B. Ed. Spl. Ed (M. R. / H. I. / V. I)-
ODL Programme

AREA - B

B-8 : Introduction to Neuro Developmental Disabilities (LD, MR [ID], ASD)

A COLLABORATIVE PROGRAMME OF
NETAJI SUBHAS OPEN UNIVERSITY
AND
REHABILITATION COUNCIL OF INDIA

AREA - B ● CROSS DISABILITY AND INCLUSION

COURSE CODE - B8

TITLE : INTRODUCTION TO NEURO DEVELOPMENTAL DISABILITIES

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The Self Instructional Material (SIM) is prepared keeping conformity with the B.Ed.Spl. Edu.(MR/HI/VI) Programme as prepared and circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU on and from the 2015-2017 academic session.

Dr. Ashit Baran Aich
Registrar, (Actg.)

Netaji Subhas Open University

From the Vice-Chancellor's Desk

Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities.

Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner.

The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners.

So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. 1 must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time.

Professor (Dr.) Subha Sankar Sarkar
Vice-Chancellor, NSOU

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(LD, MR [ID], ASD)

B-8 ❐ Introduction to Neuro Developmental Disabilities

Introduction to Neuro Developmental Distibilities (B 8)

Unit-1 ❑ Learning Disabilities, Needs and Intervention

Structure :

1.1 Introduction

Now we often here a term Learning Disability. It is a different problem in education. We cannot identify such a children with that particular disability by his or her external behaviour. We have already meet with such types of children in our educational field. Some children cannot achieve the target in the class due to their learning disability.

History suggest that the term learning disabilities originated with and became popularized by Dr. Samuel Kirk based on his writings in the early 1960s and comments that were made at the April 6, 1963 Conference on Exploration inti Problems of the Pereceptually Handicapped Child. His proposed label was "enthusiastically received and helped to unite the participants into an organization known as the Association for Children with Learning Disabilities, the forerunner of today's Learning Disabilities Association" (Learner, 2000).

I have used the term "learning disabilities" to describe "a group of children who have disorders in development in language, speech, reading, and associated communication skills needed for social interaction. In this group I do not include children who have sensory handicaps such as blindness or deafness, because we have methods of managing and training the deaf and the blind. I also exclude from this group children who have generalized mental retardation, (Kirk, 1963, p.2)

During the latter part of the 1960s, there became greater awareness about

learning disabilities, both from the general public and Congress. In response, the U.S. Office of Education was charged with creating a federal definition for what constitude a learning disability. Samuel Krik chaired this committe. In 1986, the first annual report of the National Advisory Committe on Handicaped Children, headed by Dr. Kirk, worte :

Children with special learning disabitlities exhibit a disorder in one or more of the basic, psychological processess involved in understanding or in using spoken or written languages. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithemetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual hearing, or motor handicaps, to mental retardation, emotional disturbance, or to environmental disadvantage. (Special Education for Handicappped Children, 1968)

By the end of 1968, "specific learning disability" (abbreviated SLD or LD) became a federally designated category of special education (U.S. Office of Education, 1968) and in 1969, the Specific Learning Disabilities Act was enacted, Public Law 91-230. In 1975, Congress enacted P.L. 94-142, the Education for All Handicapped Children's Act. Here, the defination of a learning disability was formalized for children in special education. Under P.L. 94-142, a specific learning disability was defined as follow.

"....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 mental retardation, of emotional disturbance, or of environmental, cultural or economic, disadvantage.

The continuance of the P.L. 94-142 definition in federal law prompted further analysis. In the 1980s, a coalition of parent and professional organizations, described as the National Joint Committee on Learning Disabilities (NJCLD), criticized the definition under P.L. 94-142 for including concepts that were unclear or difficult to use identify children with learning disabilities. In response to the criticisms, the NJCLD proposed an alternative defination.

Learning disabilities is a general term that refers to a heterogeneous group of disorders manifeasted by significant difficulties in the acquistion 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, and may occur across the lifespan. Problems in self-regulatory behaviours, social perception, and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability. Although learning disabilities may occur concomitantly with other handicapping conditions or with extrinsic influences, they are not the direct result of those conditions or influences (NJCLD, 1994).

Today, children in special education are protected under Public Law 108-446, The individuals with Disabilities Education Improvement Act (IDEA 2004). The definition under IDEA has not changed in its criteria and guidelines for what constitutes a learning disability. Under curretn federal law the following language was established.

The term "specific learning disability" means a disorder in I or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.

We are more conscious about this problem. Many educationist and psychologist have emphasized on learning disability. As we are in 21st century we can confirm the education of all types of childern.

In this unit you are going to study about the definitions, types and characteristics, tools and areas of management of learning disability.

Definition, Types and Characteristic :

As should be evident, the debate surrounding what constitutes a learning disability continues on a strong as ever. Remember, this is a multidisciplinary field that embraces sometimes competing viewpoints as the very nature of the construct and its causes. It is perhaps best to envision LD as "a family or syndrome of disabilities affecting a wide range of academic and/or behavioural performance (Gargiulio, 2004, p. 206). In particular, regardless of the definition used, children with learning disabilities have intellectual functioning within the normal range, there is a

discrepancey between potential and achievement, the learning disability is not due to other causes, there is difficulty in learning, and there is a presumption of central nervous system dysfunction.

1.1.1. Objectives

Upon completion of these subunits, you will be able to :

- Define Learning Disability
- Describe the types of Leraning Disability
- Explain the characteristics of Learning Disability.

1.1.2. Definitions

Learning Disability is an important meaningful word. The person who has learning disability may have rigid personality, cognitive ability and development characteristic also. The perceptual problem and lake of communication skill are only seen in this kind of disability. This kind of disability is not seen externally as such as other disabilities. So this type of disability is called Hidden Disorder (Anderson 1970).

Therefore we can say that if a child cannot adjust with his curriculum due to other disabilities we can't say that the child is with learning disability. Because it is a different type of disability and a child cannot able to learn properly due to other causes of disability. But if a child has the particular cause of learning disability the child categorized as the learning disabled.

Dr. Kirk (1963) said in a conference at Chicago – "A learning disability refers to retardation disorder, or delayed development in one or more of theprocesses of speech, language, reading, writing, arithmetic, or other school subject resulting froma psychological handicap caused by a possible cerebral dysfunction and/or emotional or behavioural disturbances. It is not the result of mental retardation, sensory deprivation, or cultural and Insturctional factors.

Kirk also said that LD refer to a retardation, disorder of delayed development in one are more of the processes of special language, reading, spelling, written or arithemetic resulting from a possible cerebral dysfunction and emotional or behavioural disturbance.

U.S. Office of Education 1977 definition. By the early 1970s NACHC definition of 1968 had become the most popular one among state departments of education

(Mercer, Forgnone, & Wolking, 1976). This no boubt figured into the USOE's virtual adoption of the NACHC definition for use in the implementation of P.L. 94-142 :

The term "specific learning disability" means a disorder in one or more of the psychological processes involved in underestanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, 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 disabilities which are primarily the result of visual, hearing, or motor handicaps, or mental retardation, or emotional disturbance, or of enviormental, cultural, or economic disadvantage. (USOE, 1977, p. 65083).

Early during this period, several new and revised definitions surfaced : the ACLD (now the LDA) definition of 1986, the Interagency Committee on Learning Disabilities (ICLD) difinition of 1987, and the NJCLD revised definition of 1988. In the meantime, the definition in federal law covering learning disabilities remained virtually unchanged.

ACLD / LDA definition (1986). The LDA definition is distinctive for its emphasis on the lifelong nature of learning disabilities, its lack of an exclusion clause, and its reference to adaptive behaviour : Specific Learning Disabilities is a chronic condition of presumed neurological origin which selectively interferes with the development, intergration, and/or demonstration of verbal and/or nonverbal abilities. Specific Learning Disabilities exists as a distinct handicapping condition and varies in its manifestations and in degree of severity. Throuhgout life, the condition can affect selfsteem, education, vocation, socialization, and/or daily living activities. (ACLD, 1986, p. 15).

ICLD definition (1987). The ICLD, consisting of representatives from several federal agencies, was charged by Congress to report on several issues. Although Congress did not direct them to do so, they did formulate a definition. Their definition was essentially the same one as the 1981 NJCLD definition, except for two changes. It mentioned deficits in social skills as a type of learning disability, and it added attention deficit disorder as a potential co morbid condition with learning disabilities :

Learning disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquistion and use of listening, speaking, reading, writing, reasoning, or mathematical abilities, or of social skills. These disorders are intrinstic to the indivicual 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), with socioenvironmental influences (e.g., cultural differences, insufficient or inappropriate instruction, psychogenic factors), and especially with attention deficit disorder, all of which may cause learning problems, a learning disability is not the direct result of those conditions or influences. (ICLD, 1987, p. 222) *NJCLD revised definition (1988)*. The NJCLD revised definition was in response to the LDA definition's emphasis on the lifelong nature of learning disabilities and the ICLD's listing of social skills deficits as a type of learning disability. The NJCLD revised definition agreed with the former but disagreed with the latter : Learning disabilities is 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, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems of selfregulatory behaviours, social perception, and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability. Although learning disabilities may occur concomitantly with other handicapping conditions (for example, sensory impairment, mental retardation, serious emotional disturbance) or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences. (NJCLD, 1988, p. 1). Individuals with Disabilities Education Act (IDEA) Reauthorized definition (1997). The definition in federal law has remained virtually unchanged since the one included in P.L. 94-142 :

A. IN GENERAL. —The term "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 disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.

B. DISORDERS INCLUDED.—Such term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasis.

C. DISORDERS NOT INCLUDED.—Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage. (IDEA Amendments of 1997, Sec. 602(26), p. 13)

Continuation or Research Strands of the Learning Disabilities Research Institutes As we noted earlier, Keogh (1983) noted that four of the learning disabilities research institutes funded by the USOE in the late 1970s and early 1980s (Columbia University, University of Illinois at Chicago, University of Kansas, University of Minnesota, and University of Virginia) approached learning disabilities as a strategic, information processing problem and developed their intervention within this framework. She pointed out that the institutes' data on outcomes were very promising. McKinney (1983) reported that the institutes' intervention reserach demonstrated that students with learning disabilities are capable of learning taks-appropriate strategies that enable them to succeed in academic learning and adaptive functioning. Although it is conjecture, it is easy to postulate that the institutes' rigorous research standardsand encouraging findings provided a springboard for future reserach. Columbia University. The Columbia insitute's research in reading most likely helped facilitate the proliferation of reading intervention reserach that has occured in the field of learning disabilities. For example, Lyon (1988) reported that the National Institutes of Health (NIH) has received more than $25 million to study how students with and without disabilities learn to read. Today, findings from the NIH studies are having a significant impact on the reading instruction provided youngsters with learning disabilities. Judith Birch of Columbia University recently teamed with numerous NIH researchers to develop a very informative video series that present research-based practices in teaching reading to students with learning disabilities.

According to public law 19-230, section 602-15 (April 13, 1970) "Children with specific learning disabilities" means those children who have a disorder in one or more of the basic psychological processes involved in understanding of using language, spoken or written which disorder may manifest itself in imperfect ability to listen think, speak, read, write, spell or do mathematical calculation such disorders include such condtions as perceptual handicaps brain injury, minimal brain dysfunction, dyslexia and developmental aphasia.

Those children who suffer from learning problem due to visual hearing or any physical disability they are not included under this section. The children who also suffer from mental retardation, emotional disorder or any environmental disorder are not included under LD. This definition has two dimensions.

1. The children with learning, disabilities face the problems in hearing, thinking, speaking, reading, writing, spelling, mathematical calculations etc.
2. They have no such problem which them physical, mental or behavioural handicapped.

Public law : 94-142 has accepted above definition Federal Registar (1977) has given importance on fours dimension of this definition.

1. Academic difficulties :

The children with learning disabilities suffer from some problem in education and mathematical calculations also than the other children of some age.

2. Descrepancey between potential and achievement :

The children with learning disabilities have poor educational achievement rather than their cognitive capacity this is also called apitude achievement discrepancy.

3. Exclusion of other factors :

If a child faces learning problem due to visual disability, hearing disability or speech and language disorder or mental retardation, any physical problem, emotional disorder or any environmental disorder we can't say that the child is learning disabled.

4. Neurological disorder :

A child can suffer from some learning problems due to neurological disability. We cannot categorize him/her under learning disability.

National Joint Committee (1991) has given a definition "Learning disabilities are a generic term that refer to a heterogeneous group of disorders that are manifested by significant difficulties in the acquisition and use of writing, reasoning or mathematical abilities. These disorders are intrinsic to the individual and are presuemed to be due to central nervous system dysfunctions. Even though a learning disability may occur with other handicapped conditions (e.g. sensory impairment, mental retardation, social and emotional disturbances, inssufficient or inappropriate instruction, psychogical factors). It is not the real result of those conditions or influences."

According to the definition of National Joind Committee (1991) 'Central nervous system dysfunction refers to there is no damage in the brain or in the system of

perception of the child. But it has some different activities in their brain rather than other general children.

In America, office of Education (1997) has given a definition about learning disability." 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 on imperfect ability to listen; think, speak, read, write, spell or do mathematical calculation. The term includes such conditions as perceptual handicaps brain injury, minimum brain dysfunction, dyslexia and developmental aphasia. The term does not include children who have learning problem which are the result of visual, hearing or motor handicaps, mental retardation, and emotional disturbance or of environmental, cultural or economic disadvantage.

Therefore, according to we can say that learning disability which is a problem is related with one or more psychological process of the children in about the use of oral and written language and understanding the meaning. This kind of disability is speaking, reading, writing, spelling, or mathematical calculations. This disability is related with the perceptual conditions, brain injury, minimal brain dysfunction, dyslexia, developmental problems. But who have visual, hearing or motor disability, mental retardation, emotional disorder or social and economical barrier are not included under the term—learning disability.

1.1.3 Types and characteristic

The term "learning disability" is an umbrella term describing of more specific learning disabilities. Definitions of these problems are not standardized; however, we do know that learning disabilities are due to genetic and/or neurobiological factors or injury that alters brain functioning in a manner which affects one or more processes related to learning. These disorders are not due primarily to hearing and/ or vision problems, socio-economic factors, cultural or linguistic differences, lack of motivation or ineffectual teaching, althouhg these factors may further complicate the challenges faced by individuals with learning disabilities. Learning disabilities may co-exist with various conditions including attention, behavioural and emotional disorders, sensory impairments or other medical conditions.

The experts classify the learning disabilities on the basis of features surman of Rizzo suggest three type of learning disabilities.

1. **Minimal Brain Dysfunction (MBD) :**

The doctors think that MBD is a special type of learning disability. The damage in brain of the child causes this type of disability. The child who has damage in his/her brain may show some behavioural problems such as per concentration irritability, slowness of thought, forgetfulness, impulsive behavour, easily included fatigue etc.

Kurt Goldstein (1942) noticed that the persons who got injury in their brain in the First World War lost their capacity of abstract thought.

Thereafter Strauss & Kephart (1955), Strauss & Lehtinen (1947), Werner & Strauss (1940) et. Al. Decided from their experiments that some behavioural approached are related with the damage of brain. These are very high activity level, poor attentionspan, distractibility, impulsive behaviour and emotional instability etc. These behaviour are known as strauss are know as strauss syndrome or Brain Injured syndrome. Strauss did not use the tern learning disability. He thought that through the above problems were seen among the children but no damage of the brain was proved. So these types of children are called 'Strauss Syndrome Children or 'Minimal Brain Dysfunction children.'

Clements & Peters (1962) indicated ten features of children with MBT. These are hyperactivity, specific learning deficits in the presence of normal intelligence, perceptual motor deficits, impulsivity, emotional, short attention span, coordination deficits, distractibility, unclear neurological sign; frequently abnormal E.E.G.S etc.

2. **Perceptual motor disabilities :**

Percepetion is a process by which any living being make him conscious through his sense organs about his environment. Perceptual motor mence relation and balance in between visual perception and activity based behaviour. Perceptual—motor process is very important motor process is very important for classroom learning.

Kephan (1960) suggested that the perceptual motor problem was a cause of learning disability. He thought that the problem started in development disorder. There after the researches who work with the problems of learning disability increase their thought about perceptual and perceptual motor development. Werner & Strauss stated that if any damage accouterd in central nervous system of the child the perceptual motor development was not

balanced. Many reserachers have followed him. They agree with themselves that a relation is present in between perceptual motor ability and academic achievement.

Barsch (1965), Getman (1065), Frastig (1964) et.,al. indicate that the perceptual motor disability is an another type of learning disability.

3. **Psycholinguistic or language disability :**

Language disability is also accepted as a type of learning disability. The utility of language is very important for learning. The language disability has three types.

- Inner Language Disorder
- Receptive Language Disorder
- Expressive Language Disorder

Academic Difficulties :

American National Institute of Health has classified Academic Learning Disability into three types :

- Dyslexia — Difficulty reading
- Dysgraphia — Difficulty writing
- Dyscalculia — Difficulty doing math.

What is dyslexia ?

Children who have an average or above IQ and are reading 1 1/2 grades or more below grade level may be dyslexic. True dyslexia affects about 3 to 6 percent of the population yet in some parts of the country up to 50% of the students are not reading at grade level. This means that the reason for most children not reading at grade level is ineffective reading instruction. The dyslexic child often suffers from having a specific learning disability as well as being exposed to ineffective instruction.

Children may have dyslexia or a learning if they have one or more of the following symptoms :

- Letter or word reversals when reading. (Such as was/saw, b/d, p/q).
- Letter or word reversals when writing.

- Difficulty repeating what is said to them.
- Poor handwriting or printing ability.
- Poor drawing ability.
- Reversing letters or words when spelling words that are presented orally.
- Difficulty comprehending written or spoken directions.
- Difficulty with right—left directionality.
- Difficulty understanding or remembering what is said to them.
- Difficulty understanding or remembering what they have just read.
- Difficulty putting their thoughts on paper.

Children with dyslexia do not exhibit these symptoms due to poor vision or hearing but because of brain dysfunction. The eye and ears are working properly but the lower centers of the brain scramble the images or sounds befor they reach the higher (more intelligent) centers of the brain. This causes confusion as well as frustration for the learner.

When a child is having difficulty learning, a comprehensive neurodevelopment exam is important. This includes testing of hearing, vision, neurological development, coordination, visual perception, audtioryt perception, intelligence, and academic achievement.

Often, perception problems can be helped with simple exercises which either help to improve a specific problem or teach techniques to compensate for a problem. These often can be done at home. In a few cases, a referral to an educational or speech therapist may be helpful.

What causes dyslexia and reading problems ?

The main reasons for reading problems are :

- Ineffective reading instruction
- Auditory perception difficulties
- Language processing difficulties.

Over 180 research studies to date have proven that phonics is the BEST WAY

to teach reading to all students. They also have shown that phonics is the ONLY WAY to teach reading to students with dyslexia and other learning disabilities.

Unfortunately, 80% of our nations shcools do not use an intensified phonics approach for reading instruction. They either use the whole word (see & say) approach or a cursory use of phoncis along with the whole word method.

Whihe most people can learn to read using the whole word approach, it is not the best way to learn. It teaches through memorization of word pictures and guessing. Unlike Chinese or Japanese which are picture languages, the English language is a phonetic language. With the exception of the United States which dropped phonics in the 1930's, all other countries that have a phonetic language, teach reading through phonics.

There are only 44 sounds while there are about 1 million words in English. These facts readily explain why having to memorize 44 sounds as opposed to memorizing hundreds of thousands of words is the most efficient way to learn to read.

Reading and writing is simply "talking on paper." Children learn to talk by imitating sounds and then combining the sounds to form words. The brain is programmed to learn language in this fashion. Therefore, the most efficient way to learn to read is through phonics because it teaches children to read the same way they learned to talk.

Children and adults who do not learn to read through an intensive phonics program often have one or more of the following symptoms :

- Below grade level reading achievement
- Slow reading
- Poor comprehension
- Fatigue after reading only for a short while
- Poor spelling skills
- Lack of enjoyment from reading

Some children have auditory discrimination problems. This may have been the result of having chronic ear infections when they were young. Others may be born with this learning disability. Correction involves educational exercises to train the brain in discrimination and to over teach the formation of the sounds used speaking and reading.

Another group of children have visual perception problems. They may actually reverse lertters or words. They have difficuluty matching the word image on the page with a previously stored image in their brain. Exercises that train the brain to "see" more accurately may help but instruction with phonics is the best approach to overcome this problems.

Language development problems can contribute to poor reading and listening comprehension along with difficulty in verbal and written expression. Learning appropriate word attack skills through phonics along with special help in receptive and/or expressive language skills improves this type of learning disability.

Helping Children with Reversals :

It is not unusual for children to reverse letters and words when they read or write up to the age of 6 or 7. This is due to immaturity in brain development. Children who have problems with reversals usually also have problems with left-right directionality. Below are some exercise that have been found to help improve directionality and reduce reversals. Symptoms :

Spatial confusion—unable to differentiate left-right, on self, other, or paper.

Confuses letter pairs as b-d, m-w, p-q. Confuses words such as was-saw, on-no.

Remediation :

1. Simplify tasks so that only one new discrimination is made at a time.
2. Make each simple discrimination automatic before the next one is introduced. Overteach 'b", then overteach 'd", before presenting both together.
3. Each discrimination that causes repeated errors should be worked with by itself until the problem is overcome.
4. Trace, then write, the confused letter or word and pronounce it as written.
5. Use short frequent practice periods. Lengthen the time between practice session as the material is retained.
6. If the child is confused about his own left/right, use a ring, watch, ribbon or band on his writing arem. Colour cue side of desk or paper or word as a starting place.
7. Gradually increase the difficulty of material to discriminate. If errors are made, go back to simple practice.
8. Suggestions for Improving Laterality :

- Trace hands on paper. Label "right", "left".
- Play "Simon Syas" – "Touch right foot; raise left hand," etc.
- Child follows the directions in drawing lines up, down, right ot left, etc. and in touching parts of body.
- Child connects dots on blackboard to make a completed pattern; repeats process on paper.
- Child shows hands in sequence pattern : left, right, left, right, etc. Use marching as a variation.
- Child names objects on right and on left. He moves to different parts of the room and repeats.
- Arrange story pictures in sequence, left to right.
- Use lined paper for writing.
- Use weighted wristband to designate right or left hand.
- Tracing activities, left to right. Mark left with small "x." Use colour tracing to repeat.
- When begnning writing the lessons teach the child to begin as close to left edge of sheet as possible (then can move only toward the right).
- In reading, use markers, "windows," and other left-to-right directional aids.

What is dysgraphia ?

Dysgraphia means difficulty with handwriting. There are several different kinds of dysgraphia. Some people with dysgraphia have handwriting that is often illegible and shows irregular and inconsistent letter formations. Others write legibly, but very slowly and/or very small. When these indicuduals revert to printing, as they often do, their writing is often a random mixture of upper and lower case letters. In all cases of dysgraphia, writing requires inordinate amounts of energy, stamina and time.

Dysgraphia can interfere with a student's ability to express ideas. Expressive writing requires a student to synchronize many mental functions at once : organization, memory, attention, motor skill, and various aspects of language ability. Automatic accurate handwriting is the foundation for his juggling act. In the complexity of remembering where to put the pencil and how to form each letter, a dysgraphia student forgets what he or she meant to express. Dysgraphia can cause low classroom productivity, incomplete homework assignments, and difficulty in focusing attention.

Emotional factors arising from dysgraphia often exacerbate matters. At an early age, these students are asked to forego recess to finish copying mateiral from the board, and are likely to be sent home at the end of the day with a sheaf of unfinished papers to be completed. They are asked to recopy their work but the second attempt is often no better than the first. Because they are often bright and good at reading, their failure to produce acceptable work is blamed on laziness or carelessness. The resulting angar and frustration can prevent their ever reaching their true potential.

What cause dysgraphia ?

A few people with dysgraphia lack only the fine-motor coordination to produce legible handwriting, but some may have a physical tremor that interferes with writing. In most cases, however, several brain systems interact to produce dysgraphia. Some experts believe that dysgraphia involves a dysfunction in the interaction between the two main brain systems that allows a person to translate mental into written language (phoneme-to-grapheme translation, i.e. Sound to symbol, and lexicon-to-grapheme translation, i.e. mental to written word). Other studies have shown that split attention, memory load, and familiarity of graphic material affect writing ability. Typically, a person with illlegible handwriting has a combination of fine-motor difficuluty, inability to revisualize letters, and inability to remember the motor patterns of letter forms.

Who is qualified to diagnose dysgraphia ?

Dysgraphia cannot be diagnosed solely by looking at a handwriting sample. A qualified clinician must directly test the individual. Such a test includes writing self-generated sentences and paragraphs and coyping age-appropiate text. The examiner assesses not only the finished product, but also the process, including posture, pencil grip, fatigue, cramping or tremor of the writing hand, eyedness and handedness, and other factors. The examiner may assess fine-motor speed with finger-tapping and wrist turning.

What is the treatment for dysgraphia ?

Prevention, remediation and accommodation are all important elements in the treatment of dysgraphia. Many problems can be prevented by early training. Young children in kindergarten and grade one should learn to form letters correctly; kinesthetic memory is powerful and incorrect habits are very difficult to eradicate.

Muscle training and over-learning good techniques are both critical for the

remediation of dysgraphia. Specifically designed exercises are needed to increase strength and dexterity. A specialist can recommend the most appropriate plan of exercises. For all students, kinesthetic writing, that is writing with eyes closed or averted, is a powerful reinforce. Work needs always to begin with the formation of individual letters written in isolation. Alphabets need to be practiced daily, often for months.

Finally, individuals can benefit from a variety of modifications and accommodations. One effective method is to teach the use of a word processor, bypassing the complex motor demands of handwriting. Many students may find learning the keyboard by the alphabet method easier than beginning with the home keys. For many, touch typing offers a whole new opportunity to learn to spell through a different kinesthetic mode. Students should also experiment with different writng tools; some people with dysgraphia may find pencil grips helpful. Other bypass methods include allowing a student to answer questions orally or into a tape recorder instead of writing, modifying written assignments so that less writing is required, and allowing extended time to complete tests and assignments. Copying from the board is an especially difficulut task. Teachers need to provide notes. Photocopying the notes of another student is one possibility. Providing an outline, with spaces left for the student to fill in information is another. Writing on a slightly, inclined plane may be helpful.

Dyscalculia—Difficuluty doing math :

Dyscalculia is difficulty in learning or comprehending arithmetic, such as difficulty in understanding numbers, learning how to mainpulate numbers, and learning facts in mathematics. It is generally seen as a specific developmental disorder. Dyscalculia can occur in people from across the whole IQ range, often, but not always, involving difficulties with time, measurement, and spatial reasoning. Estimates of the prevalence of dyscalculia range between 3 and 6% of the population A quarter of children with dyscalculia have ADHD. Mathematical disabilities can occur as the result of some types of brain injury, in which case the proper term is acalculia, to distinguish it from dyscalculia which is of innate, gentic or developmental origin. Dyscalculia has been associated with female children who have Turner syndrome.

Symptoms :

The following are seen in primary school, and well established by educational researchers :

1. **Delay in counting**. Five to seven year-old dyscalculic children show less understanding of basic conuting principles.
2. **Delay in using counting strategies for addition**. Dyscalculic children tend to keep using inefficient strategies for calculating addtion facts longer than their peers.
3. **Difficulties in memorizing arithmetic facts**. Dyscalculic children have great difficulty in memorizing simple addition, substraction and multiplication facts (eg. 5 + 4 = 9), and this difficulty persists up to at least the age of thirteen. [6-10]
4. **Lack of "number senese"**. Dyscalculic children may have a fundamental difficulty in understanding quantity. They are slower at even very simple quantity tasks suxh as comparing two numbers (which is bigger, 7 or 9?), and saying how many there are for groups of 1-3 objects. The brain areas which appear to be affected in dyscalculia are areas which are specialised to represent quantity.
5. **Less automatic processing of written numbers**. In most of us, reading the symbol "7" immediately causes our sense of quantity to be assessed. In dyscalculic individuals this access appears to be slower and more effortful. Thus dyscaculic children may have difficulty in linking written or spoken numbers to the idea of quantity.

Dyscalculia involves frequent difficulties with everyday arithmetic tasks like the following :

- Difficulty reading analog clocks
- Difficulty stating which of two numbers is larger
- Inability to comprhend financial planning or budgeting, sometimes even at a basic level, for example, estimating the cost of the items in a shopping basket or balancing a checkbook
- Difficuluty with multiplication-tables, and subtraction-tables, addition tables, division tables, mental arithemetic, etc.
- Difficulty with conceptualizing time and judging the passing of time. May by chronically late or early.

- Problems with differentiating between left and right
- Inability to viusalize mentally
- Difficulty reading musical notation
- Difficulty with choreographed dance steps
- Difficulty working backwards in time, (e.g. What time to leave if needing to be somewhere at 'X' time)
- Difficulty comprehending thrings relating to occurrneces in different time zones
- Difficulty navigating or mentally "turning" the map to face the current direction rather than the common North = Top usage.
- Having particular difficulty mentally estimating the measurement of an object or distance (e.g., whether something is 10 or 20 feet (3 or 6 meters) awya).
- Inability to grasp and remember mathematical concepts, rules, formulae, and sequences
- Inability to concentrate on mentally intensive tasks
- Mistaken recollection of names. Poor name/face retrieval. May substitute names beginning with same letter.

1.2 ❑ Tools and areas of Assessment

Structure :

1.2.1 Identification and Assessment :

1.2.2 Tools

1.2.3 Assessment Strategies

Introduction :

According to the discrepancy model, L.D., students have discrepancy between their academic performance and intellectual ability. "The child does not achieve adequently for the child's age or meet state–approved grade–lelvel standsard in one or more of the following areas (i) oral expression, (ii) listening cooperation, (iii), (iv) basic reading & writing skills, (v) reading comprehension, (vi) mathematics calculation or (vii) mathematical problem solving; or that the child does not make sufficient progress ot meet state or age approved gread–level standards."

Objectives :

To learn Identification and Assessment of Learning disability Students

1.2.1 Identification and Assessment :

For identification of learning disability, educational assessment is essential. Educational assessment is multi-dimensional process that involves much more that test administration. "Assessment is the process of collecting data for the purpose of making about students (Satvia & Ysseldyke, 1995). McLoughlin and Lewis (1994) discuss five primary purpose of educational assesement :

(a) Screening to locate who may have learning difficulties.

(b) Determining elitibility i.e., collecting data that enable diagnosticians to identify a student as having learning difficulty.

(c) Planning a program for placement and specific interventions.

(d) Monitoring students progress through periodic data assessment.

(e) Evaluating a programme annually in remediation of the learning practices.

In USA, Pulic Law : 94-142 (November 1975) ensures that all students with disabilities receive a free, appropriate public education for which assessment must be done in non-discriminatory or unbaised manner. Therefore, PI : 94-142 (1975) established a set of procedures to protest against inappropriate assessment and placement practice.

1.2.2 Tools

For learning disabled student we may use some of tools for the assessment i.e.

- Reading Achievement – Swarup Mehata.
- NIVANS BATTERY TEST
- Visual Motor Perceptual Measure (Gestalt Test)
- Screening Check – List of LD
- Auditory Skill Test – Wood Cock
- Psycho Educational Battery – Wood Cock & Johnson.

1.2.3 Assessment Strategies :

Assessment learning disabilities requires that we assess an individual students's academic and social learning. However, besides finding out what a student knows or can do, we also must have a basis for comparing the student's performance to what we assume is normal or typical for students similar in age, gender, cultural group, intelligence, and opportunities to learn. The same strategies are used to assess learning disabilities and all students' learning, but particular attention is paid in the former to low performance in specific areas differs from what the students's other characteristics lead us to expect (Hallahan, Kauffiman & Lioyd, 1999).

Various assessment strategies include :

(a) Neuro–Psychological assessment—focuses on how brain function affects learning

(b) Contextual assessments which includes :

  (i) Interviews with the student and important and others.

(ii) Observations of the student in the classroom and other place in school.

(iii) Error analysis to discover predictable mistakes.

(c) Standardized testing, which includes :

(i) Norm referenced tests of cognitive ability and achievement–compare the student to a large normative group.

(ii) Criterion–referenced tests–what specific standards of performance the student has reached.

(iii) Non–referenced tests–may reveal how the students approach problems.

(d) Teacher–made tests–cover material presented in class.

(e) Curriculum–based assessment–systemiatic and frequent sampling of the student's performance on the instructional tasks in the daily curriculum.

(f) Behavioural assessment–observation and recording of specific target behaviours.

(g) Interactive assessment–observation of the students response to instruction during testing.

(h) Authentic assessment, which include :

(i) Performance assessment–samples of what the student can do following might be used for performance assessment.

- Constructed–response items, in which the student must offer a response rather than choose from alternatives
- Essays, letters, instructions, speeches or oral response to questions
- Experiments and their results or reports
- Exhibitions and other performances

(ii) Portfolio assessment–collections of students work over a period of time.

1.3 ❑ Strategies for reading, writing and maths

Structure

1.3.1 Introduction

The strategy is method that the teacher can use to help the students to complete a given tas, or a way for the student to think about the task is explained. Therefore, such strategies of teaching are needed that help a learner with learning disabilities to acquire new information to solve problems and to transfer learning to related situations. Here are the six characteristic of effective teaching strategies (Ibid, p. 148-149)

(a) The strategy takes account of how the students is currently thinkign about the task.

(b) The strategy provides for both the action of the teacher and the action of the student.

(c) The strategy encourages generalization and transfer.

(d) The strategy matches the highest level of thinking which the student is capable.

(e) The strategy generated through teacher student interaction.

Therfore, the teachers must know how the student is currently thinking to stop providing misdirected instruction. So the teacher will carefully understant students mental structures, what the students need to learn, imagine the steps in between, generate disequilibrium, teachers switches roles to move to new step in the teaching process, and playing with the new concept to stabilize the new structure and transfer likely.

1.3.2 Objective :

To learn strategy of reading for learning Disbality students

To learn strategy of writing for Learning Disbality students

To learn strategy of mathematics for Learning Disbality students

1.3.3 Reading Strategies :

Reading involves skill, it involves thinking and affects the entire personlity of the reader. It makes a man perfect. Reading means reading with comprehension and with logical thinking. It is the key to the wealth of experience. It includes learning, reflection, judgement, analysis and synthesis, problem solving behaviour, inferenece and organization, comparison of data, or what is being read (Throndike)

Some of the following suggestion and strategies may help children who are experiencing problems with decoding, comprehension, or reading retention. Many of those listed are accommodations that work around a child's differences by offereing alternative approaches at home and at school. Look for those thay you think might work best and, when applicable, talk to your child's teacher about using some of them in class.

■ **Play word games.**

Word games and puzzles are fun and also build vocabulary and word understanding. Try crossword puzzles, word bingo, etc.

■ **Read every day.**

Encourage children to read directions, labels and signs in the classroom, at home, in the car, and at stores or shops, and have them take turns reading aloud with a classmate, parent, or sibling. Discuss in class or at home what you are reading.

■ **Model reading as an enjoyable activity.**

You might informally discuss what you are reading with your child or let him or her see family members or teachers enjoying reading. Have DEAR time several times a week where everyone "Drops Everything And Reads" for 20 minutes.

■ **Put learning to use.**

Help children remember by having them explain, discuss, or apply information they have just read, letting them "teach" you facts or ideas they have learned from their

reading, or encouraging them to act out characters from their reading selections.

■ **Listen to books.**

Child may benefit from listening to his or her textbooks and trade books on tape or by using assistive technologies like screen readers.

■ **Read to child every night.**

Read novel above his or her reading lelvel to stimulate and enrich language, creativity, and interest. Ask structured questions and encourage the child to predict multiple endings to each chapter.

■ **Engage children's senses while learning.**

Children with learning disabilities learn best when they use many of their senses to get information. Multisensory instruction allows the child to see, hear, touch, and act our words. For example, to learn letters children may read the printed letter, say the letter name, shape the letter out of clay, trace the letter onto paper, and form their bodies into the shape of the letter.

Remdiation in Reaidng :

Difficulties with reading fluency are nearly universal among individuals with learning disabilities in reading. Reading fluency is the ability to read text not just accurately, but also and effortlessly. Fluency is characterized by appropirate intonation and expression during oral reading, as well as by a high degree of accuracy and speed in recognizing individual words in the text. Accurate word decoding is necessary, thoug not sufficient, for fluent reading. Thus, a student who reads quickly, but wirh many decoding errors or substitutions of words, is not "fluent."

Reading flency is important for at least three reasons. First, if students need to put effort into reading individual words, they tend to lose comprehension. Second, students with poor fluency often experience reading as laborious and difficult, so they lose motivation to read. Lack of motivation to read results in less practice, further compounding the difficulties of struggling readers. And third, as they advance in school, students with poor flency have difficulty keeping up with the high volume of reading requird for academic success beyond the elementary grades. Some following remedial recommendation for reading disorder.

A. Errors in reading

1. Omissions : Omits letter. eg, Belt > Bet or whole words when reading. Remedy: Tech him to scan the complete word.

2. Additions and insertions : eg., play > played or care > careful. Remedy : Help to him to understand the context word, to comprehend the meaning of the what he is reading, to identify the word quickly; in choral reading and reading with a taped reading.
3. Substitutions : Substitute words which look the same. eg., house > home, guess > guest, us > biscuit. Remedy : Use flash cards, choral reading and rhyming.
4. Repetition : Repeating words. Remedy : Silent reading before loud reading, use phrase cards, develop stoke of sight words.
5. Reversals : Twist symbols like p>q, b>d, was>saw. Remdy : Establish the concepts of right and left, teach them to distinguish between letters like, P,p,q,h,m,r,e,a,d,q,f and use of colours.
6. Word by word Reading : Loses his place of reading, using no intonation, expression, punctuation, pausing. Remedy : Increase the peace of reading by moving a piece of paper, read along with the child in a faster pace, use flash card.
7. Sound Blending : Cat > Kat. Remedy : Meaningful word patterns and words in context.

B. Teachng word identification : Letter with similar configurations, eg., h-n, i-j, v-w, m-n, -d and pair words, lap-lip, bat-dad, tip-tin, house-horse.

C. Teach phonics : the (the, thin), ph (Phone, phantom) etc.

D. Teaching words meaning.

E. Comprehension skills.

Among students with reading disabilities, two patterns of difficulties are especially common. In the first pattern, a student has difficulty reading words accurately and also reads in a slow, labored fashion. In the second pattern, a student may have achieved reasonably accurate word decoding, especially after remediation in phonemic awareness and phonics, but still reads very slowly relative to other students his or her age.

Fluency deficits in individulas with reading disabilities may be linked to several underlying factors. One especially importan factor involves a cumulative lack of exposure to printed words. Struggling readers receive much less exposure to words

(e.g., through independent reading both in and out of school) than do skilled readers. If struggling readers' difficulties are not remediated early, this cumulative deficit in exposure to words may be extremely difficulut to ovecome. In addition, some scientific investigators have linked problems in developing reading fluency to underlying deficits in naming speed, or the speed with which children can retrieve the names of familiar items, such as letters or numbers. Other researchers view these difficulties as reflecting a single underlying phonological deficti, the core deficit in most individuals with reading disabilities.

The use of fluency measures in early identfication :

Measures involving fluency can be very useful in identifying at-risk readers in the early elementary grades. Depending on the age of the children, these measures may involve identifying letters, real words or nonsense (made-up) words out of context, or reading grade-appropriate passages. The measures are timed and the child's score is simply the number of letters or words read correctly per minute. Children must be tested individually because the measures involve oral reading; however, typically these measures are easy to administer, take only a few minutes of time, require only minimal training of teachers, and are excellent predictors of children's risk status. Thus, flency measures can be used in general education settings to monitor the progress of all children and to identify early those who are in need of additional help. Early identification and appropriate intervention (which may or may not include special education) can help to prevent the cumulative deficits which make it so difficult for older struggling readers to catch up to their age peers.

Instruction and remediation in fluency :

Once serious fluency problems have developed, they can be resistant to remediation. However, several approaches have shown promise for addressing fluency difficulties. An especially helpful technique involves repeated oral reading of text under timed conditions. In this technique, the teacher select an appropriate level passage—one that is not too difficult—for a child to read aloud repeatedly. The child rereads the passage until he or she reaches a predetermined criterion for accuracy and rate, then moves on to another, more difficult passage. A somewhat similar approach, but one that does not neccessarily use timing, involves having children reread familiar books aloud several times, with appropriate guidance and feedback from the teacher. Other approaches to developing reading fluency include the use of timed speed drill on individual words (e.g., common sight words), readers'

theatre, paired or partner reading, and encouraging independent reading (e.g., by making books available to children that are interesting and and at an appropriate level of difficulty).

Teaching basic phonics and skills for decoding multisyllabic words, such as syllabication strategies and structural analysis, is essential for students whose reading is not accurate. Without a foundation of accurate decoding, students cannot become fluent. However, by itself, phonics instruction will not meet students' needs for building fluency. Rather, fluency must be directly addressed, through the kinds of approaches discussed above, as part of a comprehensive program of reading instruction.

1.3.4 Strategies for writing :

Introduction :

Writing is both a social and a cognitive precess. In the world outside the classroom, people write to communicate with an audience, drawing on their knoledge of content and writing, strategies for planning and revising, and basic writing skills. Writing development and disabilities in terms of five components.

- the social context for writing
- the writer's knowledge
- planning processes
- text production
- evaluation and revision
- self-regulation

It will outline components of effective writing instruction, to help parents assess the quality of instruction in their child's classroom. The goals of good writing instruction for students with disabilities are the same as those for all students. All students need to develop their knowledge about the purposes and forms of writing, basic writing skills, strategies for planning and evaluating their work, and motivation. However, struggling writers need more support and more intensive, explicit instruction in skills and strategies.

A high-quality writing program will provide a balance between opportunities for children to engage in writing that is meaningful to them, and to receive explicit

instruction in the skills and strategies they need to become proficient writers. Development of the self-regulation strategies and motivation needed for independent writing are also important. The writing classroom should provide :

- a context for regular, meaningful writing
- instruction in handwriting, spelling, and sentence formation, as needed
- instruction in strategies for planning, revising, and self-regulation during the writing process
- attention to development of motivation for writing
- use of technology to support the writing process (this important topic will be addressed separately in a future article)

Developmental Hierarchy of Writing Tasks

i. scribbling

ii. Tracing – (a) Connected letters or figures
(b) Disconnected letter or figures

iii. Copying – (a) From a model
(b) From memory
(c) Symbolic and non-symbolic

iv. Completion tasks – (a) Figure,
(b) Word completion—supply missing letters and sentence completion.

v. Writing from direction : writing from letters as they are spoken,w writing words and sentences and supply missiing word, supply missing sentence.

Source : Central Processing Dysfunction in children : a review of Research J. C. Chalfant and M. A. Scheffin, NINDS Monograph no-9, Bethesde Md : U.S. Department of Health, Education and Welfare, 1969, p. 112.

Remediation :

According to mercer, (1997, pp, 466-469)

- Teacher should help the students develop a positive attitude towards handwriting encouraging progress and stressing the importance of the sill. In upper elementary grades and in secondary classrooms, greater emphasis should be placed on identifying specific deficits in student's daily routine work. Marketing must be on the basis of students handwriting quality.
- The teacher needs to help each student develop his skills in the area like

muscular control, eye hand cooridination and visual discrimination before the students is ready to begin handwriting.

- The proper position of the paper pencil must be taught before extensive handwriting.
- Multi-sensory approach should be used in teaching letter forms—vision, hearing and touch.
- Letter with easier strokes (viz. E, F, H, I, L, T, I, I, and t) may be taught first (before teaching b, f, h, p, q etc).

1.3.5 Strategy for Mathematics

Introduction :

Dyscalculia is a mathematics-related disability resulting from neurological dysfunction. Students who are diagnosed with Dyscalculia have average to above-average intellectual functioning and a significant discrepancy between their math skills and their chronological-age-peer norms. For a diagnosis of Dyscalculia, itmust be determined that the math deficit is not smiply related to issues such as poor instruction, vision, hearing or other physical problems, cultural or language differences, or developmental delays.

In Accommodating Math Students with Learning Disabilities, author Rochelle Kenyon lists the following strategies for teaching a student with math-related disabilities.

- Avoid memory overload : Assign manageble amounts of work as skills are learned.
- Build retention by providing review within a day or two of the initial learning of difficult skills.
- Provide supervised practice to prevent students from practicing misconceptions and "misrules."
- Make new learning meaningful by relating practice of subskills to the performance of the whole task.
- Reduce processing demands by preteaching component skills of algorithms and strategies.
- Help students to visualize math problems by drawing.
- Use visual and auditory examples.

- Use reala-life situations that make problems functional and applicable to everyday life.
- Do math problems on graph paper to keep the numbers in line.
- Use uncluttered worksheets to avoind too much visual information.
- Practice with age-appropriate games as motivational materials.
- Have students track their progress.
- Challenge critical thinking about real problems with problem solving.
- Use manipulatives and technology such as tape recorders or calculators.

This is was adapted from the following source : Garnett, K., Frank, B., & Fleischner, J. X. (1983). A strategies generalization approach to basic fact learning (addition and subtraction lessons, manuan #3; multiplication lesson, manual #5). Research Institute for the Study of Learning Disabilities. New York, NY : Teacher's College, Columbia University.

Some of the following math strateties and suggestions may help children who are experiencing problems with mathematics. Identify strategies that you think will help your child and, if appropriate, talk to your child's teacher about using some of the strategies in school.

■ Maintain consistency and communication across school and home settings.

Parents, tutors, and classroom teachers should coordinate and use the same instructional approach.

■ Teach basic concepts using concrete object.

For example, let children explore number concepts by counting the legs of a chair to find the number four or by subtracting crayons from a box. The progression from understanding concrete materials, pictorial representations, and abstract number representations may take some children longer than others.

■ Provide specialized materials.

To help childern organize their calculations, have them use graph paper (or lined paper turned sideways) to keep numbers in columns. Encourage the use of scrap paper to keep work neat, highlighters to underline key words and numbers, and manipulatives such as base-ten blocks or fraction bars.

■ Make your expectations explicit.

Tell children the procedures you would like them to use when solving a problem, model each procedure for them, then have them tell you what they are expected to do. Some students benefit by having a math notebook filled with examples of completed problems to which they can refer if they becomes overwhelmed or confused.

■ **Provide time for checking work.**

Emphasizing that completing math assignments is a process, encourage children to become comfortale reviewing their work, making changes, or asking questions when they are unsure of their answer.

■ **Give children opportunities to connect mathematical concepts to familiar situations.**

For example, when introducing measurement concepts, have children estimate their measurements before measuring classmates' and family members' heights or weighing their book bags' when empty and when full.

■ **Help children apply math concepts to new sitations.**

For example, show them how to use percentages to understand the price of a pair of shoes on sale at the mall or the amount of their allowance they spend on snacks.

■ **Provide access to programs or tutors that can help a child improve his or her math skills.**

Tutors can assist children with weak math sub-skills, such as multiplication and division. Provide tutors during summer months or after school to boost performance and ensure that the child retains his or her skills.

■ **Help children keep track of problematic areas.**

When doing math homework, children may benefit from having their most common errors listed on flashcards. They can then refer to the cards while completing their assignments.

■ **Play math games.**

To encourage automaticity with math facts, students may benefit from playing math games (i.e. dice, playing cards) and listening to commercially available audiotapes that provide a fun way of learning math facts. The PBS Parents Activity Search can help you find great games from PBS Children's television series.

Unit 1.4 : Curriculum Adaptation, IEP, Further Education

Structure

1.4.1. Introduction

There is no recipe for adapting general education currilculum to meet each student's needs. Each teacher, each student, each classroom is unique and adaptations are specific to each situation. Keep in mind that curriculum does not always need to be modified. By providing multi-level instruction you will find that adapting a lesson may not always be necessary. Differentiating instruction and providing multiple wasy assess allows more flexibility for students to meet the standards and requirements of the class. At other times, the curriculum can be made more accessible through accommodations. In addition, supports for one student may not necessarily be the same in all situations, e.g., a student who needs full time support from a paraporfessional for math may only need natural supports from peers for English, and no support for art for learning disability students. And, supports should not be determined by the disability lebel, instead supports should be used when the instructional or social activity warrants the need for assistance (Fisher and Frey, 2001). The forms and examples on the following pages provide information about curriculum and types of adaptations that could be considered in developing the appropriate strategy for a particular student.

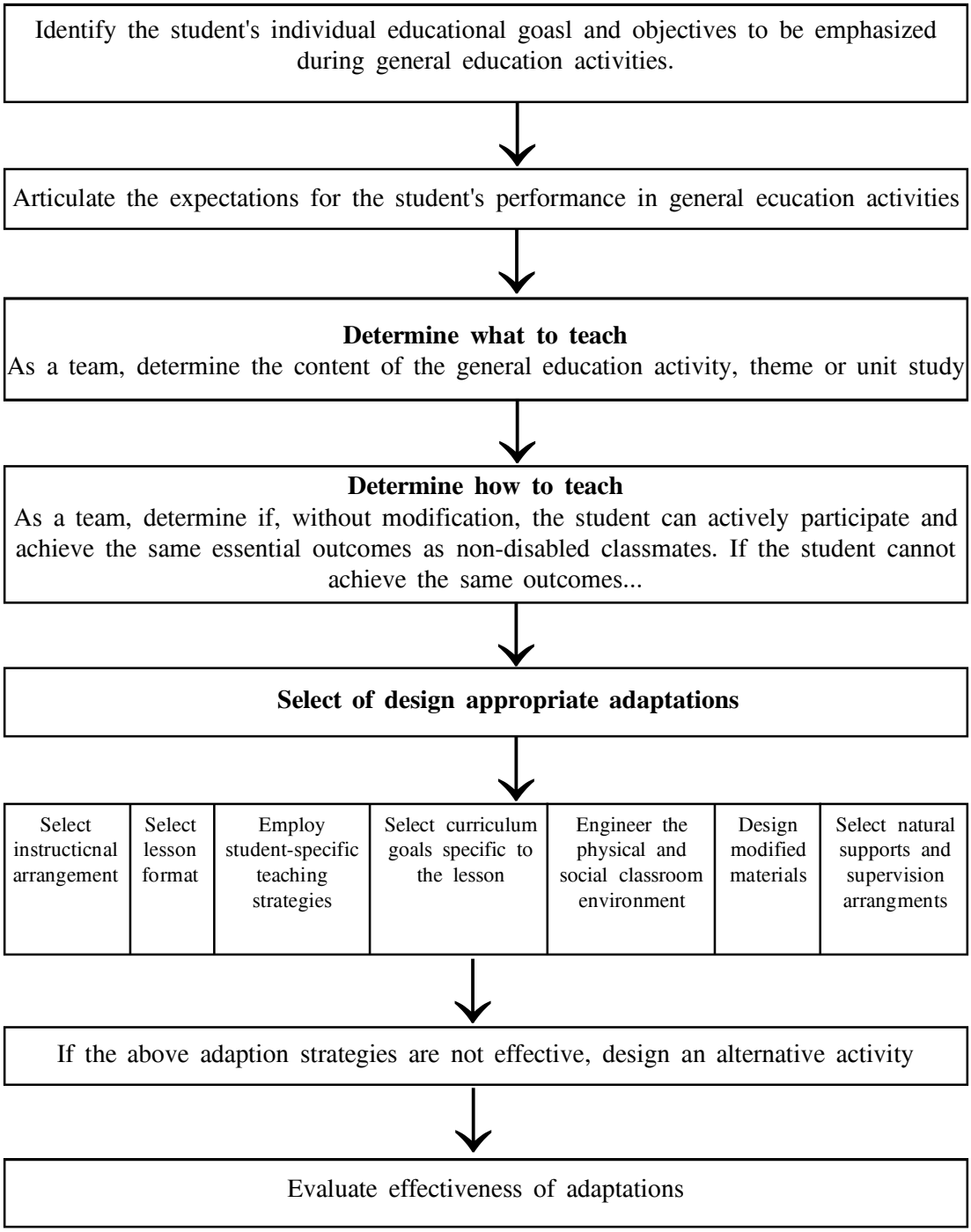
1.4.2. Objectives

To learn curriculum adaptation for L.D. students
To learn IEP for L.D. students
To learn further education for L.D. student

1.4.3. Curriculum Adaptation

A Curriculum Adaptation and Decision-making Process :

This decision-making flowchart casn be used to conceptualize the process of selecting and implementing curriculum adaptations. It should be used as a tool for a team in determing an individual student's needs.


Identify the student's individual educational goasl and objectives to be emphasized during general education activities.
Articulate the expectations for the student's performance in general ecucation activities
Determine what to teach
As a team, determine the content of the general education activity, theme or unit study
Determine how to teach
As a team, determine if, without modification, the student can actively participate and achieve the same essential outcomes as non-disabled classmates. If the student cannot achieve the same outcomes...
Select of design appropriate adaptations
Select instructicnal arrangement
Select lesson format
Employ student-specific teaching strategies
Select curriculum goals specific to the lesson
Engineer the physical and social classroom environment
Design modified materials
Select natural supports and supervision arrangments
If the above adaption strategies are not effective, design an alternative activity
Evaluate effectiveness of adaptations

A Curriculum Adaptation and Decision-making Model :

Examine the Structure of the Instruction :

1. Can the student activity participate in the lesson without modification ? Will the same essential outcome he achieved ?
2. Can the student's participation he increased by changing the instructional arrangement ?

   From traditional arrangements to :

   - Cooperative groups
   - Small groups
   - Peer partners
   - Peer or cross-age tutors
3. Can the student's participation be increased by changing the lesson format ?
   - Interdisciplinary / thematic units
   - Activity-based lessons, games, simulations, role-plays
   - Group investigation or discovery learning
   - Experiential lessons
   - Community-referenced lessons
4. Can the student's particiaption and understanding be increased by changing the delivery of instruction or teaching style ?

Examine the Demands and Evaluation Criteria of the Task

5. Will the student need adapted curricular goals ?
   - Adjust performance standards
   - Adjust pacing
   - Same content but less complex
   - Similar content with functional/direct applications
   - Adjust evaluation criteria system (grading)
   - Adjust management techniques

Examine the Learning Environment

6. Can the changes he made in the classroom environment or lesson location that will facilitate participation?

- Environmental / Physical arrangements
- Social rules
- Lesson location

Examine the Materials for Learning

7. Will different materials be needed to ensure participation?
   - Same content but variation in size, number, format
   - Additional or different materials/devices
   - Materials that allow a different mode of input
   - Materials that allow a different mode of output
   - Materials that reduce the level of adstraction of information

Examine the Support Structure

8. Will personal assistance be needed to ensure participation ?
   - From peers or the general education instruction ?
   - From the support facilitator ?
   - From therapists ?
   - From paraprofessionals ?
   - From others ?

Arranges Alternative Activities that Foster Participation and Interaction

9. Will a different activity need to be designed and offered for the student and a small group of peers ?
   - In the classroom
   - In other general education environments
   - In community-based environments

Curriculum Adaptations :

It is important to correlate adaptations with the IEP. In other words, we are not adapting for adaptations sake but, to meet the student's needs as identified on an IEP.

a. Curriculum as is. This is type we forget most frequently. We need to constantly be looking at the general education curriculum and asking if the students of IEPs may gain benefit from participating in the curriculum as is. We need to keep in mind that incident learning does occur. Curriculum as is supports outcomes as identified in standard curriclum.	**Move in this direction only when necessary**
b. Different objective within the same activity and curriculum. The student with an IEP works with all the other students in the classroom participating in the activity when possible but, with a different learning objective from the other students. This is where the principle of partial participation fits examples include. ● A student with a short attention span staying on task for 5 minutes. ● Using a switch to actis ate a communication deivce to share during a class discussion. ● Expressing one's thoughts by drawing ina journal instead of writing. ● Holding a book during reading time. ● Understanding the effect World War II has on the present rather than knowing the names and dates of key bettles.	↓
c. Material or environmental adaptations. The material or environemental changes are utilized so that participation in the general education curriculum by the student with the IEP may occur. Examples include : ● 5 spelling words from the weekly list instead of the standard 20. ● Completely a cooking assignment by following picutre, directions rather than written direction. ● Changing the grouping of the class from large group to small groups (possible with the additional support staff). ● Chaging the instructional delivery from lecture to the cooperative learning format. ● Using a computer to write an assignment instead of paper and pencil. ● Reading a test to a student. ● Highlighting the important concepts in a textbook. ● Having the student listen to a taped textbook. ● Using enlarged print.	

● Using an assistive technology device. ● Using visual cues such as picture and/or word schedules for those who have difficulty staying on task. ● Using a note taking guide listing the key concepts during a lecture.	**Move in this direction only when necessary**
d. Providing Physical assistance. Assistance from another person may be needed for a student to participate ina classroom activity. If possible, it is better to use natural supports (peers) as these will be the people always present in the student' life. If the use of peers is not possible, then either the support teadcher, the paraprofessional, the classroom teacher, the classroom aide, or a parent volunteer may provide the assistance. Most peers and staff will need training in the correct way of providing physical assistance. In addition, we need to keep in mind the principle of partial participations. Examples include : ● Starting a computer for an student with an IEP to use. ● Guiding a hand during handwriting. ● Assisting in activating a swtich. ● Completing most of the steps of an activity and having a student with an IEP do the remainder. ● Pushing a student in a wheelchair to the next activity.	↓
e. Alternative/substitue curriculum. This is sometimes referred to as functional curriculum as it usually involves the acpuisition of "life skills". The decision to use alternative/substitue curriculum is a major change and needs to be reflected on the IEP. This decision should be carefully made after weighing all or the pros and cons of using an alternative curriculum. The alternative curriculum may or may not take place in the general education classroom. Examples include : ● Community-based instruction (which all students may benefit from!) ● Learning job skills in the school cafeteria. ● Learning how to use a communication device. ● Doing laundry for the athletic department. ● Learning cooking/grooming skills at the home.	

Overlap does occur among the five types of curriculum adaptation.

Nine Types of Adaptions :

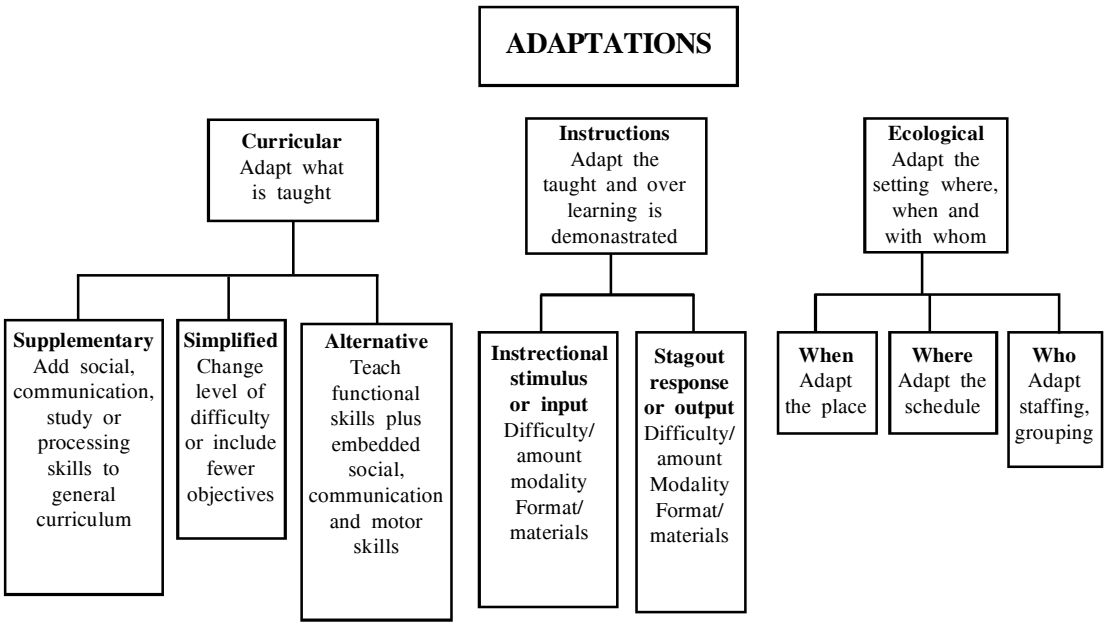
Input	Output	Time
Adapt the way instruction is delivered to the learner. *For example :* Use different visual aids; plan more concrete examples; provide hands-on activities; place students in cooperative groups.	Adapt how the learner can respond to instruction *For example :* Allow a verbal vs. written response; use a communication book for students; allow students to show knowledge with hands on materials.	Adapt the time allotted and allowed for learning, task completion or testing. *For example :* Individualize a timeline for completing a task; ...learning differently (increase or decrease) for some learners.

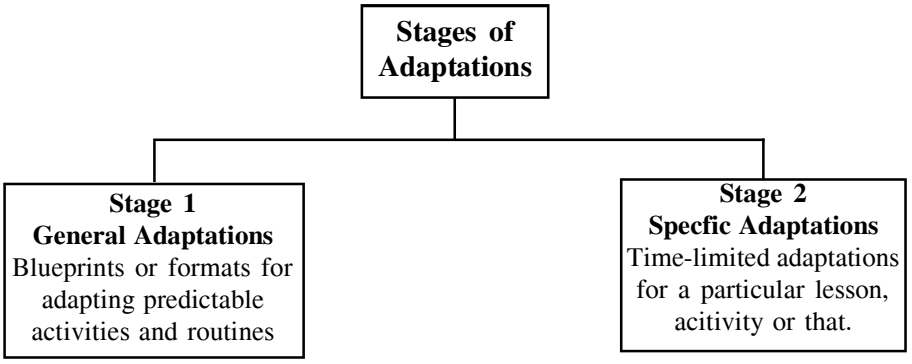
Difficulty	Level of Support	Size
Adapt the skill level, problem type, or the rules on how the learner may approach the work. *For example :* Allow a calculator for math problems; simplify task directions; change rules to accommodate learner needs.	Increase the amount of personal assistance with specific learner. *For example :* Assign peer buddies, teaching assistants, peer tutors or crossage tutors.	Adapt the number of items that the learnier is expected to learn or compete. *For example :* Reduce the number of social studies terms a learner must learn at any one time.

Degree of Participation	Alternate Goals	Substitute Curriculum
Adapt the extent to which a learnier is actively involved in the ask. *For example :* In geography, have a student hold the globe, while others point out the locations.	Adapt the goals or outcome expectations while using the same materials. *For example :* In social studies, expect one student to be able to locate just the states while others learn to locate capitals as well.	Provide the different instruction and materials to meet a learner's individual goals. *For example :* Individualize a timeline for completing a task; pace learning differently (increase or decrease) for some learners.

From : Ebeling, D. G., Ed. D., Deschenes, C. M.Ed., & Sprague, J., Ph.D. (1994). *Adapting curriculum and instruction.* The Center for School and community Integration, Institute for the Study of Development Disabilities.

Adaptations :





From : Janney, R., Ph.D., and Snell, M., Ph.D. (2000) Modifying Schoolwork; Baltimore, MD; Paul Brooks Publishing Company

1.4.4 IEP

IEP

A federal law called the Individuals with Disabilities Education Act (IDEA) requires that public schools create an IEP for every child receiving special education services. Kids from age 3 through high school graduation or a maximum age of 22 (whichever comes first) may be eligible for an IEP. The IEP is meant to address each child's unique learning issues and include specific educational goals. It is legally binding document. The school must provide everything it promises in the IEP.

What does an IEP contain ?

IEPs are designed to meet kids' unique needs. That means that every IEP will look different. But by law, all IEPs must contain the following elements:

Child's present level of educational performance (PLOP) : This is thorough descripition of your child's current abilities, skills, weaknesses and strengths. It's the part of the IEP that explains how the child's learning issues affect his ability to learn the general education curriculum. PLOP (also sometimes called PLP or PLAAFP) includes details on how your child handles academic subjects and everyday or "functional" activities, like socializing.

The results of the child's evaluations and tests : This should include district-wide and state assessments.

Special education and related services to be provided : The IEP spells out what kinds of support and services your child will receive. If your child is going to have speech therapy, for instance, it will say how many minutes a week he will receive this therapy.

Accommodations and modifications : These help your child learn the general education curriculum. Accommodations are changes in *how* a child shows what he has learned. They can help your child work around his learning issues. For example, he may be given extra time on tests.

Supplementary aids and services : These are supports to help a child learn in the general education classroom. L.D. student included in general classroom. They might include a one-on-one, aide, highlighted classroom notes, equipment or assitive technology, such a software.

Annual educational goals : These should be realistic, achievable and measurble. The IEP lists the academic and functional skills that the IEP team thinks the child can achieve by the end of the year. Annual educational goals should help your child participate in the general education classroom. If the child has multiple or severe disabilities, the law requires that the IEP list short-term goals. These are also called objectives or benchmarks.

A description of how the child's progress will be measured and reported to you : By law, the IEP must explain how the school will track the child's progress toward goals. And it must describe how the school will share those results.

For instance, one goal might be that the child be able to read at a third-grade level. The IEP will specify how that will be tracked—informal and formal assessments, for instance—and how often those results will be reported to you. If these interim reports show that your child's progress has stalled, the IEP team may discuss new interventions.

An explanation of how much your child will participate in general education classes and extracurricular activities : Participation at the fullest level possible is required by law. This is called the least restrictive environement.

The date the IEP will go into effect : Many states have formal timelines for this. Depending on your child's age and situation, his IEP might also include :

A transition plan : This kicks in when the child turns. Transition planning includes services and support to help a student graduate from high school and achieve post-high school goals.

Extended school year services : Some students receive special educational services outside of the regular school year, such as during the summer or, less commonly, during extended breaks like winter break.

1.4.5. Further Education :

There is sometimes a misconception that people with learning disabilities will not opt for a college placement prior to attending a day-centre. There has often been limited scope for those with learning disabilities to progress into further education and full-time employment.

But people with learning disabilities may often feel that they want to expand their horizons or take their studies to a nwe level. Further education may offer a wider

range of options in terms of long-term planning. However, the focus on students with learning, disabilities tends to fall on shorter-term college studies, with less emphasis on progression to employment.

In some cases, a learning disabled person will progress to college, with only around 11% going on to employment. In other cases, the individual may simply progress to attending a day centre and not enter employment at all.

Therefore, people with learning disabilities may not alwasy be aware of the further education opportunities and support open to them.

Progression And Support :

The UK Government's white paper Valuing People asserts that people with learning disabilities should have the same rights and opportunities as everyone else with regards with post 16 education. Objective 7 of the Valuing People paper states, "To enable people with learning disabilities to lead full and purposeful lives within their community and to develop a range of friendships, activities and relationships." It also states that Learning Disability Partnership Boards, the Learning and Skills Council (LSC) as well as colleges should support choices and ambitions of people with learning disabilties, and that they should be able to realise their potential.

Person-Centered Planning and Further Education :

It is the way forward for supporting people with a learning disability into further education. This also includes getting carers and family involved in supporting planning in post-16 education opportunities, but with an emphasis on the student being at the heart of the provision rather than an assumption that they will have to fit into existing provisions.

1.5. ❐ Transition Education, Lifelong education :

1.5.1 Transition Education

1.5.2 Lifelong Education

1.6 Unit Summary

1.7 ‘‘Check Your Progress’’

1.8 References

1.5.1. Transition Education

The term transition refers to passing from one state or condition to another. Many important transitions occur throughout each person's life, and many of them are associated with predictable life events, such as beginning preschool, leaving elementary school, and entering middle adulthood. One of the most critical transition periods for students with learning disabilities (LD) is the transition from shcool to young adulthood. The 1997 amendments to the Individuls with Disabilities Education Act (IDEA) defined transition services for this particular transtion as : a coorinated set of activities for a student, with a disability, that: (a) is designed within an outcome oriented porcess, that promotes movement from school to post school activities, including postsecondary education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services independent living, or community participation; (b) is based on the studen'ts needs, taking into account the student's preferences and interest; (c) includes instruction, related services, community experiences, the development of employment and other post-school objectives, and when appropriate, acquisition of daily living skills and functional vocational evaluation (*602).

This concept is straightforward and fairly smiple, including three major components (storms, O'Leary, & Williams, 2000). First, every student and his or her family should be coached to (a) think about post ? high school goals and (b) develop a plan for how to achieve those goals. Second, a high school experience should be designed so that the student acquires the skills and competencies necessary to obtain his or her desired post ? high school goals. Finally, the linkages to post ? high schools

services, supports, and programs need to be idenfified and made before the student exits high school.

Transition Planning Important for Individuals with LD :

Even thouhg transition planning has been mandated for all students with L.D. for more than 10 years, transition planning for individuals with LD has lagged behind that of other groups. A major reason for this lack of attention has been an assumption that individuals with LD have a mild disability that primarily affects academic achievement; therefore, they have the ability to move from secondary to postsecondary environments without a lot of difficuly. Unfortunately, this is not the case for many students with LD. The results of a number of recent studies have suggested that many adolescents with LD do encounter difficulties in making the transition to adult life, including problems related to unemployment, underemployment, job changes, participation in community and leisure activities, pay, dependency on parents and others, satisfation wit employment, postsecondary academics, and functional skills.

1.5.2. Lifelong Education :

'Lifelong education' the "onging, voluntary, and slef-motivated" pursuit of knowledge for either personal or professional reasons. Therefore, it not only enhances social inclusion, active citizenship, and personal development, but also self-sustainability, rather than competitiveness and employability. The concept Lifelong Learning was introduced in Denmark as early as in 1971. Evoloved from the term "life-long learners" created by Leslie Watkins and used by Professor Clint Taylor (CSULA) and Superintendent for the Temple City Unified School District's mission statement in 1993, the term recognizes that learning is not confined to childhood or the classroom but takes place throughout life and in a range of situations. Allen Tough (1979), Canadian educator and researcher, asserts that almost 70% of learning projects as self-planned. As per normal life L.D. students can learn as lifelong learning processes.

1.6. Unit Summary

Learning Disability :

Liarning disability is a classification that includes several areas of functioning in which a person has difficulty learning in a typical manner, usually caused by an unknown factor or factors. Given the "difficulty learning in a typical manner", this does not exclude the ability to learn in a different manner. Therefore, some people can be more accurately described as having a "Learning Difference", thus avoiding any misconception of being disabled with a lack of ability to learn and possible negative stereotyping.

While *learning disability, learning disorder* and *learning difficulty* are often used interchangeably, they differ inmany ways. Disorder refers to significant learning problems in an academic area. These problems, however, are not enough to warrant an official diagnosis. Learning disability on the other hand, is an official clinical diagnosis, whereby the individual meets certain criteria, as determined by a professional (psychologist, pediatrician, etc.). The difference is in degree, frequency, and intensity of reported symptoms and problems, and thus the two should notbe confuses. When the term "learning disorder" is used, it describes a group of disorders characterzied by inadequate development of specific academic, language, and speech skills. Types of learning disorders include reading (dyslexia), mathematics (dyscalculia) and writing (dysgraphia).

Tools and Areas of Assessment :

Learning disabilities are neurological disorders that affect a person's ability to interpret information and create prbolems with language, coordination, self-control or the ability to concentrate. Learning disabilities can cuase difficulties in taska such as reading, writing and doing math. When a child is struggling there are stps that parents can take to help. Formal assessment tools are a key part of the process to finding and identifying a learning disorder and getting a child the right support.

Strategies for reading, writing and maths

Reading Strategies	Writing Strategies	Math Strategies
Strategies to see when reading.	The Essential Writing Skills:	Explore and investigage math ideas.
Access background knowledge.	Generate ideas in a variety of ways.	Connect new math ideas with what already know.
Predict what will be learnied or what will happen.	Organize ideas based on purpose for writing	Figure out the big ideas in math.
Figure out unknown words	Use a variety of sentence lengths and patterns	Computations quickly and accurately
Self-monitor and self-correct	Write so thoughts flow smoothly and are easy to read.	Makes reasonable estimations.
Make mental pictures.	Carefully chose the most effective words to express the ideas.	Use mental math
Connect what you read with what you already know.	Chose the tone and point of view that suit writing purpose	Make sense of problems
Extract information from texts, charts, graphs, maps, and illustrations.	Use personal style to make writing unique.	Use a variety of strategies to solve math problems.
Identify and interpret literary elements in different genres.	re-read, reflect, revise, and edit.	Explain and give reasons for math thinking.
Summarize what has been read		Work hard a math.
Make inferences and drew conclusions.		

Curriculum Adaptation :

Even a child with many needs is to be involved with non-disabled peers to the maximum extent appropriate. Just because a child has learning disabilities or needs

modifications to the general curriculum does not mean that he or she may be removed from the general education class. If a child is removed from the general education class for any part of the school day, the IEP team must include in the IEP an explanation for the child's nonparticipation.

Because accommodations can be so vital to helping children with disbilities access the general curriculum, participate in school (including extracurriculuar and nonacademic activities), and be educated alongside their peers without disabilities, IDEA reinforces their use again and again, in its requirements, in its definitions, and in its principles. The wealth of experience that the special education field has gained over the years since IDEA was first passed by Congress is the very resource you'll want to tap for more information on what accommodations are appropriate for students, given their disability, and how to make those adaptations to support their learning.

IEP

An individualized Education Program, or IEP, is an agreement between school and parent that outlines the special education and related services to be delivered to a child who has been found eligible for services under the Individuals with Disabilities Education Act (IDEA). The documdnt provides several important statements about the progress to be accomplished and the specific amounts of special education and related services to be delivered in order to achieve the desired progress. In addition, an IEP outlines to be furnished both in daily instructional settins and in state-and district-wide testing. It also details how progress will be determined and a method by which parents will be regularly advised of that progress.

Further Education

In terms of inclusiveness in education, this means providing adequate support services for people with varying degrees of learning disability that wish to enter into further educatin. This can include support such as helping a person with learning disabilities use public transport services and other services that they will need to use frequently in order to continue into independent further education.

Transition Education

A transtiion plan is the section of the Indivicualized Education Program (IEP) that outlines transition goals and servives for the L.D. student. The transition plan is based on a high school student's individula needs, strengths, skills, and interests.

Transition planning is used to identify and develop goals which need to be accmomplished during the current school year to assist the student in meeting his post-high school goals.

Lifelong Education

During the last fifty years, constant scientific and technological innovation and change has had a profound effect on learning needs and styles. Learning can no longer be divided into a place and time to acquire knowledge (school) and a place and time to apply the knolwdge acquired (the knowledge). Instead, learning can be seen as something that takes place on an ongoing basis from our daily interactions with others and with the world around us. It can take the form of formal learning or informal learning, or self-directed learning for L.D. students.

1.7. ‘‘Cheek your progress’’ :

1. What is Learning Disability ?
2. What is the characteristic of Learning Disability (L.D.) ?
3. What are the types of L. D.
4. Discuss about strategies for reading, writing and maths.
5. Discuss about Curriculum adaptation for L.D. students.
6. What is IEP ? Discuss about IEP for L.D. students.
7. What is Transition Education ? Discuss about transition education for L.D. students.

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