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1.0 INTRODUCTION

Looking at the population of the any class, it is observed that not all the students present in the class are same. Every student is different from every other student in one way or the other. If we leave aside the physical features of the students, even then, the learning abilities of each student will be different. Broadly we can classify them as above average, average and below average. Besides this classification, there are some students with special needs relating to sight, hearing, speech difficulty, physical handicap and also slow learners and backward children. There is yet another set of students, who are otherwise intelligent but due to some reasons their achievement level falls down. These students do not fully benefit from the regular programme of instructions. These perplexing children are wrongly called lazy, unmotivated, stubborn, not trying to work, dumb etc. But actually these children are facing severe learning disorder. In education the most unattended category of children are those with specific learning disability. This field of learning disabilities (LD) is recently, identified, proposed and defined. Unlike other disabilities, such as paralysis or blindness, learning disability (LD) is a hidden handicap. It doesn’t disfigure or leave visible signs that would invite others to be understanding or offer support. LD is a disorder that affects people ability to either interpret what they see and hear or to link information from different parts of the brain. These limitations can show up in many ways—specific difficulties with spoken and written language, coordination, self-control or attention. LD can affect many parts of a person’s life; school or work, daily routines, family life and sometimes even friendship and playing activities. Learning disabilities is used more particularly in education to refer to a group of children, who despite having the apparent benefits of normal intelligence,
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adequate instruction and behavioral stability, experience unusual difficulty in succeeding in school.

1.1 LEARNING DISABILITY

The term learning disability was first coined by Kirk in 1963 and it refers to the children attending school who have trouble in learning despite the fact that they have no apparent physical, sensory, intellectual or emotional defect. Such children had for years been ignored, misdiagnosed or mistreated by terms such as hyperactivity, hyperkinetic syndrome, hyperactive child syndrome, minimal brain dysfunction, learning disorder, learning difficulty and minimum brain damage.

According to Bateman (1965), learning disabled children are those who manifest an educationally significant discrepancy between their estimated intellectual potential and actual level of performance related to basic disorders in the learning process, which may or may not be accompanied by demonstrable central nervous system dysfunction and which are not secondary to generalized mental retardation, educational or cultural deprivation, severe emotional disturbance or sensory loss.

National Advisory committee on Handicapped children (1968) stated that "Children with special LD exhibit a disorder in one or more of basic psychological processes involved in understanding or in using spoken or written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling or arithmetic. They include conditions, which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia etc. They don't include learning problems which are primarily due to visual, hearing or motor handicaps to mental retardation, emotional disturbance or to environmental disadvantage".

The definition of learning disability adopted by Federal Government in Federal Register (1977) "Specific learning disability means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written which may manifest itself in an imperfect
ability to listen, think, speak, read, write, spell or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing or motor handicaps or mental retardation or of environmental cultural or economic disadvantage.

According to Hammill et al (1981) "Learning disability is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g. sensory impairment, mental retardation, social and emotional disturbance) or environmental influences (e.g. Cultural differences, insufficient/ inappropriate instruction, psychogenic factors), it is not the direct result of those conditions or influences."

Kirk et al (1978) emphasized that learning disabled child displays developmental discrepancies in ability, has a specific problem that is not a correlate of other primary handicapping conditions and displays behavioural deficits.

Mercer et al (1976) also found considerable variation in accepted definitions of learning disability. However, there is a general agreement about some of the basic dimensions related to the disorder. These dimensions have been summarized as follows (Berdine and Blackhurst, 1985):

Discrepancy: There is a difference between what these students should be able to do and what they are actually doing.

Deficit: There are some tasks others can do that a learning disabled cannot do such as listen read or do arithmetic.

Focus: The child’s problem is centered around one or more of the basic psychological process involved in using or understanding language.
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Exclusion: These problems are not direct result of poor vision or hearing, disadvantage or retardation but these students still are not learning.

There are some elements which commonly exist in almost all the above stated definitions. Hallahan and Kauffman (1976) have listed five such major points to decide whether the learning disabled child:

• has central nervous system dysfunctioning.
• has an uneven pattern of development.
• has academic retardation.
• does not owe his learning problems to environmental disadvantage, and
• does not owe his learning problems to mental retardation or mental disturbance.

National Joint Committee on LD (1981) defined it as ‘a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning and mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction and may occur across the life span.’

The Learning Disabilities Association of Canada (1996) (cited in Rama, 2000) defined learning disorders/ disabilities in terms of the following important features:

1. Learning disabilities (disorders) is a generic term that refers to a heterogeneous group of disorders due to identifiable or inferred central nervous system dysfunctions.
2. Such disorders may be manifested by delays in early development and/ or difficulties in any of the following areas, such as, attention, memory, reasoning, coordination, communication, reading, writing, spelling, calculation, social competence and emotional maturation.
3. Learning disabilities are intrinsic to the individual and may affect learning and behavior of any individual including those with potentially average or above average intelligence.

4. Learning disabilities are not primarily due to visual, auditory or motor handicaps to mental retardation or emotional disturbance or environmental disadvantage, although they may occur concurrently with any of these.

5. Learning disabilities may arise from generic variations, biochemical factors and events in the pre to post natal period or any other subsequent events resulting in neurological impairment.

The Learning Disabilities Association of Canada (2002) defined learning disabilities as a number of disorders which may affect the acquisition, organization, retention, understanding or use of verbal or nonverbal information. These disorders affect learning in individuals who otherwise demonstrate at least average abilities essential for thinking and/ or reasoning. As such, learning disabilities are distinct from global intellectual deficiency. Learning disabilities result from impairments in one or more processes related to perceiving, thinking, remembering or learning. These include, but are not limited to: language processing; phonological processing; visual spatial processing; processing speed; memory and attention; executive functions (e.g. planning and decision making).

The American Special Education law, the Individuals with Disabilities Education Act (IDEA, 2002) defines a specific learning disability as:

‘…… a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think speak, read, write, spell or do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia. However, learning disabilities do not include learning problems that are primarily the result of visual, hearing or motor disabilities of
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mental retardation of emotional disturbances or of environmental, cultural or economic disadvantage'

The 2002 LD Roundtable produced the following definition:

"Concept of LD: Strong converging evidence supports the validity of the concept of specific learning disabilities (SLD). This evidence is particularly impressive because it converges across different indicators and methodologies. The central concept of SLD involves disorders of learning and cognition that are intrinsic to the individual. SLD are specific in the sense that these disorders each significantly affect a relatively narrow range of academic and performance outcomes. SLD may occur in combination with other disabling conditions, but they are not due primarily to other conditions, such as mental retardation, behavioral disturbance, lack of opportunities to learn, or primary sensory deficits."

Even though a learning disability may occur concomitantly with other handicapping conditions (e.g. Sensory impairment, mental retardation, social and emotional disturbances) or environmental influences (e.g. cultural difference, insufficient/ inappropriate instruction, psychogenic factors), it is not the direct result of those conditions or influences.

The designation of a specific learning disability should be applied only to children who have significant discrepancy between achievement and intellectual ability.

1.1.1 Factors causing Learning Disability

In most cases the exact cause of learning disability remains unknown, but different causes have been identified by different researchers and authors. Many writers have been concerned particularly with the constitutional aspects of specific learning difficulties. Naidoo (1971) classified factors under the following heads: genetic, maturation lag, neurological dysfunction and cerebral dominance. Singleton (1976) gives virtually the same four factors: genetic, developmental delay, brain damage and defective lateralization, although he
stresses that they are not mutually exclusive. Scott (1976) refers to four major hypotheses to account for dyslexia: genetic, developmental delays, organic brain damage and late or ill-established cerebral dominance. Eisenberg (1966), Keeney and Keeney (1968), Rabinovitch (1968), Bannatyne (1971), Ingram (1971) and Klasen (1972) summarized the following eight factors:

1. Brain damage involvement
2. Maturational lag delay
3. Genetic, Constitutional & Inherited
4. Neurological organization, brain dysfunction
5. Perceptual/motor difficulties
6. Secondary to environment
7. Sensory defects

Tansely and Panckhurst (1987) classified the various findings into three groups:

1. Primary or Constitutional specific learning difficulties- this include neurological dysfunctions, maturational lag and genetic factors.
2. Secondary learning difficulties include perception, cognitive style, attention, physical, environmental and emotional correlates.
3. Reading and non-reading difficulties include both language and reading sub skills associated with specific learning disabilities and non reading disabilities such as spelling, writing, arithmetic and speech.

The different studies conducted by the researchers highlighted various factors which cause learning disabilities. Some of these factors are: Educational factors, Genetic factors, Environmental factors, Psychological factors.
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Educational Factors:

It is lamentably true that inadequate and inappropriate teaching may be a consideration in many learning disabilities (Bruner, 1971; Cohen, 1971). A number of children with learning disabilities seem never to have been taught. Some teachers have not developed the necessary skills to teach basic school subjects. Surveys of the phonic knowledge of teachers responsible for reading instruction, for example, have revealed serious flaws in their backgrounds (Lerner and List, 1970).

Besides the unfortunate possibility that teachers have not taught the learning disabled child, teachers may be equally culpable in allowing their expectations for the young learners to be inappropriately affected (Rosenthal and Jacobson, 1968).

Teacher's expectations often based upon extraneous information may be either too high or too low. Knowledge of family background, information from cumulative records, such as, intelligence (IQ), medical history and comments from teachers and difficulties in managing unruly behavior sometimes cause teachers to limit their instructions and expectations from some children.

Poor instructional programme and designs, lack of motivation and inappropriate teaching and practice must be considered causes of learning disorders. Problems in remembering, difficulty in conceptualization, inadequate knowledge of learning disability and lack of attention in the classroom by teachers, poor schooling etc. are some other educational causes. According to Bruner (1971) and Cohen (1971), constant change of schools from one town to another, from rural to urban and drastic changing in teaching methods and also constant change of teachers may well retard child's ability to acquire the basic skills in reading, writing and arithmetic.

Genetic Factors:

The fact that learning disabilities tend to run in families indicates that there may be a genetic link. For example, children who tack some of the skills needed for reading, such as hearing the separate sound of words, are likely to have a parent with a related problem. However, a parent's having disability may
take a slightly different form in the child. A parent who has a writing disorder may have a child with an expressive language disorder. The exact nature of the relationship between genetics and learning disability remains obscure but the evidence does suggest that members within a family have a tendency towards learning disability. Hallgren (1950) found that 88% of the families of dyslexic children showed similar learning problems. Hermann (1959) examined dyslexic in twins and reported that of the twelve sets of identical twins, all members were dyslexic. But when the study was conducted with thirty three pairs of fraternal (dizygotic) twins, only one-third showed both members as being dyslexic and two-thirds had only one dyslexic member.

*Environmental Factors:*

Although environmental factors are not generally regarded as primary agents of specific learning difficulties, nevertheless, it is important to consider them as components which exert a variable influence on reading, writing and spelling.

Some writers such as Crabtree (1976) and Stott (1971, 1978) go so far as to suggest that dyslexia and related difficulties may be largely explained by environmental factors including, inappropriate teaching methods and faulty learning styles. Maslow (1954) has fully outlined the need of every learner for environmental support in learning. Each learner demands some basic physical and emotional features in his surroundings to facilitate the successful acquisition of basic skills. The learning disabilities of a child may be caused or certainly contributed by the absence or quality of these factors.

Social environment affects the reading environment (socio-economic class) of learning disabled children. Douglas (1964) found significant differences among upper-middle, lower-middle, upper-working, lower-working class eight year old children in word recognition and sentence completion. Morris (1959), Douglas (1964), Lovell and Woolsey (1964) have found that lower social class is associated with backwardness in reading independent of intelligence.
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Home environment also influences a lot in disabled learners. Goldberg and Schiffman (1972) pointed out that family crisis such as death, divorce, alcoholism, mental illness etc. would affect a child’s ability to learn. Inadequate nutrition can affect the immediate learning ability of a child in a classroom. Poor motivation, attention and application of the task at hand can be caused by something as a basic hunger. The amount and kind of children’s nutritional intake have led to increased interest in megavitamins and other aspects of the child’s diet (Cott, 1972). Feingold (1976) has focused upon the behavioural effects of food additives, especially, synthetic colours and flavours.

Low birth weight, maternal attitudes to the environment, maternal employment, large family size, parental attitudes and interests are causal factors which have been proposed by different writers (Hess, 1968; Valtin, 1970; Bale, 1974; Wright, 1974; and Yule and Rutter, 1976).

Language is a particularly crucial aspect of a child’s environment because of its role in thinking and in learning other skills. Researchers show that learning disabled children have particular problems in understanding and using synthetic structures (Vogel, 1974; Semel and Wiig, 1975), use of morphological markers such as tense and plurals (Wiig, Semel and Crouse, 1973; Vogel, 1977) and semantic production abilities (Wiig and Semel, 1975). Bryan and Bryan (1978) consider language problems as the cause of the LD child’s interpersonal difficulties.

Psychological Factors:

Children with learning disabilities may exhibit disorder in basic psychological factor such as perception, recall and conceptualization. Some learning disabled children cannot understand directions, remember materials recently taught, organize a meaningful thought or perhaps write proper sentence. Kirk and Kirk (1971) note the presence of different kinds of learning deficits, poor visual or auditory perception and discrimination, slow understanding and interpretation of concepts, poor organization and generalization ability, inability to express concepts, minimal motor and verbal
skills, poor short term memory and poor closure which are the symptoms of LD children.

Hallahan and Kauffman (1975) have reviewed the most highly researched cognitive style that is the reflectivity-impulsivity dimension. Many LD children demonstrate impulsive behavior, including difficulty in inhibiting motor movements, distractibility and inattention.

Gupta et al. (1978) investigated visual discrimination among good and poor readers and concluded that differences found between the two groups were almost certainly caused by differences in cognitive linguistic strategies rather than in visual discrimination abilities. Individuals who had reading disability should demonstrate a common pattern of cognitive anomalies which were distinguished from normals (Wallbrown, Huelsman, Blaha and Wallbrown, 1975). Meichenbaum (1976) proposed a new method of determining learning difficulties, the cognitive functional approach which led to the identification of inappropriate cognitive strategies and appropriate remedial treatment.

1.1.2 Characteristics of Learning Disabilities

Children with LD's exhibit a wide variety of different characteristics. Most difficulties are school related tasks of listening, thinking, talking, reading, writing, spelling and arithmetic. However, the specific types of each deficit and the differing degree of difficulty extend the variations found within this group of children.

Traver and Hallahan (1976) identified following characteristics of the learning disabled:

1. Hyperactivity
2. Perceptual Motor Impairments
3. Emotional Liabilities (ups and downs, moodiness, anxiety)
4. General Coordination Deficits
5. Disorders of Attention (distractibility)
Reedy, Kusuma and Jayaprabha (1999) have reported the learning disabled children usually exhibit characteristics such as:

- Perceptual-motor impairments
- Memory and thinking disorders
- Speech and language disorders
- Hyperactivity
- Impulsivity
- Emotional liability
- Deficits in specific academic skills such as reading, writing, spelling and arithmetic, general co-ordination deficits and neurological soft signal.
- Students with LD have low IQ. This is because of language skills that are measured on IQ test.
- They are poorly motivated and show signs of external motivation. Their self concept and self esteem are very low.

1.1.3 Types of Learning Disabilities

Learning disabilities can be classified into two categories:

1. Perceptual motor areas
2. Language areas
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The perceptual motor classification is given by Kephart (1960), Ayers (1972) and Frostig and Maslow (1973). Language classification is given by Myklebust and Johnson (1962), Bateman (1967) and Kirk et al. (1968). Both classifications overlap each other.

Perceptual motor disabled students are of many types:

a. Aphasia
b. Alexia
c. Acalculia
d. Apraxia
e. Agraphia

a. Aphasia: it is the loss of ability to comprehend, manipulate or express words in speech, writing or gestures. Auditory aphasia is the inability to comprehend the spoken words. Formulation aphasia is the inability to formulate sentences properly. Confusion occurs in relationships and tenses rather than in words themselves.

b. Alexia: it is the loss of ability to read or to write printed language. It is assumed that a person with such problems possesses a type of delayed neurological and perceptual development arising from neurological characteristics. In addition they may have deficiency in visual, auditory and perceptual problems.

c. Acalculia: it denotes the inability to perform mathematical calculations. With this disability a person is without the capacity to understand and interpret numbers and engaged in problem solving dealing with numbers. This disability may arise from disturbance of quantitative thinking or from language or reading disability.

d. Apraxia: it denotes the lack of capacity to make movements.

e. Agraphia: it refers to the total inability to write. It is an inability to copy which differentiates agraphic children from other disorders if writing. The conditions are usually associated with brain dysfunctions.
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Language learning disability can be classified as under:

a. Dyslexia
b. Dysgraphia
c. Dyscalculia
d. Dysphasia
e. Dyspraxia

a. **Dyslexia (difficulty reading)**

Dyslexia is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. Reading disabilities affect 2 to 8 percent of elementary school children. To read successfully, one must:

- Focus attention on the printed symbols
- Recognize the sounds associated with letters
- Understand words and grammar
- Build ideas and images
- Compare new ideas to what you already know
- Store ideas in memory

A person with dyslexia can have problems in any of the tasks involved in reading. However, scientists found that a significant number of people with dyslexia share an inability to distinguish or separate the sounds in spoken words. Some children have problems sounding out words, while others have trouble with rhyming games, such as rhyming "cat" with "bat." Yet, scientists have found these skills fundamental to learning to read. Fortunately, remedial reading specialists have developed techniques that can help many children with dyslexia acquire these skills. However, there is more to reading than recognizing words. If the brain is unable to form images or relate new ideas to those stored in memory, the reader cannot understand or remember the new concepts. Other types of reading disabilities can appear in the upper grades when the focus of reading shifts from word identification to comprehension.
b. Dysgraphia (difficulty writing)

Writing too, involves several brain areas and functions. The brain networks for vocabulary, grammar, hand movement, and memory must all be in good working order. A developmental writing disorder may result from problems in any of these areas. For example, a child with a writing disability, particularly an expressive language disorder, might be unable to compose complete and grammatically correct sentences.

c. Dyscalculia (difficulty with mathematics)

Arithmetic involves recognizing numbers and symbols, memorizing facts, aligning numbers, and understanding abstract concepts like place value and fractions. Any of these may be difficult for children with developmental arithmetic disorders, also called dyscalculia. Problems with number or basic concepts are likely to show up early. Disabilities that appear in the later grades are more often tied to problems in reasoning.

d. Dysphasia or Language Disorder

Language is the medium through which human beings express their ideas, thoughts and feelings to the world in meaningful way. Well developed language is the only means to establish effective communication among individuals and pass on knowledge and ideas to one another. Through language we can speak or write about an object without the necessity of having the object present in front of us and even others can understand it. Language is acquired in the sequence of listening, speaking, reading and writing. Each skill is built on the preceding one. If acquired completely, it gives a way of expression to an individual. However, if one experience difficulty in acquiring one or more skills then he is said to have language disorder.

Language disorder may be classified as difficulties in (a) receptive language and (b) expressive language. Receptive language is the ability to understand verbal language. Poor understanding of word meanings, grammar rules, recalling names and interpreting is the common difficulties faced by children with this disorder. This ability is further reduced in case of learning disabled children as they get confused when the same words appear in long
sentences. As a result their reading and writing comprehension abilities are severely affected.

Expressive language is the ability to communicate with others. Children with this disorder may comprehend what they read or what is said to them but they fail to express it. Difficulty in receptive language also contributes to expressive language disorder. The above two processes are actually interdependent and cannot be separated.

- **Dyspraxia:**

  It is the disturbed function in the process of making fine motor movement as in writing and drawing.

Kirk and Chalfant (1984) suggested two types of learning disabilities:

- Developmental Learning Disability and
- Academic Learning Disability

**Developmental Learning Disabilities** include the pre-requisite skills that a student needs in order to achieve better in academic subjects (that is, attention, memory, perceptual skills, thinking skills and oral language skills).

**Academic learning disabilities** refer to school acquired learning (reading, arithmetic, handwriting, spelling and written expression).

McKinnney (1984) identified four sub types of learning disabilities in a study using a cluster of analyzing techniques. The following characteristics were found in the four sub types:

**Sub-type-I (33 percent):** average verbal skills, deficits in sequential and spatial skills, poor in independent and task orientation, conceptual strengths on the intelligence test (WISC-R). mild learning disability in reading and mathematics(60 percent male).

**Sub-type-II (10 percent):** poor in general information, arithmetic and picture arrangements on WISC-R, severely impaired in academic area, rated low by teachers in behavioural scale, judged less considerate area and more hostile by teachers, very poor in task orientation.
**Sub-type-III (47 percent):** 93 percent male above average conceptual skills on WISC-R, mild impairment in academics, poor task orientation, socially extrovert.

**Sub-type-IV (10 percent):** moderately impaired in academic areas, no evidence of behavioural deficiencies, average verbal skills, deficits in sequential and spatial skills.

### 1.1.4 Cognitive Approach to Treating Learning Disability

One important area of growth of a person is cognitive development. And in the cognitive perspective, education is looked upon as a process whereby students become better able to adaptively respond to their environment and to meet their own goals and needs. The environment and the student interact and outcomes of education are a result of these interactions. The cognitive approach focuses on (i) allowing the student to enter the educational process as an equal partner (ii) developing of a non-competitive learning situation and (iii) breaking down of systematic pattern of previous failure, if any. When cognitive approaches are used, children become aware of implicit rules by making them explicit, asking the child questions to prompt them to see and understand the link between one event and the other. Daniel (2003), Kirby and Williams (1991), Naglieri and Das (1997), Scheid (1993) and Xin (2003) emphasizes on the success rate of the cognitive strategy. Cognitive functioning may not be equally normal and steer through the normal stages of development in all the children.

Cognitive deficits may occur in different children due to various reasons and causes. By virtue of being learning disabled there is an increased probability of occurrence of cognitive deficits in the individual. These may include speed of information processing, problem solving, concrete thinking and difficulties in language and memory. This in turn affects their academic performance. Cognitive strategies are useful tools in assisting students with learning problems.
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The term cognitive strategies in its simplest form are the use of the mind (cognition) to solve a problem or complete a task. It is based on improving thought process in learning, feeling and problem solving because there is an important role of thinking in how we feel and what we do. Cognitive strategies may also be referred to as procedural facilitators (Bereiter & Scardamalia, 1987), procedural prompts (Rosenshine, 1997) or scaffolds (Palinscar & Brown, 1984).

There are number of techniques which can be categorized under cognitive strategies. Investigator identified three specific strategies for the study. These are:

- Self Instructional Technique
- Mediated Learning
- Reciprocal Teaching.

The cognitive approach is better known for its emphasis on factors such as a sense of personal effectiveness and is designed to increase self-awareness and self-control.

**1.1.4.1 Self Instructional Technique**

Self-Instructional Materials (SIM) play a major role in the teaching-learning process at all levels of education and training. Students facing severe learning problems may not be able to set themselves in a normal classroom situation where the teacher gives instructions keeping in mind an average student. Every student is different from the other in the class, thus, leading to individual differences. Due to this many students remain dissatisfied during teaching learning process. This makes it necessary to adopt such type of instructions which fit to the needs and requirements of each and every child in the class.

Self instructional technique is one such technique where the students learn themselves rather than being taught. It is the designation of materials or programs that are designed to provide independent learning. This, in other words, means to teach oneself or to learn by oneself without obtaining the assistance from others. Self Instructional Technique is prepared according to
the learning requirements of the child so that they read and respond immediately. These modules are in the form of program, which involves systematic, sequenced and organized instructions to the child. These are based on the principle that whatever fails to do its job should be replaced. They are materials specifically designed to enable learners to study partly or wholly by themselves and have been described as “Tutorial-In-Print” (Rowntree, 1998) Self-instructional materials have been associated with many other names such as: home study, computer-based training, packages learning, flexible learning, independent learning, individualized learning, programmed instruction and so forth.

The programme modules are devised to control the student’s behavior and help them to learn without the supervision of a teacher. The learning material is arranged in the graded steps of difficulty in such a way that it will result in the most effective and efficient learning outcomes. The learning material is presented in small steps supplemented with questions from within the material. The child is expected to immediately respond to the given questions. To check the accuracy of the answers, feedback is given with the material. This process not only helps in improving the cognitive abilities of the child but also increases their speed of learning.

Self Instructional Technique is based on certain principles referred below:

- Principle of Small Steps
- Principle of Active Responding
- Principle of Immediate Feedback
- Principle of Self Pacing

Skinner (1954) gave the Principles of Programmed Learning (Self Instructional Technique) as follows:

- Programmed instruction is an individualized / self instruction.
- It is self paced instruction.
- The students learn through carefully sequenced small steps.
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- There learners are made to interact with every bit of information and to make a response.
- There is an immediate confirmation of the right answer or the correction on wrong answer for each response the learner makes.

1.1.4.2 Mediated Learning

http://www.3d-ring.org/cep/mediatated.asp

Mediated Learning Experience (MLE) describes a special quality of interaction between a learner and a person, whom we shall call a "mediator". The function of a mediator is different from that of a teacher, as illustrated by the following two figures - figure 1.1 & figure 1.2.

![Figure 1.1](http://www.3d-ring.org/cep/mediatated.asp)

**Figure 1.1:** Figure Showing Stimulus by the Teacher and Response by the Learner.

In this mode (fig.1.1) the teacher provides a suitable stimulus (homework, test, assignment, etc.) and then observes the response of the learner to the stimulus. Based on the response, the teacher interacts with the learner (praise, criticism, encouragement, grade, new assignment) and the process is continued until either the teacher or the learner is satisfied or time runs out. Teachers develop their own repertoire of methods depending upon the size of the class, the apparent ability of the learner(s) and the subject matter.
In Feuerstein method, the above figure is replaced by one in which a warm human being, indicated by the "H" in the figure 1.2, intervenes in the process by placing himself or herself between the learner and the stimulus and between the learner and the response.

The intentionality of the mediator is different from that of a teacher. The mediator is not concerned with solving the problem at hand. Rather the mediator is concerned with how the learner approaches solving the problem. The problem at hand is only an excuse to involve the mediator with the learner's thinking process.

![Figure 1.2: Figure Showing Mediated Learning](image)

For the process to be successful, at least three important qualities must characterize the interaction.

1. Intentionality and Reciprocity

The intentionality of the mediator is to know how the learner approaches the problem and solves it. The mediator concentrates on understanding and helping the learner to understand how the learner is using his or her brain. Reciprocity refers to the need for the learner and the mediator to see each other at the "same level". That is, the teacher does not pretend to know the answer as to how the learner should be thinking. Only the learner knows how the thinking proceeds. The mediator is rather a fellow explorer.

2. Mediation

The mediator interprets for the learner the significance of what the learner has accomplished. The mediator also mediates feelings of accomplishment.
"Now that you have figured that out, you can probably use the same method on this harder problem,"

"Now I'll bet you see the advantage of having developed a strategy for solving the problem,"

"Did you notice how you went faster when you decided you could be flexible in your approach?".

In various ways the mediator causes the learner to reflect not just on the solution to the problem but also on how the solution was obtained and the generalizations which flow from it.

3. Transcendence

Human beings differ from the other species in the way they can transfer lessons learned from one experience to rules and methods to use in another situation. Indeed, this is what learning should be about, for if a person does not generalize from experience that person does not gain 30 years of experience, that person simply repeats one year 30 times. Transcendence means "bridging" the experience and lessons learned in the current situation to new situations.

"Where else in your life it is important to have a strategy?"

"How often has 'impulsivity' brought you to difficulty in your family life?"

"Where else do you find that you are imposing structure on what would otherwise be a confusing set of input information?"

"When and where do you find it useful to categorize information?"

The above three criteria are essential in defining mediated learning experience (MLE). However, the mediator also pays close attention to other aspects of learning from experience, and mediates for other (affective) components of learning:

- Regulation and Control of Behavior
- Feelings of Competency
- Sharing Behavior
In examining the approach of the learner in a problem solving situation, it is helpful to the mediator to develop a mental image of the steps learners take in successful problem solving and what can go wrong.

1.1.4.3 Reciprocal Teaching


Reading is perhaps one of the most important tools to gain knowledge. School going children and even adults fail to grasp sufficient information from the text that they read. Reading with understanding is a habit that needs to be imbibed in students at a young age. Young school going students need to be taught the importance of concentrated and constructive reading, and hence teachers often make use of several reading techniques and teaching methods that aid the students. One such technique is the reciprocal teaching technique, which is a remedial technique, aimed at developing and enhancing reading comprehension.

According to Palincsar, who introduced this technique, Reciprocal teaching refers to an instructional activity that takes place in the form of a dialogue between teachers and students regarding segments of text which is structured by the use of four strategies: summarizing, question generating, clarifying, and predicting. According to Palinscar, during reciprocal teaching, the teacher and students take turns assuming the role of teacher in leading this dialogue, which leads to an interesting group learning experience.

Basic Strategies of Reciprocal Teaching:
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There are four basic strategies in reciprocal teaching, which, when applied while reading, can enhance the understanding and enable maximum grasping of information by the student from the given text. These strategies are as follows:

a) Predicting:

This is the stage where the students are encouraged by the teachers to predict or hypothesize about what the students think the author will discuss in the text. While predicting, students often have to draw upon the background knowledge pertaining to the subject in concern, which eventually enriches the learning experience by linking the new knowledge that they will come across in the text with the already possessed knowledge. Also, this helps enhance the students’ understanding of text structure as they learn the purpose of headings, subheadings, and questions that are embedded in the text and thus are useful means of anticipating further information.

Encourage the students to think on the following lines:

- I am looking at the title and other visual clues that are appearing along with the body text on the page. What do I think we will be reading about?
- Thinking about what I have read and discussed so far, what do I think might happen next?

b) Summarizing:

Summarizing the important information while simultaneously processing the text by the teacher helps students to identify and integrate the most important information in the text. The length of the text after summarization can differ from person to person. Text can be summarized after a few sentences, paragraphs, or across the passage as a whole. Usually while making use of the reciprocal teaching techniques, the students should be advised to begin summarizing at sentence and paragraph levels. As they master the technique, they can become proficient enough to integrate at the paragraph and passage levels.
Encourage the Students to think on the following lines:

- What does the author want me to remember or learn from this passage?
- What is the most important information in this passage?
- What are the valid and logical questions that can be phrased about the text?

**c) Question generating:**

The students are taught to question everything since asking questions helps them to collect more and more information. The questioning technique reinforces the summarizing strategy by taking the reader’s understanding to the next level of reading comprehension. Questioning requires the students to process and identify the information that is present to them and further analyze its significance to generate a valid question, which they can answer themselves. This strategy has a major advantage of flexibility since students can be taught to generate questions at many levels.

Encourage the Students to think on the following lines:

- What question do I have about the text that I read?
- What are the concepts in the passage that I did not fully comprehend or am unsure about?
- I’m curious about ‘so-and-so’ things mentioned in the text

**d) Clarifying**

Clarification of any doubts or questions regarding the text as and when you are reading it is very important for reading comprehension. It is particularly important while working with students who have a history of comprehension difficulty, since at times students may believe that the purpose of reading is saying the words correctly rather than understanding the underlying meaning of the written text. When the teacher asks the students to clarify a particular concept in the text, their attention is brought to the fact the text is not being understood. The students will then think of the reasons why
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there is difficulty or failure in understanding. The reasons might include new vocabulary, unclear reference words, and even unfamiliar or rather difficult concepts. The clarifying technique makes the students aware of such impediments to comprehension and encourages them to take the necessary measures to restore meaning. For example rereading the text or looking up difficult words or asking for help tends to restore meaning of the previously un-understood text.

Encourage the Students to think on the following lines:

• One of the words from the text that I wasn’t familiar with was...
• What other words or additional concepts do I need for further clarification and better understanding?

1.2 EMOTIONAL INTELLIGENCE

Emotional intelligence refers to the capacity for recognizing the feeling and those of others, for motivating ourselves and for managing emotions well in us and in our relationships.

The term "emotional intelligence" was coined by Mayer and Salovey (1990). They defined it as "the ability to monitor one's own and others feelings and emotions, to discriminate among them and to use information to guide one's thinking and actions". This definition talks mostly about perceiving and regulating emotions.

Mayer and Salovey 1990 categorized emotional intelligence into five domains:

• Self Awareness
• Managing Emotions
• Motivating oneself
• Empathy
• Handling Relationships

More recently they (Mayer and Salovey 1997) have updated their definition by stating, "Emotional intelligence is the ability to perceive
accurately, appraise and express emotions, generate feelings that facilitate thoughts and an ability to regulate emotions to promote growth". The concept of emotional intelligence has its roots in the concept of social intelligence ability to understand and relate to people. EQ encompasses social intelligence and emphasizes the effect of emotions on our ability to view situations objectively and thus to understand ourselves and other people. It is the ability to sense, understand and effectively apply the power of emotions, appropriately channeled as a source of energy, creativity and influence. Emotions are the primary source of human energy, aspiration and drive, activating our innermost feelings and purpose in life and transforming them from things we think about to values we live. The key factor is the way that we interpret our circumstances, based on our prior experiences and belief system, to either respond reactively like a stimulus response machine with an emotion that is outside our control and may be inappropriate and self-defeating, or to respond proactively with self-determined responsibility and freedom of choice. Only part of our success is attributable to intellect, other qualities: trust, integrity, authenticity, presence and resilience are at least as important. These 'other intelligences' are correctly described as emotional intelligence.

Goleman describes emotional intelligence as "managing feelings so that they are expressed appropriately and effectively, enabling people to work together smoothly toward their common goals." According to Goleman, the four major skills that make up emotional intelligence are:

- Self-Awareness
- Self-Management
- Social Awareness
- Relationship Management.

Stein and Book (2000) added that, 'emotional intelligence has to do with the ability to read the political and social environment and landscape them, to intuitively grasp what others want and need, what their strengths and weaknesses are, to remain unruffled by stress and to engage the kind of person that the other want to be around.
1.3 ANXIETY

Anxiety is the sense of uneasiness that is experienced in the individual’s relationships with other people (and in his / her relationship to their own conscience). In any situation where the person’s vanity is undetermined, fear arises. The conjunction of this fear with the vanity creates anxiety.

Anxiety originated from the Latin word ‘anxietas’ which connotes an experience of varying blends of uncertainty, agitation and dread. The term was introduced into psychology when Freud (1894) described that the anxiety neurosis is a syndrome distinct from neurasthenia. But its acceptance in the discipline did not become general until more than forty years later.

According to Freud (1936) anxiety is ‘a conditioned form of pain reaction’.

Mowerer (1939) referred to anxiety as a learned response that enables human individuals and certain other animals to adapt to potentially harmful events in advance of their occurrence.

May (1950) also supported the fact as he noted that, outside the publications of psychoanalytic writers, anxiety was not even listed in the indices of psychological books written before late1930s.

According to Webster’s New World Encyclopedia, anxiety is an emotional state of fear or apprehension. It is normal response to potentially dangerous situation.

According to Lewis and others (1967) the word anxiety is used habitually to refer to an emotional state with the subjectively experienced quality to fear or a closely related emotion.

Sullivan (1968) views anxiety as an intensely unpleasant state of feeling or tension due to experiencing disapproval in interpersonal relationship.

May (1979) defined anxiety as an apprehension caused by the threat to values which the individual holds essential to his or her existence.
Bhagi and Sharma (1992) defined anxiety as a state of heightened emotional arousal containing a feeling of apprehension or dread.

Kazdin (2000) defined anxiety as an emotion characterized by heightened automatic system activity, specially activation of the sympathetic nervous system, (that is, increased heart rate, blood pressure, respiration and muscle tone), subjective feeling of tension and cognitions that involve apprehension and worry.

In MacMillan English Dictionary (2002), anxiety is
- a worried feeling you have because you think something had might happen,
- a nervous or impatient feeling that you have because you want to do something very much or want it to happen very much.

Anxiety may be thought of as general response to stress, a way of emotional experiencing stressful situation. It is particular difficult and puzzling form of stress.

1.4 RATIONALE OF THE STUDY

The past decade has witnessed a sudden increase in the awareness about learning disabilities in India. This sensitivity has benefited some children who have to cope with the invisible learning disability. The hard fact is that Learning Disability (LD) is real and a stumbling block for a nation's development process. Prevalence of Learning disabilities has varied widely from as low as 1% to as high as 30%. For many years the Federal estimates of learning disabilities in the school age population have been around 2% to 3%. In the late 1970’s and 1980’s, however, there was a rapid growth in the number of students being identified as learning disabled.

The US Department of Education (1987) reported that 10.5% of all post-secondary students in the nation were disabled. Of the 1.3 million disabled students, 12.2% (approximately 160,000) reported having learning disability.

In USA various groups have estimated the number of children who fail at reading to be 20-25% of the school population (Stedaman and
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Kaestle, 1987). A teaching leaflet produced by Hornsby (1989) quoted approximately 25% of the child population as falling into this category. In Great Britain too, a great variety of prevalence figure has been quoted by Klasen (1972) who showed that estimates of dyslexia in the western world vary between 2-25% of the population. Rubin and Balow (1971) estimated an incidence of 24-41% and Eisenberg (1966) quoted 28% of sixth graders who were reading two or more years below grade level. Silver and Hagin (1960) likewise suggested a variation of 5-25%.

In Canada the Commission on Emotional and Learning Disorder in Children (CELDIC, 1970) reported that between 10% and 16% of school age children in Canada were believed to be in need of specific diagnosis and remedial help.

Research in India has paid little attention to the condition of learning disabilities. In very few studies, using non-uniform operational definitions and samples restricted to school settings only, the picture of learning disabilities in India is obscure.

The actual number of children who have a learning disability problem in India is difficult to assess because no national census has been taken. According to National Council of Educational Research and Training (NCERT), New Delhi, there has been no systematic collection of data and they follow the figures generally quoted by international agencies. Figures issued by American educators place the number at 10-12%. Nevertheless, individual researchers have made attempts in different parts of India to get some picture on the prevalence of learning disabilities among school children of different age groups. In Schools within Delhi, about three children out of 40 have been found to have specific learning disability.

Ramma (1985) identified 14 dyslexic children out of 550 school going children which was 2.54% (age range 9-11 years).

Mukherjee et al. (1995) estimated prevalence of learning disability ranging from 2-30%. Radhakrishnan (1995) estimated about 10% of school going children to be dyslexic in Madras. Sodhi (1995) estimated prevalence rate of learning disability in Delhi to be 20%.
Bains (1997) reported prevalence rate of reading disabled children as 14.64% and incidence of reading disability was found in greater number of males as compared to females.

Five percent of all school going children is estimated to be suffering from learning disability in Mumbai (Times of India, Feb. 2001).

Sufficient studies are not available in India in regard to incidence of learning disability. But research in LD in India may help to clarify the definition, find more homogeneous diagnostic groups and promote better ways to make decisions on teaching and placement.

The prevalence rate of learning disability world over and the attitude towards learning disability in India compelled the investigator to take up the study for research. The investigator intended to study the effectiveness of cognitive strategies as remedial treatment on learning disabled students. The remedial treatment in this study is seen in terms of improvement in their achievement.

1.5 STATEMENT OF THE PROBLEM

Effectiveness of cognitive strategies as remedial treatment on learning disabled in relation to Emotional intelligence and Anxiety

1.6 OPERATIONAL DEFINITIONS

i. Learning disability: Learning Disability as measured by Swarup and Mehta in Diagnostic Test for Learning Disability (1993) in the area of visual and auditory perception (viz. eye & hand coordination, figure ground perception, figure constancy, position in space, spatial relations, auditory perception) and cognitive functions (memory, cognitive abilities, receptive language and expressive language).

ii. Emotional Intelligence: Emotional Intelligence as measured by Ankool Hyde, Sanjyote and Upinder in Emotional Intelligence Scale- EIS (2001). In this test emotional intelligence is defined as the abilities of a person
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with the characteristics—self awareness, empathy, self motivation, emotional stability, managing relations, integrity, self development, value orientation, commitment and altruistic behavior.

iii. Anxiety: Anxiety as measured by Singh & Gupta in Academic Anxiety Scale for Children (AASC) - 1986 and which relates to teacher, certain subjects like Mathematics, English etc.

1.7 OBJECTIVES OF THE STUDY

The objectives of the study were to:

• Diagnose the learning disabled in specific areas of comprehension in subject of Science for class VII students.
• Construct and standardize an achievement test in Science for class VII students.
• Study the effect of three cognitive strategies as remedial treatment on achievement of learning disabled students.
• Study the effect of emotional intelligence on the achievement of learning disabled students irrespective of the cognitive strategies given to them.
• Study the effect of anxiety on the achievement of learning disabled students irrespective of the cognitive strategies given to them.
• Ascertain the interaction among cognitive strategies, emotional intelligence and anxiety.

1.8 DELIMITATIONS OF THE STUDY

The study was delimited to:

• Students of Class VII studying in Government Model Schools of Chandigarh.
• A few topics of general science of class VII only.
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- Three cognitive strategies, that is, Self Instructional Techniques; Mediated Learning and Reciprocal Teaching.
- Comprehension problems in the subject of science of class VII on CBSE pattern.