the ability to express himself effectively if he wants to use techniques like story-telling, explanations, etc.

Instructional strategies will also have to be related to requirement with reference to a particular objective of education. If an objective is to be achieved for the whole group, then we shall have to think of one set of instruction strategies. If, on the other hand, an educational objective is to be achieved in respect of only a few individuals, instance, to impart knowledge to the children, methods of direct exposition can be utilized. But, if certain learning difficulties are to be removed in the case of a few students, then the teacher will have to work with these children individually.

3.6.1 Criteria for choosing an appropriate teaching learning strategy

Before choosing a teaching-learning strategy the teacher may bear in mind the following points:

I. The strategy should be usable by the teacher in the given situation.
II. It should have relevance to the objectives to be achieved.
III. It should help in greater involvement of children in the learning process.
IV. It should be appropriate to the age, ability, and interest of the child.
V. It should, as far as possible, lead to self-learning on the part of the child.
VI. It should help in building a good climate for learning.
3.7 TEACHER AND INSTRUCTION

Dr. Jerome J. Schultz is currently director and clinical neuropsychologist at the Learning Lab at Lesley University. He began his professional career as a middle school special education teacher and has evolved into a neuropsychologist at a university-based clinic for children and adolescents with learning disabilities and related learning difficulties. A teacher possessing the following characteristics in his view is the closest thing he can find to a “great teacher” for children with learning disabilities.

- **Understands** the relationship between emotion and cognition. She understands that many negative emotions and troubling behaviors go away when students feel competent and successful.

- **Knows** that students learn in different ways. Focuses on observations and testing and adjusts teaching according to confirmed results from those observations and tests.

- **Focuses** on the learner first and the curriculum second. The student is taken to a place of cognitive and psychological safety before venturing into deeper waters of new material. Constant review of student’s feeling of success with previously covered material.

- **Demonstrates** the ability to expose students to a variety of stimuli, and knows when students are connected emotionally and cognitively to the experience.

- **Is guided and energized** by finding out what facilitates effective learning and what gets in the way.

- **Praises** the process that students use as often or more than the product, since the product may be substandard (in the child’s perception or in reality) even if the process is right.

- **Understands** that it’s not about having kids work harder, but rather that they work smarter.

- **Knows** that it’s important to separate skill instruction from content acquisition.
➢ **Is willing** to take a risk when it comes to advocating for a student with LD in her classroom.

➢ **Examines** his classroom practices to identify what works and what doesn’t.

➢ **Knows** how to work as a team with the student as the key member.

➢ **Understands** that cultural and language factors play an important role in learning.

➢ **Is able** to cover the curriculum by understanding the child. To consider each child as a unique individual is for these teachers not just a euphemism; this belief is acted upon minute-by-minute, even in large and diverse classrooms.

The Teacher is connected to children and children are connected to this teacher most of the time. This allows the teacher to be responsive to not only the student with LD, but all learners in the classroom. There are other traits that distinguish this teacher and each reader can add to the list as well. Dr. Schultz believes these teachers are everywhere, you just need to look. When you find one, it is important to remember to appreciate, support and thank them.

The primary concern and focus should always remain on the children and the progress of his or her achievements, keeping in mind that all individuals learn differently. There is no one simple answer to sum up Learning Disabilities, nor is there one solution to cure learning disabilities. Most importantly, there is a collective and collaborative effort involved in evaluating, assessing, diagnosing and effectively benefiting students with learning disabilities. I believe teachers become involved in education because there is a desire within their souls to make a difference in the lives of children.

**3.8 NEED FOR INNOVATIVE APPROACH**

Learning Disability is an emerging area of special education and there is a lot of scope for qualitative research but most of them are done in psychological factors relating to the learner. But very few attempts have been made to develop
the child as a learner and maximize his academic achievement. In the normal classrooms ten percent the children have learning disability who are isolated because of their failure owing to their academic deficits which make them poor learners due to the characteristics inherent in them as shown in the table below.

Table: 3.1 Comparison of the characteristics of Learning Disabled children and Good Learner

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Characteristics Learning Disabled Children</th>
<th>Characteristics of a Good Learner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Poor Language skill, which hinder memory,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Careless Listening.</td>
<td>Aims at acquiring knowledge form different sources.</td>
</tr>
<tr>
<td></td>
<td>▪ Lack of Basic reading skills.</td>
<td>Able to relate it to new experiences.</td>
</tr>
<tr>
<td></td>
<td>▪ Lack of Reading comprehension.</td>
<td>Able to keep systematic record of the acquired information.</td>
</tr>
<tr>
<td></td>
<td>▪ Writing and written expression.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Unable to use of strategies for memorization.</td>
<td>Able to acquire new information from different sources and retain it.</td>
</tr>
<tr>
<td></td>
<td>Difficulty in organizing information</td>
<td>Able to organize and classify information.</td>
</tr>
<tr>
<td>3</td>
<td>Difficulty with short-term auditory and visual memory,</td>
<td>Observes different phenomena very minutely.</td>
</tr>
<tr>
<td></td>
<td>Lack of awareness of skills and strategies needed to solve problems.</td>
<td>Grasps ideas advanced by others and comes out with new ideas of his own.</td>
</tr>
<tr>
<td></td>
<td>Lags in Performing tasks</td>
<td>Applies it in new situation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Generalizes on the basis of logical analysis.</td>
</tr>
<tr>
<td>4</td>
<td>Lack of attention.</td>
<td>Curious.</td>
</tr>
<tr>
<td></td>
<td>Lack of motivation.</td>
<td>Originality.</td>
</tr>
<tr>
<td></td>
<td>Low self esteem.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Negative attitude towards learning</td>
<td>The positive attitude towards learning.</td>
</tr>
<tr>
<td>6</td>
<td>Haphazard in their approaches to learning,</td>
<td>Possess good study habits.</td>
</tr>
</tbody>
</table>
A teacher must take maximum effort to accommodate individual students’ needs. There are diverse students in every class and every teacher must make maximum effort to meet the needs of individuals who may differ in some way from the average student in his or her classroom. Teachers are often at a loss how to help such students how to integrate them more fully into classroom life. Flexibility, adaptation, accommodation are expected of every teacher. There are many challenges that face teachers today, inclusion being one of those challenges. Knowledge, experience, support and effective teaching strategies for inclusive classrooms will help teachers produce a productive environment for all students to achieve their most successful potential possible. This is a fair assessment of what most teachers want for their students: success.

Each child has his own distinct limitations and potentials and limitations, the final extent of realization of his possibilities depends on the richness of the child’s environment. The variety and scope of a child’s achievement depend upon both the quality and kind of his experience. Hence an attempt has been made by the investigator to conduct an in-service training programme for primary teachers on select techniques which can accommodate the child with learning disability who differs from the normal children and has unique academic deficits; as a learner in-order to facilitate the academic achievement in science.

3.9 SELECTION OF TECHNIQUES

The Institute for the Advancement of Research in Education (IARE) in USA has completed a research study entitled Graphic Organizers: A Review of Scientifically Based Research. In the report, twenty-nine studies were identified and evaluated as scientifically based research (SBR). The studies provided evidence in support of the instructional effectiveness of the use of visual learning techniques. Scientifically based research cited in the literature review demonstrates that a research base exists to support the use of visual learning techniques for improving student learning and performance in the following areas:
Reading comprehension

- Student achievement across grade levels, diverse student populations and content areas
- Thinking and learning skills such as organizing and communicating ideas; seeing patterns and relationships; and categorizing ideas
- Retention

Keeping in mind the above and since Children with Learning Disability devise unusual strategies and prefer additional oral explanations or visual explanations, whereas non-disabled students prefer more written examples (Heiman, Tali; Precel, Karen.2003). the investigator has selected the following techniques.

I. Chunking
II. Visualization
III. Webbing
IV. Idea Map
V. Concept Map
VI. Story Telling
VII. Puppetry (finger Puppets)

**a. Chunking** is a method of presenting information which splits concepts into small pieces or "chunks" of information to make reading and understanding faster and easier. Chunking is also used as a strategy for making more efficient use of short-term memory by recoding information.

 Chunked content usually contains:

- Bulleted lists
- Short sub headings
- Short sentences with one or two ideas per sentence
- Short paragraphs, even one sentence paragraphs
- Easily scannable text with bolding of key phrases
- Inline graphics to guide the eyes or illustrate points which would normally require more words
Chunking helps to convey information more efficiently and helps the readers to find what they are looking for quickly.

b. Visualization:

Visualization involves the creation of the real or unreal images in the mind's eye. It may refer to visual images, images of sound movement, touch, taste and smell.

Visualization can:
- Bring classroom activities to life and make them more memorable.
- Creates a natural information gap.
- Combines left and right brain functions.
- Help children to develop their ability to create different sensory images.
- Add variety to teaching.
- Help children to learn to relax making them more receptive.

c. Webbing

Webs are visual maps that show how different categories of information relate to one another. Webs provide structure for ideas and facts and give children a flexible framework for organizing and prioritizing information.

Typically, major topics or central concepts are at the center of the web. Links from the center connect supporting details or ideas with the core concept or topic.

Webbing is an effective technique to use in small group settings. As children work cooperatively they can build collaborative webs, incorporating the thoughts and contributions of each group member.
d. Idea Maps

Idea maps help children brainstorm and plan their work. Using fast, five-minute exercises in word and idea association, idea maps connect keywords, symbols, colours and graphics to form nonlinear networks of potential ideas and thoughts.

Fig 3.7 The Idea Map of Water
e. Concept maps: They are used as teaching tools, and have shown many positive results in the classroom. (Chau, 1998). This visual approach has proven to be of great benefit to diverse student groups. Concept mapping gives new meaning to learning as they organize the acquired knowledge in their own way. (Willerman, 1991) Concept mapping derives from the theory that tapping into children' prior knowledge can help create meaningful learning. Meaningful learning results when a person consciously ties new knowledge to relevant concepts they already possess. (Ausubel, 1963)

Concept maps offer a method to represent information visually. There are a variety of such maps. It graphically illustrates relationships between information. In a concept map, two or more concepts are linked by words that describe their relationship. Concept maps encourage understanding by helping children organize and enhance their knowledge on any topic. They help children learn new information by integrating each new idea into their existing body of knowledge.

Concept maps are ideal for measuring the growth of student learning. As children create concept maps, they reiterate ideas using their own words. Misdirected links or wrong connections alert teachers to what children do not understand, providing an accurate, objective way to evaluate areas in which children do not yet grasp concepts fully.

Concept maps harness the power of our vision to understand complex information "at-a-glance." The primary function of the brain is to interpret incoming information to make meaning. It is easier for the brain to make meaning when information is presented in visual formats. This is why a picture is worth a thousand words.

Webs, concept maps, and idea maps are used to enhance thinking and learning skills. Children with the help of teachers create graphic organizers and outlines as they brainstorm ideas, organize information, make visual associations and identify connections.
Fig: 3.8 Concept map of Waves

These techniques help children to:

- **Clarify thoughts**
  Children with LD see how ideas are connected and realize how information can be grouped and organized. With visual learning, new concepts are more thoroughly and easily understood when they are linked to prior knowledge.

- **Organize and analyze information**
  Children with LD can use diagrams and plots to display large amounts of information in ways that are easy to understand and help reveal relationships and patterns.

- **Integrate new knowledge**
  Children with LD better remember information when it's represented and learned both visually and verbally.

- **Think critically**
  Linked verbal and visual information helps Children with LD make connections, understand relationships and recall related details.
f. Story Telling

Once the prime means of passing on knowledge and creating meaning, Story telling is still one of the greatest mediums of communication for people everywhere. Through storytelling, the child's imagination is stimulated, their knowledge is enhanced and language skills are extended. Stories can bring facts to life, make abstract concepts tangible and most importantly, model that science, at its core, is a verb, an activity. Science has many compelling and fascinating stories, and thinking about teaching science through the use of narratives can be a rewarding idea.

Stories not only help children remember because of their structure and sequencing, with a beginning, middle and end, but they also enhance a person's ability to create images of what they are learning in their minds, which helps with long-term memory.

Storytelling requires listeners to participate in a visualization process of their own imaginative making. The dragon described by the teller is rarely the precise dragon visualized by the listeners, since they bring to the story their own prior experience with pictures of dragons, and they superimpose those images onto the unfolding story. If there are problems with their understanding, they often express these nonverbally to the teller (quizzical looks, furrowed brow, or loss of interest if the problem is sufficiently distracting), and he then alters the telling of the tale to clarify the listeners' understanding. Storytelling, in this way, is improvisational and different each time because the teller adapts the unfolding story to “fit” each new audience and maximize their experience. It is also communal because both telling and listening to a story require people to engage with each other to build an understanding of the unfolding tale; the experience is co-created as teller and audience interact with each other to bring the story to life.

This interaction is deeply engaging, as it requires both parties to be fully present and focused, and to contribute to the story experience, and engagement is precisely what teachers want from their children. While the body is quiescent,
the listeners’ minds are fully engaged in the process of creating their own story from the words of the teller, and if those words have a scientific basis, or more particularly an environmental message, the children will help create it in the process of listening to the story. This is, perhaps, the most effective form of active learning. By embedding the information that teachers want their children to learn in the framework of a story, they help children learn without the obvious didacticism of the typical classroom. This framework consists of the following components: idea(s) to incite wonder, main plot of the story, ideas to be learned by the pupils, content knowledge, human values and the moral of the story.

g. Finger Puppets

In South East Asia, for centuries upon centuries puppet shows were the most honored and primary tool for transmitting history, religion, culture, ethics, politics and social behavior. Puppetry was recognized as a grand teaching tool. Puppets are inherently interesting, often humorous, and first-rate story tellers. They bring focus and interest to subject matter, they teach without the children recognizing they are being taught. But puppetry in the classroom can be more than story telling and fun. Today, teachers are facing the challenge of instructing children with diverse needs and abilities.

Teachers have to communicate and educate children of varying abilities and achievement levels. How can they introduce difficult concepts in a fun way? How can they bring warmth and humor and unity to a classroom of children who are so diverse? There are many ways to do these. But teaching with puppets is one of the easiest and funniest.

Children view puppets as toys, and toys equal fun. Adding puppets and children’s literature to the science classroom makes learning entertaining and motivating. Puppets hold children’s attention and actively engage their natural curiosity.

Puppets hold a magical attraction for children. Their eyes grow wide and they become entranced when stories are told with puppets. Puppets are non-
threatening, approachable objects that come to life through the skillful manipulations of a puppeteer. The animation of the puppets holds children’s attention and appeal to their sense of wonder. They help children relate to their world and enable them to examine animals they may not otherwise be able to approach. Articulate children respond animatedly to puppets, and quiet children are emboldened by the puppets. The children can be motivated to enact the play with simple dialogues and paper or finger puppets so that children are motivated and learn without difficulty.

The training provided by the investigator will enable the teacher to guide the children through a variety of selected experience towards the attainment of the minimum level of competencies set by the NPE thus promoting learner development. This will provide equal opportunities for all the children. The study will be helpful in fulfilling the dream of achieving UEE, at the same time realizing the goals of Sarva Shiksha Abbilyan (SSA) combining quality with equality, which is the top concern of the Indian educationist today. The study will be a valuable contribution to DIETs in improving the quality of Teacher training especially for its in-service branch in providing scope for empowering primary teachers, to reduce dropout and stagnation and thereby achieving the target of SSA. It will also give an exposure to the current IED approach emphasized in NPE. Since the treatment is educational, and can be easily implemented, in the light of the above background the investigator wanted to measure the effectiveness of the select techniques in facilitating learning and the academic achievement of children with learning disability.

The Plan and Procedure of the present investigation is presented in the following chapter.