Appendices
Appendix - 1
Training Module
TRAINING MODULE

(PREPARED BY THE INVESTIGATOR TO TRAIN THE TEACHERS IN SELECT TECHNIQUES)

Objectives of the training

As a result of this training participants will be able to:

- Distinguish between learning disability and learning difference.
- Describe methods for screening of learning disabilities.
- Briefly describe the various types of learning disabilities.
- Explain how students' academic areas are impacted by learning disabilities.
- Explain and apply seven techniques to help learning disabled students to reach their educational potential.

JUSTIFICATION

By Education I mean an all-round drawing out the best in the body mind and soul - Gandhiji

We need a creative approach to today's problems. For rising up, the empowerment of youth we need to develop their innate abilities physical mental and spiritual. - Dr. S. Radha Krishnan

Education is a process of human empowerment for the achievement of better and higher quality of life -- (R.H. Dave, 1996).

The most tremendous experience of life
Is the learning process
The saddest time is when a person thinks
That he has learned enough ----- Charles Jones

Every man who has risen above the common level
A decent education is a passport to a good, comfortable and secured life. It should enable youngsters to become contributing members of the society through knowledge, skills and character development, provide access to first rate training for people of all ages and backgrounds and make it possible for them to compete in a global economy. Education is provided for bringing out the internal potentialities in a pupil. It is the process of helping the child to adjust to the changing world. Education, for all at all levels plays a vital role.

The Government of India is fully committed to the goal of Universalization of Elementary Education (UEE). For promotion of UEE, the Parliament of India has passed the Constitutional (86th Amendment) Act, making free and compulsory elementary education a Fundamental Right, for all the children in the age group of 6-14 years through inclusion of the new Article 21A in Part III of the constitution, as follows:

‘The State shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the State may, by law, determine.’ This amendment has given a new thrust to the education of Children With Special Needs, as without including them the objective of UEE cannot be achieved.

**Education of Children with Special Needs**

The concept of integrating CWSN in regular schools was introduced in many countries in 1960’s. The schemes dealing with CWSN can be categorized into educational and supplementary schemes. The Educational scheme includes the Integrated Education of Disabled Children (IEDC) and the supplementary
schemes include the Scholarship as well as the Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances (ADIP).

FACTS:

EDUCATIONAL SCHEMES FOR CHILDREN WITH SPECIAL NEEDS

Inclusive Education of Disabled Children (IEDC):
The Government of India’s appreciation of the need to integrate children with special needs came in 1974, when the Union Ministry of Welfare launched the centrally sponsored scheme of Integrated Education of Disabled Children (IEDC). In 1982, this scheme was transferred over to the then Department of Education of the Ministry of Human Resource Development. The centrally sponsored scheme of Integrated Education of the Disabled Children provides educational opportunities for the disabled children in common schools, to facilitate their retention in the school system, and also to place in common schools, such children already placed in special schools after they acquire the communication and the daily living skills at the functional level.

Initial Experiments on Integrated Education in India:
The early attempts to include CWSN in regular schools were through Project Integrated Education for the Disabled (PIED) and District Primary Education Programme (DPEP).

Project Integrated Education for the Disabled (PIED):
The first pilot project on integrated education in India came in the form of Project Integrated Education for the Disabled (PIED). PIED launched in 1987, was a joint venture of MHRD and UNICEF. This project was implemented in one administrative block each in Madhya Pradesh, Maharashtra, Nagaland, Orissa, Rajasthan, Tamil Nadu, Haryana, Mizoram, Delhi Municipal Corporation and Baroda Municipal Corporation. In these ten blocks, 6000 children with special needs were integrated in regular schools.
District Primary Education Programme (DPEP)

The success of DPEP led to the inclusion of the component of Integrated Education of the Disabled (IED) in DPEP, a scheme launched by the Government of India for the development of elementary education. IED in DPEP was conducted in 242 districts of 18 states. In these states, approximately 6.21 lakh children with special needs were enrolled in regular schools with adequate support services.

Sarva Shiksha Abhiyan (SSA)

A recent initiative of the Government of India to Universalise Elementary Education is Sarva Shiksha Abhiyan (SSA). SSA is a response to the demand for quality basic education all over the country. However, UEE cannot be achieved unless children with special needs are also provided access to education. Hence, education of CWSN is an essential part of the SSA framework.

Major Factors in Education of CWSN under SSA

The interventions suggested under SSA for inclusive education of disabled children are as follows:

- Awareness
- Necessary infrastructure for planning and management
- Early detection and identification
- Functional and formal assessment
- Educational placement
- Preparation of Individualized Educational Plan
- Aids and appliances
- Teacher training
- Resource support
- Strengthening of special schools
- Removal of architectural barriers
- Monitoring and evaluation
By the time children are teen-agers; their frustration often leads to low levels of self esteem. Low self esteem, combined with continual failure, creates a negative attitude about school and authority figures.

**What are Learning Disabilities?**

Learning Disability refers to marked difficulty in reading / writing / calculating or hyperactivity in the child. (SSA).

The LD movement in India is of a much more recent origin and is today comparable with that of the western LD movement nearly half a century ago. The apparently lower incidence of these types of difficulties resulted in a relative lack of concern about LD in Asian countries like India and China. Reports of lower incidences of LD in the eastern world were attributed by western scholars to the general lack of awareness and sensitivity among educationists to the specific difficulties faced by children learning to read in overcrowded classrooms. At the same time, reports of the high incidence of problems associated with the acquisition of reading in western countries was attributed by easterners to the vagaries and complex nature of alphabetic writing systems such as English.

During the last decade or two, however, there has been an increasing awareness and identification of children with LD in India. Despite this growing interest we still have no clear idea about the incidence and prevalence of LD in India. Epidemiological studies of LD are fraught with difficulties ranging from the very definition of LD, identification, assessment, to socio-cultural factors unique to India. A brief review of definitions will amply demonstrate these difficulties.

Exclusionary definitions, such as the one given by the World Federation of Neurology (1968) are typical of the definitions of LD in the earlier period. It states, "Specific developmental dyslexia is a disorder manifested by difficulty learning to read, despite conventional instruction, adequate intelligence and socio-cultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin".
Wheeler's inclusionary definition (1979) specifies, "Dyslexia is experienced by children of adequate intelligence as a general language deficit which is a specific manifestation of a wider limitation in processing all forms of information in short term memory, be they visually or auditorily presented. This wide limitation exhibits itself in tasks requiring the heaviest use and access to short term memory, such as reading, but particularly spelling".

Key terms such as adequate intelligence, appropriate instruction and socio-cultural factors are present in nearly all definitions of LD, whether exclusionary or inclusionary. The implication of these terms for an identification of children with LD in a pluralistic society such as ours is immense and cannot be easily handled. Note also that the "constitutional / neural" origin of LD is as yet only presumed and not unequivocally documented. These inherent complexities of the notion of LD are further complicated by a near total lack of teacher awareness and a lack of clear cut assessment procedures or indigenous tools for identification of processing deficits, intelligence testing and testing for proficiency in reading and writing.

The multilingual social context in India, where children often have to learn to study through the medium of a language not their own, is an added complexity. The language issue is further compounded by factors such as age of enrolment in school, preschool exposure to literacy and literacy support at home during the school years. Consequently, defining "adequate instruction" and "social opportunity" for children varying in backgrounds - from an urban Indian child enrolled in preschool at age 2½ years with early and sustained support from upwardly mobile, middle class parents, to a rural child attending school for the first time at age 6½ years with no additional literacy support of any kind - is a tremendous challenge.

If this is true of identification and assessment, the challenges that we face with respect to remediation and management are no less daunting. Our educational system with its overwhelming emphasis on knowing rather than
Types of Learning Disabilities

Learning Disabilities notice among children can be broadly classified into various categories depending upon the major problem experience by them. Learning Disabilities rarely exists in isolation. Different types of Learning Disabilities are:

2. Reading disability.
3. Writing disability and

Under oral language disabilities there are two types namely dysphasia and Aphasia. Dysphasia refers to the partial inability to comprehend the spoken word and to speak. Aphasia is the inability to comprehend manipulates or expresses words in speech and writing or gestures. Reading disabilities are divided into dyslexia and alexia. Partial inability to read or to understand what one reads is known as dyslexia. Alexia is the inability to read written or printed language.

Writing disabilities are divided into dysgraphia and agraphia. Dysgraphia is the partial inability to write. Agraphia refers to total inability to write. Revisualization problem refers to inability to revisualise the image of the letters or words. Formulation and syntax disorder is the inability to organize the ideas into a clear concise pattern of words.

Arithmetic disability is the inability to identify isolated or serious of numerals. This is further divided into dyscalculia and acalculia. Dyscalculia is the partial inability to perform calculations. Acalculia is the total inability to perform calculations.
Causes of Learning Disabilities

It is very difficult to specify the cause of ‘child’s learning disability’. In most cases the cause of a child’s learning disabilities remains mystery possible causes fall into three general categories organic and biological genetic and environment.

Organic and Biological Factors

Many professionals believe that learning disabled children have central nervous system dysfunction. Their brains malfunction in some way. Although some authorities in this field are reluctant to favour the notion of organic or biological causes of learning disabilities, there is an ever increasing body of research indicating that learning disabled children, especially those with severe learning difficulties have neurological abnormalities. Early research linking organic factors and learning disabilities was based on relatively crude technological measures but today’s researchers are able to harness advanced technology to assess brain activity more precisely.

Genetic Factors

There has been ever increasing evidence that indicates that learning disabilities tend to run in families. There are adequate studies implicating heredity as a cause of learning disabilities, in some children. Studies of twins indicate that when one twin has a reading disability the other is also more likely to have a reading disability if he or she is an identical (monozygotic from the same age) rather than a fraternal (dizygotic two eggs) twin.

Environmental Factors

It is very difficult to document environmental causes. There is much evidence indicating that environmentally disadvantaged children are more prone to exhibit learning problems. Another possible environmental cause of learning disabilities is poor teaching. Some of authorities (Hallahan and Kauffman, 1991) are of the firm opinion that if teachers were better prepared to tackle the special learning problems of children in the early school years, some learning disabilities could be avoided.
Characteristics of Children with Learning Disability

The student with a learning disability may show one or more of the following (Batshaw, M.L. and Perret, Y.M. (1992) Children with disabilities: A medical primer (3rd edition) Baltimore, Maryland. Paul H. Brookes Publishing):

- **Specific academic skills deficits.** For example, the student may have trouble with basic reading skills, reading comprehension, writing, written expression, spelling, mathematical calculation, and mathematical reasoning. Perceptual-motor impairments. The student may have trouble distinguishing shapes and sizes. He or she may also have difficulty with fine motor activities, such as writing, coloring, and cutting. They may lack established handedness and may make letter, word, and/or number reversals.

- **Memory and thinking disorders.** The students may be deficient in the use of strategies for memorization and haphazard in their approaches to learning. They may have poor language skill, which hinder memory, difficulty with short-term auditory and visual memory, and a lack of awareness of skills and strategies needed to solve problems and perform tasks.

- **Lack of organizational and study skills:** Time management difficulties (consistently late to class, late assignments, poor planning on exams, missing classes, etc.). Slow to start and/or complete assignments (procrastination). Repeated inability to recall what has been taught. Difficulty following oral and written directions. Lack of overall organization in written notes and composition. Short attention span during lectures. Inefficient use of campus resources (library, tutorials, etc.).

- **Speech and language disorders.** The student may have difficulty with the grammar (syntax), meaning (semantics), or social use (pragmatics) of language.
• **Attention disorders**: The student may have difficulty concentrating and remaining "on task". He or she rarely finishes what is started, frequently jumps from one activity to another, and is easily distracted by competing stimuli.

• **Hyperactivity**. The student has difficulty sitting still, is constantly in motion, is fidgety, and seems driven by an "inner motor."

• **Impulsiveness**. The student often acts without thinking, has poor planning and organizational skills, responds quickly and makes many errors, and lacks self-regulation skills.

• **Emotional liability**. The student is moody and often isolated or rejected by his or her peers. He or she may have low self-esteem and is more likely to violate social norms. He or she may exhibit inappropriate ways of getting attention, elicits more negative reactions from others, and be lacking in social cognition skills. Also, he or she may have difficulty with reading nonverbal social cues and with motivation. He or she may be passive, rather than active learners.

• **General coordination deficits**. The student may be uncoordinated and have difficulty with fine and/or gross motor skills (e.g. tying shoes, running, hopping, skipping), and depth perception.

• **Neurological soft signs**. Poor fine motor coordination, balance, and tactile discrimination. The student may have strabismus and poor visual-motor coordination.

**How Teachers Can Help**

There are many interventions or strategies to assist LD children but the most important and most fundamental is parental and teacher support. Encouraging children, by focusing on their strengths while minimizing their weaknesses, is essential. They can, however, expect gradual improvement in children's performances over long periods of time and can reward each step of their progress. For example, if children have poor small motor coordination that makes handwriting difficult, teachers can allow them to record reports and
assignments on tape recorders. Then they can turn in the tape or transcribe the tape by using a typewriter or word processor. If children have sequencing problems, teachers may give fewer instructions at one time or distribute examples of correctly solved math problems so the children can see solutions as a whole rather than trying to remember the order in which the problem was meant to be solved. If one strategy doesn’t work, another can be tried until a solution unique to each LD child is found.

<table>
<thead>
<tr>
<th>SI. No.</th>
<th>CHARACTERISTICS OF 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>Aims at acquiring knowledge form different sources.</td>
</tr>
<tr>
<td></td>
<td>• Careless Listening.</td>
<td>Able to relate it to new experiences.</td>
</tr>
<tr>
<td></td>
<td>• Lack of Basic reading skills.</td>
<td>Able to keep systematic record of the acquired information.</td>
</tr>
<tr>
<td></td>
<td>• Lack of Reading comprehension.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Writing and written expression.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Unable to use 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. Generalizes on the basis of logical analysis.</td>
</tr>
<tr>
<td></td>
<td>Lack of motivation.</td>
<td></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>
Skimming through the above table we’ll arrive at the conclusion that the Learning Disabled children lack most of the characteristics needed to be a good learner. 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. Hence this in-service training programme for primary teachers aims at training the teachers on select techniques to develop the learning disabled child who differs from the normal children and has unique academic deficits; as a learner in-order to facilitate the academic achievement.

“The journey of thousand miles begins with just one step” -- A Chinese proverb

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, students 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 4, 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).

### Accuracy and fluency of fourth graders

#### Fourth-Grade Fluency

![Graph showing accuracy and fluency of fourth graders]

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).

There are many interventions or strategies to assist LD children but the most important and most fundamental is teacher support. Encouraging children, by focusing on their strengths while minimizing their weaknesses, is essential. They can, however, expect gradual improvement in children's performances over long periods of time and can reward each step of their progress. For example, if children have poor small motor coordination that makes handwriting difficult, teachers can allow them to record reports and assignments on tape recorders. Then they can turn in the tape or transcribe the tape by using a typewriter or word processor. If children have sequencing problems, teachers may give fewer instructions at one time or distribute examples of correctly solved math problems so the children can see solutions as a whole rather than trying to remember the order in which the problem was meant to be solved. If one strategy doesn't work, another can be tried until a solution unique to each LD child is found.

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 set 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 spirit of scientific thinking in teaching and learning processes which necessitates the application of innovative instructional approaches.

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 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.

1) Chunking
2) Visualization
3) Webbing
4) Idea Map
5) Concept Map
6) Story Telling
7) 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
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.

HOW WELL DO YOU VISUALISE

Here is an easy way to find out

Read the first instruction and close your eyes and try to follow it. You will notice that each instruction ask you to imagine some thing not just scene but tastes, smells, textures and sounds. When you have imagined it as well as you are able score yourself each time according to the scale given bellow.

Very clear 5 points
Clear 4 points
Fairly clear 3 points
Not clear 2 point
Can't do it 0 point
Here comes the test. Try as best as you can, Eyes closed to imagine...........

1. This training module on a shelf among other books.
2. Yourself running across grass.
3. The taste of a fresh cut lemon.
4. The scent of a rose.
5. The sound of a horn of a bus.
6. The feel of tree bark.
7. Steam rising from a boiling kettle.
8. Yourself lifting a really heavy suitcase.
9. Yourself recovering in a hot scented bath after lifting a really heavy suitcase.
10. Stepping out of a heated house into the street in the middle of winter.

Go back and do it again in a few weeks and then a few weeks later, and notice the difference. Notice the difference, also in the way you see things--inner as well as outer--after you've done these exercises.

HOW TO MAKE IT EASY FOR CHILDREN.

The key to all magical operations is a strong ability to visualize. Everyone can visualize, but children need to strengthen their visualization abilities in order to gain the effects we desire. The following technique has proved highly effective in intensifying one's visualizations. (taken from Experiences in Visual Thinking by Robert McKim)

Ask the children to take their time and translate each of the following descriptions into a mental image and sense (see, touch, hear, taste, and smell) with their mind's eye

- a familiar face
- a galloping horse
- a rosebud
• your bedroom
• a changing stoplight
• a newspaper headline
• the sound of rain on the roof
• the voice of a friend
• children laughing at play
• the feel of soft fur
• an itch
• a gentle breeze on your face
• of kicking a can
• of drawing a circle on paper
• the taste of a lemon
• of toothpaste
• of a potato chip
• the smell of jasmine
• flame of a candle
• the feeling of hunger
• of a cough
• of coming awake
• a stone dropped into a quiet pond with concentric ripples forming and expanding outward
• these words flying away, high into the blue sky, finally disappearing.
• your shoe coming apart in slow motion and each piece drifting away into space
• an orange being cut into five equal pieces and the pieces being arranged into equal patterns

choose images suitable for your children from the above list and practice it till they are able to get a clear mental image.
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.
Idea maps help students generate ideas and develop thoughts visually. They are used for brainstorming and prewriting exercises, and producing plans and solving problems. Idea maps clarify thinking by helping students to see connections between ideas. Using fast, five-minute exercises in word and idea association, idea maps utilize keywords, symbols, colors and graphics to form nonlinear networks of potential ideas and observations.

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 in to 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.

Concept map of food digestion in stomach
Tips on Making Your Own Concept Maps.

Gather Your Writing and Drawing Materials

Have plenty of paper on hand, colored markers, a ruler, and even a shape template. You may have a notebook just to making and refining visuals for your classes.

Gather Your Materials

These materials can include: books, class notes, related newspaper and magazine articles, notes of independent observations, data / statistics, and visual materials, such as photos and diagrams. This is your "database" for making concept maps. You scan such materials to keep relevant information in mind as you are making maps.
Select One of the Concept Map Formats

Get to know the different formats. Try them out when you have an opportunity. See how different formats are appropriate for different kinds of information. For example, if you want to depict the organizational structure of the College of Agricultural, Consumer and Environmental Sciences, a hierarchy map is best (the Dean goes in the top box!).

Creative Tips for Making Maps

1. Review available visual materials such as photos, sketches, graphs, etc.
2. Focus upon a visual language approach to communication.
3. Consider possible formats for visual structuring.
4. Relax, close your eyes and allow your mind to "free associate".
5. Draw informal, thumbnail sketches of your visual impressions.
6. Experiment with a variety of visual layout formats.
7. Color shapes, arrows or words for emphasis.
8. Imagine a bird's eye overview of the subject matter to be presented.
9. Look with fresh eyes, is the visual presentation attractive?
10. Ask yourself, are these visuals compelling? Do they help convince the viewer that the subject matter is important and inviting?
11. Integrate the visuals with the text. Does it work to the best advantage?
12. Keep a record of the maps you do (Perhaps in your "Visual Notebook").

Revising Maps

Revise your maps to refine them: Are they clear? Logical? Attractive? Good maps are like good writing; they are usually the product of several drafts. Show a map to your friends to get feedback.

An idea map is similar to a mind map but does not adhere to the above guidelines. In idea maps rules are constantly broken based on the purpose and application of the map.
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. 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.
ESOPHAGUS

Pipe

Connects Mouth and Stomach

Passes food to Stomach from Mouth

STOMACH

Store Food

Secretes Gastric Juse

Food From Mouth

Mashing of Food

Sends the food to the small intestine

Breakdown food into a Liquid Mixture
CONCEPT MAPS OF PART OF FOOD IN THE DIGESTIVE SYSTEM

1. Mouth
2. Esophagus
3. Stomach
4. First part of Small Intestine (Duodenum)
5. Small Intestine
6. Large Intestine
7. Anus
**HUMAN DIGESTIVE SYSTEM**

1. **Month**
   - Sends food
   - Connects mouth & stomach
   - Swallow

2. **Esophagus**
   - Food mixes with saliva
   - Chewing of food

3. **Stomach**
   - Breakdown of food into a liquid mixture
   - Secretion of gastric juice
   - Mashing of food

4. **Liver**
   - Bile

5. **Fist part of small Intestine (Duodenum)**
   - Food is digested
   - Pancreatic Enzyme
   - Pancreas
   - Digestive Enzymes produced in small Intestine

6. **Small Intestine**
   - Absorption of digested food by villi

7. **Large Intestine**
   - Undigested food

8. **Anus**
f. STORY TELLING

Once the prime means of passing on knowledge and creating meaning, Storytelling 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.

**Steps of Telling a Story**

1. Know your audience and make sure your story is appropriate
2. Make your story easy to relate to
3. Write out your story when presenting for the first time - and cut it in half
4. Have a clear link between your story and your lesson
5. Engage your listener by engaging the senses
6. Be aware of audience cues when telling your story
7. Deliver your story with some feeling!

**Pre-telling activities. (eg. Trees are our friends)**

1) Use semantic maps to help students brainstorm ideas about the characteristics of deciduous and evergreen trees. 2) Ask students to name and categorize as many deciduous trees and evergreen trees as possible. 3) Use a bar graph to show which of these trees (and how many) are found locally. Compare the graphs and determine the characteristics of neighborhoods where high and low numbers of the two types of trees grow. 4) Provide students with leaves, seeds, nuts and fruits, and ask them to determine which trees produced them. 5) Ask students to name familiar folktales and the situation that was resolved in each. 6) What are the qualities of a good friend? When do you help a person you don't know?
**While-telling activity.**

Have the class participate in subsequent telling of the story. Assign groups to represent the trees and at the points in the story when the trees speak, the children can act chorally.

**Post-telling activities.**

Return to the semantic maps and use the children's responses in a pre-writing activity. Have the students brainstorm. Help the children create an original ending to the story.

The integration of storytelling and science can strengthen the learning process and language development, raise the level of inquiry about other aspects of nature, and consequently result in meaningful learning experiences for students.

**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 funnest.

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.

"Research carried out in schools in the UK with children in the 7-11 age group clearly shows the beneficial effects of using the puppets. The children can be seen focusing intently on the puppets and maintaining high levels of concentration. The puppets were found to make the children more eager to contribute to the lesson and to promote children’s talk about the scientific concept being discussed. The children used more reasoning when they talked in response to the puppets than they did in typical science lessons; they listened more closely to the puppets and gave fuller explanations."

Assignment
1. Prepare a concept map for a topic of your choice.
2. Prepare a script to present a concept
3. Dividing the concept into chunks from a given lesson.
4. Draw an idea map for air
5. Use webbing technique for various systems of our body
6. Write a story to explain land and sea breeze.
4. **Steps to remember while using select techniques:**

1. Reflect often on the process used to support learning disabled children - are the learning opportunities worthwhile?
2. Provide as many visual and auditory representations as is possible.
3. Activities need to be specific, manageable, attainable and measurable. Ask yourself if the learning opportunity meets the criteria.
4. Provide ample time for the child to seek clarification and to share his/her thoughts/responses.

With appropriate early intervention and targeted support strategies, learning disabled children can reach their potential.
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Day I</td>
<td></td>
</tr>
<tr>
<td>09.45 Hrs. to 10.45 Hrs</td>
<td>Introduction &amp; Objectives of the training</td>
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<tr>
<td>11.00 Hrs to 12.00 Hrs</td>
<td>Role of IED in achieving UEE</td>
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<tr>
<td>12.00 Hrs to 13.00 Hrs</td>
<td>LD (What, Why &amp; How)</td>
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<tr>
<td>14.00 Hrs to 15.00 Hrs</td>
<td>Definition and types of LD</td>
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<td>15.00 Hrs to 16.00 Hrs</td>
<td>Characteristics of LD &amp; Assessment</td>
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<tr>
<td>16.15 Hrs to 17.15 Hrs</td>
<td>Discussions with teacher about their student who possesses the characteristics of LD</td>
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<tr>
<td>II day</td>
<td></td>
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<tr>
<td>09.45 Hrs to 10.45 Hrs</td>
<td>LD and Learning</td>
</tr>
<tr>
<td>11.00 Hrs to 12.00 Hrs</td>
<td>Science Learning and Instruction</td>
</tr>
<tr>
<td>12.00 Hrs to 13.00 Hrs</td>
<td>Select Techniques and Chunking</td>
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<tr>
<td>14.00 Hrs to 15.00 Hrs</td>
<td>Visualization</td>
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<tr>
<td>15.00 Hrs to 16.00 Hrs</td>
<td>Practicing visualization</td>
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<tr>
<td>16.15 Hrs to 17.15 Hrs</td>
<td>Webbing theory and practice</td>
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<tr>
<td>III day</td>
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<tr>
<td>09.45 Hrs to 10.45 Hrs</td>
<td>Idea May Theory and Practice</td>
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<tr>
<td>11.00 Hrs to 12.00 Hrs</td>
<td>Concept maps</td>
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<td>12.00 Hrs to 13.00 Hrs</td>
<td>Preparing concept maps for selected units</td>
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<tr>
<td>14.00 Hrs to 15.00 Hrs</td>
<td>Story telling &amp; Finger Puppets</td>
</tr>
<tr>
<td>15.00 Hrs to 17.00 Hrs</td>
<td>Demo and practical (Writing the story, Making puppets and dramatizing &amp; feedback)</td>
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