



## Department of Open & Distance Learning

### Punjabi University, Patiala

**Class : B.Ed.-II**

**Semester : 4**

**Paper : XXV & XXVI (Special Education)**

**Medium : English**

**Unit : II**

#### ***Lesson No.***

- 2.1. : Children with Autism
- 2.2. : Mentally Retarded Children
- 2.3. : Learning Disabled Children
- 2.4. : Orthopedically Handicapped Children
- 2.5. : Visually Impaired Children
- 2.6. : Locomotor Impaired

***Department website : [www.pbidde.org](http://www.pbidde.org)***

**SPECIAL EDUCATION: CHILDREN WITH AUTISM**

**STRUCTURE OF THE LESSON**

**2.1.1 Objectives**

**2.1.2 Introduction**

**2.1.3 Characteristics**

**2.1.4 Causes**

**2.1.5 Educational Provisions**

**2.1.6 Suggested Questions**

**2.1.7 Suggested Books and Web Sources**

**2.1.1 Objectives**

After reading this lesson, the students will be able to:-

1. Define 'Autism.'
2. Describe the characteristics of autism.
3. Explain the various causes of autism.

**2.1.2 Introduction**

Autism spectrum disorder (ASD) and autism are both general terms for a group of complex disorders of brain development. These disorders are characterized, in varying degrees, by difficulties in social interaction, verbal and nonverbal communication and repetitive behaviors. ASD can be associated with intellectual disability, difficulties in motor coordination and attention and physical health issues such as sleep and gastrointestinal disturbances. Some persons with ASD excel in visual skills, music, math and art.

Autism appears to have its roots in very early brain development. However, the most obvious signs of autism and symptoms of autism tend to emerge between 2 and 3 years of age, children show impairment in language development, especially comprehension, unusual language usage, poor response to name calling, deficient non verbal communication, minimal recognition or responsiveness to other people's happiness or distress, and limited variety of imaginative play or pretence, and especially social imagination.

During school these type of children face problem in language development, withdrawal tendency, inability to join play of other children, inappropriate attempts etc.

**2.1.3 Characteristics**

**Social Skills**

- 1) Very little or no eye contact.
- 2) Resistance to being held or touched.
- 3) Tends to get too close when speaking to someone (lack of personal space).
- 4) Responds to social interactions, but does not initiate them.
- 5) Does not generally share observations or experiences with others.
- 6) Difficulty understanding jokes, figures of speech or sarcasm.
- 7) Difficulty reading facial expressions and body language.
- 8) Difficulty understanding the rules of conversation.

- 9) Difficulty understanding group interactions.
- 10) Gives spontaneous comments which seem to have no connection to the current conversation.
- 11) Makes honest, but inappropriate observations.
- 12) Seems unable to understand another's feelings.
- 13) Prefers to be alone, aloof or overly-friendly.
- 14) Difficulty maintaining friendships.
- 15) Finds it easier to socialize with people that are older or younger, rather than peers of their own age.
- 16) Unaware of/disinterested in what is going on around them.
- 17) Talks excessively about one or two topics (dinosaurs, movies, etc.).
- 18) Overly trusting or unable to read the motives behinds peoples' actions.
- 19) Minimal acknowledgement of others.

### **Linguistic/language development**

- 1) Abnormal use of pitch, intonation, rhythm or stress while speaking.
- 2) Speech is abnormally loud or quiet.
- 3) Difficulty whispering.
- 4) Repeats last words or phrases several times. Makes verbal sounds while listening (echolalia).
- 5) Often uses short, incomplete sentences.
- 6) Pronouns are often inappropriately used.
- 7) May have a very high vocabulary.
- 8) Uses a person's name excessively when speaking to them ("Mary, we are having lunch. Right, Mary?").
- 9) Speech started very early and then stopped for a period of time.
- 10) Difficulty understanding directional terms (front, back, before, after).

### **Behaviours**

- 1) Obsessions with objects, ideas or desires.
- 2) Ritualistic or compulsive behaviour patterns (sniffing, licking, watching objects fall, flapping arms, spinning, rocking, humming, tapping, sucking, rubbing clothes).
- 3) Fascination with rotation.
- 4) Play is often repetitive.
- 5) Unusual attachment to objects.
- 6) Quotes movies or video games.
- 7) Difficulty transferring skills from one area to another.
- 8) Perfectionism in certain areas.
- 9) Frustration is expressed in unusual ways.
- 10) Feels the need to fix or rearrange things.
- 11) Transitioning from one activity to another is difficult.
- 12) Difficulty attending to some tasks.
- 13) Gross motor skills are developmentally behind peers (riding a bike, skating,

- running).
- 14) Fine motor skills are developmentally behind peers (hand writing, tying shoes, and scissors).
  - 15) Extreme fear (phobia) for no apparent reason.
  - 16) Verbal outbursts.
  - 17) Unexpected movements (running out into the street).
  - 18) Difficulty sensing time (Knowing how long ten minutes is or three days or a week).
  - 19) Difficulty waiting for their turn (such as in a line).
  - 20) Causes injury to self (biting, banging head).

**Emotions or sensitivities**

- 1) Sensitivity or lack of sensitivity to sounds, textures (touch), tastes, smells or light.
- 2) Difficulty with loud or sudden sounds.
- 3) Unusually high or low pain tolerance.
- 4) Intolerance to certain food textures, colours or the way they are presented on the plate (one food can't touch another).
- 5) Inappropriate touching of self in public situations.
- 6) Desires comfort items (blankets, teddy, rock, string).
- 7) Laughs, cries or throws a tantrum for no apparent reason.
- 8) Resists change in the environment (people, places, objects).
- 9) An emotional incident can determine the mood for the day - emotions can pass very suddenly or are drawn out for a long period of time.
- 10) Calmed by external stimulation - soothing sound, brushing, rotating object, constant pressure (hammock, rolled in a blanket).
- 11) May need to be left alone to release tension and frustration.

**School-related skills**

- 1) Exceptionally high skills in some areas and very low in others.
- 2) Excellent rote memory in some areas.
- 3) Difficulty with reading comprehension (can quote an answer, but unable to predict, summarize or find symbolism).
- 4) Difficulty with fine motor activities (colouring, printing, scissors, gluing).-
- 5) Short attention span for most lessons.
- 6) Resistance or inability to follow directions.
- 7) Difficulty transitioning from one activity to another in school.

**Health/movement**

- 1) Walks on toes.

- 2) Difficulty changing from one floor surface to another (carpet to wood, sidewalk to grass).
- 3) Odd or unnatural posture (rigid or floppy).
- 4) Difficulty moving through a space (bumps into objects or people).
- 5) Walks without swinging arms freely.
- 6) Incontinence of bowel and/or bladder.
- 7) Constipation.
- 8) Frequent gas (flatulence, burping) or throwing up.
- 9) Appearance of hearing problems, but hearing has been checked and is fine.
- 10) Allergies and food sensitivities.
- 11) Irregular sleep patterns.
- 12) Apparent lack of concern for personal hygiene (hair, teeth, body odours).

#### **2.1.4 Causes**

Scientists are not certain about what causes ASD, but it is likely that both genetics and environment play a role. Researchers have identified a number of genes associated with the disorder. Studies of people with ASD have found irregularities in several regions of the brain. Other studies suggest that people with ASD have abnormal levels of serotonin or other neurotransmitters in the brain. These abnormalities suggest that ASD could result from the disruption of normal brain development early in fetal development caused by defects in genes that control brain growth and that regulate how brain cells communicate with each other, possibly due to influence of environmental factors on gene function.

Some studies suggest that some people have a genetic predisposition to autism. Identical twin studies show that if one twin is affected, there is up to a 90% chance the other twin will be affected. Researchers are looking for clues about which genes contribute to this increased susceptibility. In some cases, parents and other relatives of a child with ASD show mild impairments in social and communicative skills or engage in repetitive behaviors. Evidence also suggests that some emotional disorders, such as bipolar disorder, occur more frequently than average in the families of people with ASD.s

#### **2.1.5 Educational Provisions**

1. Least Restrictive Environment (LRE). School districts are required to educate students with disabilities in regular classrooms with non-disabled peers, in the school they would attend if not disabled, to the maximum extent appropriate, supported with the aids and services required to make this

possible. This does not mean that every student has to be in a general education classroom. The objective is to place students in as natural a learning environment as possible, within their home community, as much as possible. Participation of students with autism in the general education environment is often called mainstreaming or inclusion. Inclusion does not mean placing a student with autism in general education just like a typical learner; a variety of supports are provided to create a successful environment and experience for everyone involved. Careful planning and training are essential to provide the right modifications and accommodations. Supports might include a specially trained classroom or one-on-one paraprofessional, altering testing environments or expectations, adapting curriculum, visual supports or adaptive equipment, etc. The special education department should support general education staff and others in the school community who interact with students with autism. The less restrictive a student's setting, the greater the opportunities for a child with autism to interact with the school population outside the special education environment - this means support staff, general education and special area teachers, office staff, custodians and most importantly, peers, who are not necessarily knowledgeable about autism.

2. Applied Behavior Analysis (ABA). ABA is the name of the systematic approach to the assessment and evaluation of behavior, and the application of interventions that alter behavior. The principles of analyzing behavior to understand its function, controlling the environment and interactions prior to a behavior (antecedents) and adjusting responses (consequences), and using positive reinforcement (rewarding what you want to see) are all ABA techniques that are often used in shaping behavior in individuals with autism. Many programs use the principles of ABA as a primary teaching method, or as a way of promoting positive and adaptive behavior.
3. Discrete Trial Teaching (DTT) or the Lovaas Model: Named for its pioneer (ABA-based) Teacher-directed DTT targets skills and behaviors based on an established curriculum. Each skill is broken down into small steps, and taught using prompts, which are gradually eliminated as the steps are mastered. The child is given repeated opportunities to learn and practice each step in a variety of settings. Each time the child achieves the desired result, he receives positive reinforcement, such as verbal praise or something that he finds to be highly motivating.
4. Floortime, or Difference Relationship Model (DIR): The premise of Floortime is that an adult can help a child expand his circles of communication by meeting him at his developmental level and building on his strengths. Therapy is often incorporated into play activities – on the floor – and focuses on developing interest in the world, communication and emotional thinking by following the child's lead.
5. Picture Exchange Communication System (PECS): The PECS system allows children with little or no verbal ability to communicate using pictures. An adult helps the child build a vocabulary and articulate desires, observations or feelings by using pictures consistently. It starts with teaching the child to exchange a picture for an object. Eventually, the individual learns to distinguish between pictures and symbols and use these to form sentences. Although PECS is based on visual tools, verbal reinforcement is a major

component and verbal communication is encouraged.

#### 6. Therapies Used For Students with Autism.

(i) Occupational Therapy (OT). A Certified Occupational Therapist, (OT) brings together cognitive, physical and motor skills to enable the individual to gain independence and participate more fully in life. For a student with autism, the focus may be on appropriate play, fine motor and basic social and life skills such as handwriting, independent dressing, feeding, grooming and use of the toilet. The OT can recommend strategies for learning key tasks to practice in various settings.

(ii) Physical Therapy (PT). A Certified Physical Therapist (PT), focuses on problems with movement that cause functional limitations. Students with autism frequently have challenges with motor skills such as sitting, walking, running and jumping, and PT can also address poor muscle tone, balance and coordination. An evaluation establishes the abilities and developmental level of the child, and activities or supports are designed to target areas of need.

(iii) Sensory Integration Therapy (SI). (SI) therapy addresses disruptions in the way an individual's brain processes sensory input, developing strategies to help process these senses in a more productive way. A sensory integration-trained OT or PT begins with an evaluation, and then uses research-based strategies to plan an individualized program for the child, matching sensory stimulation with physical movement to improve how the brain processes and organizes sensory information.

(iv) Speech-Language Therapy (SLT). Certified Speech-Language Pathologists (SLP) use a variety of techniques to address a range of challenges for children with autism. SLT is designed to address the mechanics of speech and the meaning and social value of language. For students unable to speak, SLT includes training in other forms of communication, or oral exercises to promote better control of the mouth. For those who seem to talk incessantly about a certain topic, SLT might work on expanding the conversational repertoire, or reading social cues and adjusting conversation to the needs of the listener. An SLT program begins with an evaluation by an SLP and therapy may be conducted one-on-one, in a small group or in classroom/natural settings.

#### **2.1.6 Suggested Questions**

Q 1. What do you mean by Autism?

Q 2. Discuss the characteristics of Autism in detail.

Q 3. What are the causes of Autism?

Q 2.1. What is the role of teacher in shaping the behavior of an autistic child?

#### **2.1.7 Suggested Books and Web Sources**

- 1 Heward, William L. and Orlansky, Michael D. (1992). Exceptional children. Fourth Edition. New York : Macmillan Publishing Company.
- 2 Gearheart, Bill R., Weishahn, Mel W. and Gearheart, Carol J. (1992). The Exceptional student in the regular classroom. Fifth Edition. New York: Macmillan Publishing Company.
- 3 Kotwal, Parijit. (2008). Special Education. Delhi : Authors press Jawahar Park Laxmi Nagar
- 4 Kaur, Rajpal. (2005) Special Education. Delhi : Deep and Deep Publications.
- 5 <https://en.wikipedia.org/wiki/Autism>
- 6 [www.fixers.org.uk/What-is-Autism](http://www.fixers.org.uk/What-is-Autism)

**SPECIAL EDUCATION : MENTALLY RETARDED CHILDREN**

**STRUCTURE OF THE LESSON**

**2.2.1 Objectives**

**2.2.2 Introduction**

**2.2.3 Classification of Mental Retardation**

**2.2.4 Characteristics of Mental Retardation**

**2.2.5 Causes of Mental Retardation**

**2.2.6 Curricula for Individuals with Mental Retardation**

**2.2.7 Suggested Questions**

**2.2.8 Suggested Books and Web sources**

**2.2.1 Objectives:**

**After reading this lesson, the students will be able to:**

1. Understand the meaning of mental retardation.
2. Explain the characteristics of mental retardation.
3. Describe the causes behind mental retardation.
4. Explain the need of special type of curriculum for mentally retarded children.

**2.2.2 Introduction**

Across the Centuries, persons with mental retardation have been sometimes feared, sometimes considered fools and almost always misunderstood. Historically, individuals called mentally retarded (fools, morons, imbeciles, or idiots) were primarily those recognized today as persons with severe or profound mental retardation, plus some persons with or moderate mental retardation. Those called mildly mentally retarded were not considered part of group.

Mental retardation has been defined by various individuals and groups, for a variety of purposes, but in the schools, until the mid-1970s, students were commonly identified as mentally retarded based on IQ scores. There is little doubt that IQ-only identification led to inaccurate classification in some cases. In 1973, the American association on mental deficiency (AAMD), now the American Association on mental Retardation (AAMR), provided the following definition: "Mental retardation refers to significantly sub-average general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested during the developmental period"

According to Mental Deficiency Act of 1921 of England: "Mental defectiveness is a condition of arrested or incomplete development of mind existing before the age of eighteen years, whether arising from inherent causes or induced by disease or injury."



According to Tredgold (1937): "It is a state of incomplete mental development of such a kind and degree that the individual is not capable of adapting himself to the normal environment of his fellowmen in such a way as to maintain existence independently of supervision, control or external support."

According to World Health Organisation (WHO) (1954): " It is incomplete or insufficient general development of mental capacities."

According to Kirk(1954): "The mentally retarded children though they possess subnormal intelligence but also they are socially incompetent so far social adjustment is concerned. Not only they have intellectual or mental retardation right from the birth and so far the growth and development are concerned they express retarded maturity. At times these children have hereditary deficiencies and also at times mental retardation disease is incurable."

According to Benda(1954): " A Mentally defective persons is a person who is incapable of managing himself and his affairs, on being taught to do so, and who requires supervision, control and care for his own welfare and the welfare of the community."

### 2.3.3 Classification of Mental Retardation

Many systems have been proposed for classifying mental retardation by type or degree of severity. In 1963 Gelof reported that 23 different classification systems were in use in English-speaking countries. Various systems have been developed that classify mental retardation according to etiology (cause) or clinical type (for Example, Down syndrome). Although these classification systems are useful to physicians, they have little utility for education. The AAMR classified mental retardation by degree or level of severity, as measured by an IQ test. Table lists the levels of mental retardation according to the most recent AAMR manual (Grossman,1983). The range of scores representing the high and low ends of each level indicates an awareness of the inexactness of intelligence testing and the importance of clinical judgment in determining level of severity. For many years educators used the terms educable mentally retarded (EMR) and trainable mentally retarded (TMR) to refers to mild and moderate levels of retardation respectively. Some educators and school systems still use these terms.

**Table: Level of mental retardation according to the AAMR (American Association on Mental Retardation)**

Level	Intelligence Test Score
Mild	50-55 to approx. 70 (+/-5)
Moderate	35-40 to 50-55
Severe	20-25 to 35-40
Profound	Below 20-25

#### Mild Retardation:

Children with mild retardation have traditionally been educated in self-contained classrooms in the public schools. Today, many children with mild mental retardation are being educated in regular classrooms, with a special educator helping the classroom teacher with individualized instruction for the child and providing extra tutoring in a resource room as needed. Many mildly retarded children are not identified until they enter school and sometimes not until the second or third grade, when more difficult academic work is required.

Traditionally, school programs for students with mild mental retardation stressed the basic academic subject—reading, writing, and arithmetic—during the elementary years, with a shift in emphasis to vocational training and work-study programs in junior high and high school. Most mildly retarded students master academic skills up to about the sixth grade level and are able to learn job skills well enough to support themselves independently or semi-independently. Many adults with mild mental retardation develop social and communication skills similar to those of their nonretarded peers: many are not recognized as mentally retarded outside school or after they finish school.

### **Moderate Retardation**

Unlike mildly retarded children, who may not be identified as needing special education until they reach school, most children with moderate retardation show significant delays in development during their preschool years. As they grow older, discrepancies generally grow wider between these children and their nonhandicapped age-mates in overall intellectual, social and motor development. Approximately 30% of those individuals classified as moderately retarded have down syndrome, and about 50% have some form of brain damage (Neisworth & Smith, 1948). Additional handicapping conditions and physical abnormalities are more common in people with moderate retardation than in individuals with mild retardation.

During their school years, children with moderate mental retardation are most often taught in self-contained classrooms with highly structured instructional programs designed to teach daily living skills. Academics may be limited to development of a basic sight-word vocabulary (e.g., "survival" words such as *exit*, *don't walk*, *stop*), some functional reading skills (such as simple recipes), and basic number concepts. In the past, most persons with moderate mental retardation were removed from society and placed in large institutions where they had little opportunity to develop and learn how to get along in the world. Today most people with moderate retardation are receiving the individualized levels of support and supervision they require to live and work in the community.

### **Severe and Profound Retardation**

Individuals with severe and profound mental retardation are almost always identified at birth or shortly afterward. Most of these infants have significant central nervous system damage, and many have other handicapping conditions. Although the AAMR (American Association on Mental Retardation) distinguishes between severe and profound retardation on the basis of IQ scores, the difference is primarily one of functional impairment. Until recently, training for individuals with severe retardation

focused primarily on self-care skills –toileting dressing, and eating and drinking –and communication development. A person with profound mental retardation may not be able to care for personal needs, may have limited or no independent mobility, and may require 24-hour nursing care.

## **2.2.4 CHARACTERISTICS/IDENTIFICATION OF MENTAL RETARDATION**

### **1. Personal-Social Skill Deficits**

For. Individuals with mild mental retardation, such deficits may not be so great as to be evident every moment of the day, but they show up in various circumstances. For example, a student may not be able to deal with emotion as well as might be expected considering age and experience. There may be problems with self-directed activities and initiative. Behavior may lead to a general conclusion—usually based on multiple criteria that the student is immature.

Students with mild mental retardation may be slow in interpreting social signals (for example, of acceptance or non-acceptance) and may have difficulty in getting along with peers, especially when any sort of dissension occurs. Such students may tend to socialize with younger children and when interacting with age peers, they may permit themselves to be blamed for behaviors that are really group initiated. They may also have unusual difficulty in understanding that others see and interpret situations differently than they do.

### **2. General Academic Retardation**

Students who are later classified as mildly mentally retarded are usually referred for evaluation because of lack of progress in academic areas and inability to learn when taught in the same manner as other students in class.

In primary grades, this characteristic is more often first recognized because of poor progress in reading, but general academic retardation usually involves difficulty in all academic areas of the school program.

### **3. Below-Average Language Ability**

Although language ability that is below average may indicate hearing impairment, learning disability, lack of opportunity to develop language, or other factors, students with mental retardation almost always have below-average (for age) language ability.

### **4. Below-Average Ability to Generalize and Conceptualize**

Below-Average ability to generalized and conceptualize is at least partially measured by most individual tests of intelligence and thus is to be expected, since intelligence test result play a significant part in determining mild mental retardation . It is useful for classroom teachers to think in terms of the abilities of students in these areas, but care should be taken to avoid confusion between ability to generalize of conceptualize relation to what is read and ability to generalize or conceptualize in other setting. A student with a serious reading problem, for example, may appear to be unable to conceptualize if reading is the base for conceptualization. However, the student may be able to conceptualize quite well if initial information is provided

verbally. In contrast, a student with mild mental retardation has a tendency to have difficulty with generalization and conceptualization in a variety of setting.

#### **5. An External Locus of Control**

As a result, students with mental retardation tend to believe that they have little personal control or influence over their environment or the consequences of their actions.

#### **6. A high expectation of failure**

Because of many, repeated failures, students with ,mental retardation tend to anticipate failure and after a time may refuse to attempt new learning tasks.

#### **7. Outerdirectedness**

A tendency to rely on external cues or instructions for behavior .

#### **8. Limited Intelligence**

Mentally retarded children have limited intelligence . They are unable to learn useful information skills, adapt to new problems and conditions of life , profit from past experiences, engage in abstract and creative thinking, employ critical judgment, surmount difficulties and exercise foresight. Their learning usually depends upon rote memory than on understanding. All this is due to their low intellectual level.

#### **9. Absence of Clarity**

These children cannot express their needs, feeling and thoughts clearly.

#### **10. Inability to Decide**

They are unable to decide even on trivial issues. They cannot take even small decisions. They do not know what to do , say and so on.

#### **11. Inability to remember**

Some of the mentally children can remember only for a short time of what they are told. Sometimes they do not remember at all.

#### **12. Lack of Co-ordination**

Some have difficulty in sucking, chewing or eating, use of hands or moving from place to place .

#### **13. Poor sense of Judgement**

They have poor sense of judgement. They cannot distinguish between right and wrong, moral and immoral etc.

#### **14. Personality traits**

Among the retardates, it is rare to find individuals who might be described as dynamic, charming, forceful, vicious, obnoxious or outstanding. Many of them are colorless and tractable individuals. They also tend to be submissive. The defectives are either stable, apathetic or unstable and excitable.

#### **15. Organism inferiority**

Mentally retarded children suffer from general structural and functional inferiority of the entire organism. They learn to talk and walk at a much later age . defective speech and shuffling gait are two very prominent characteristics of such individuals. Their sensory discrimination is less acute . The defectives are relatively insensitive to pain and their auditory and visual defects are common. They fall short of normal performance on tests of mechanical ability.

**16. Delay in development**

The mentally retarded children have delayed development. If child shows delay in the various aspects of development such as sitting, crawling, walking, speaking etc. then, there may be chances of his being mentally retarded.

**2.2.5 Causes of Mental retardation****1. Genetic:**

One of the most visible condition associated with mental disorder is Dawn's syndrome. Mongolism was also used to explain this symptom because of similarity in physical features. Down's syndrome doubles when the mother's age exceeds 30 years. Down's syndrome contains non-sex determining chromosome Chromosomal anomaly explain many forms of mental disorders. In non dys-junction Down's syndrome one pair of genes fails to separate at conception, resulting in an extra or 47<sup>th</sup> chromosome after 46 (trisomy no. 21). This is related to older age of the mother.

Translocation is common. It occurs because of faulty cell division in which one chromosome is attached to another. In Mosaicism, the cell receive an extra twenty first chromosome, but there are fewer abnormalities in this form of Down's syndrome.

The child with Dawn's Syndrome has small ears, protruding tongue with deep fissures, slanted eyes, broad hands with short fingers, short stature and underdeveloped genitalia. Congenial heart disorders and respiratory complication are quite common.

Degree of retardation in such cases varies from mild to severe. Treatment would involve special educational provisions and medication.

**2. Turner's syndrome**

Turner's syndrome results from the absence of an X-chromosome in the female (XO). Learning problems are usually seen, including loss of hearing. Treatment includes use of female hormones to develop female sex characteristics.

**3. Klinefelter's syndrome:**

It is seen in males due to the presence of an additional X-chromosome (XXY) and chromosome count of 47. The male usually develops female characteristics. Mental retardation due to this factor remains within the moderate range.

**4. Congenital Defects:**

Microcephaly and Hydrocephaly are two types of disorders which involve cranial and congenital defects. These are due to unknown origins and they exist before birth. Primary microcephaly is inherited whereas secondary microcephaly is acquired. In the case of primary microcephaly the brain tissue is underdeveloped but in relation to size of the cranium. Retardation ranges from mild to severe.

Overproduction or under absorption of cerebrospinal fluid is termed as hydrocephaly. The head is globe shaped, the bridge of the nose is flat and the eyes

are pushed downward, and become more widely spaced. It is not hereditary. Surgery is applied to prevent further disorders.

**5. Trauma:**

Prenatal, Perinatal and Postnatal injury cause trauma. Radiation cause preatal injury which leads to retardation. Mechanical injury or birth injuries cause brain damage. Anoxia is responsible for mental retardation. Postnatal anoxia are caused by shock, respiratory difficulties. The extent of brain injury will determine the degree of retardation.

**6. Metabolic and Nutritional Disorders:**

Galactosemia is a carbohydrate disorder which is transmitted genetically. In such cases, the infants fail to metabolise the galactose in milk unless the child is placed on a low lactose diet mental retardation onsets. Similarly, when the body fails to change phenylalanine into tyrosine, it leads to phenylketoneurea. (PKU) which can be detected easily by urine culture or blood analysis. Low protein diet acts as prevention to such disorders. Hypothyroidism or Cretinism is a common disorder leading to low IQ. Use of thyroxin can lessen cretinism.

**7. Gestational Factors**

Gestational disorders like prematurity also causes mental retardation. Even post maturity is also harmful in sense that surgery is applied for birth and because of extra growth, there is prolonged labour and consequent adverse effects on the brain of the new born.

Severe environmental deprivation, special sensory handicaps (deafness and blindness) contribute to retarded development. Multiple handicaps such as epilepsy, and cerebral palsy also account for some degree of retardation. After birth the child can contract diseases such as meningitis and encephalities which can also result in retardation.

**8. Lead Poisoning**

Today most victims of lead poisoning are infants and toddlers who are likely to take edible objects into their mouths. Common source of lead poisoning is use of lead paints in the wall, furniture, cribe rails, toys, battery cases, chewing of lead pencils etc. the symptoms of lead poisoning include weight loss, anaemia, stomach cramps and constipation. Other symptoms include mental depression, irritability, and convulsions. Lead poison is retained in the body and leads to permanent brain damage, and mental retardation. Lead poisoning is treated by using medicines e.g. 'EDTA' and maintaining a healthy diet. Lead free environment is to be ensured. Prevention is most important since it leads to permanent damage of the brain.

**9. Infection and Intoxication:**

During the prenatal period the foetus is susceptible to damage from maternal infection and intoxication. Within the first three months of pregnancy, the mother's infection of rubella can lead to serious complications, such as: mental retardation, heart disorders, seizures etc. About 10 to 85 per cent of

rubella babies suffer from these types of ailments. Mental retardation occurs due to congenital syphilis, although, syphilis can be controlled. Postnatal infections caused by viruses, bacteria, parasites and fungi may also lead to mental retardation. Toxic agents cause damage to the foetus. Mother-foetal blood group incompatibility can lead to death and spontaneous abortion of the foetus. This is inherited.

**10. Excessive Exposure To X-rays and ultrasound:**

Exposure to X-ray in the early months of pregnancy, using harmful drugs especially those used in treatments of cancer, antiepileptic drugs and hormones can damage the growing foetus. Untreated fits of the mother, and accidents from falls resulting in injury to the abdomen can damage to growing foetus and lead to mental retardation.

**11. Brain Diseases:**

Neurofibromatosis and Tuberous sclerosis are two examples of gross brain disease. Neurofibromatosis is hereditary and is characterised by brownish spots on the skin, and tumours in the brain and nervous system. Tuberous sclerosis is characterised by reddish-orange nodules in a butterfly pattern in the face and cheeks. This is hereditary. Its treatment consists of removal of tumours wherever possible and use of anticonvulsants in case of seizures.

Huntington's chorea is a condition that does not appear generally until a person is in the mid thirties, at which progressive deterioration of the brain occurs. Preventive measures include sterilisation.

**12. Deprivation:**

Low Socio Economic Status through poor language environment, large number of children in the family, emotional suffering of mother during pregnancy, nutritional deficiencies of the mother during pregnancy, cause impairment in intellectual functioning.

**13. Mother-foetal blood group incompatibility:**

Mother-foetal blood group incompatibility can lead to death and spontaneous abortion of the foetus. This is inherited. These are of two types:

a. **ABO-incompatibility:**

ABO incompatibility concerns the blood of the mother and foetus blood types. If the mother's blood and foetus's blood (A,B, AB, O) are different, various problems can ensue. A.B.O. incompatibility occurs with second and later pregnancies. However, if the mother has O-type blood and foetus has A-type blood, incompatibility can even occur during first pregnancy.

b. **RH-incompatibility:**

Typically if the mother carries RH-negative blood, she is administered Rho Gam with 72 hours after birth of a RH positive child. More recent practice indicates that Rho Gam can be administered periodically during pregnancy.

**2.2.6 CURRICULA FOR INDIVIDUALS WITH MENTAL RETARDATION**

Although all curriculum planning must be individualized, certain generalization related to severe/profound, moderate and mild mental retardation may be made with respect to appropriate planning. The following discussion is based on presently accepted educational practice related to these three levels. Various combinations of the instructional practice are common for students who are borderline with respect to these levels.

#### **Curriculum for individuals with Severe/Profound Mental Retardation**

Individual with severe/profound mental retardation are almost always identified at birth or very soon thereafter, and often, special provisions for their needs are instituted at an early age. A few years ago, such individuals were considered unable to learn, so education and training efforts were thought to be hopeless, Thus, individuals with severe/profound mental retardation were provided custodial care, which gave them protection and kept them away from other members of society.

Now, frequently, such individuals are educated in community facilities or separate , special classes in schools. Especially at the elementary school age, children with severe/profound mental retardation may spend part of each day in a regular class. Alternately , when programs are provided in school-based special classes, students from regular classes may serve as peer tutors. Preparation for and supervision of such peer tutoring, sometimes called reverse mainstreaming is usually handled by special class teachers, because the learning difficulties of individuals with severe/profound mental retardation dictate very specialized educational programming .

#### **Curriculum for individuals with Moderate Mental Retardation**

Individuals with moderate levels of metal retardation “can benefit from multifaceted training that will eventually prepare them for semi-independent or supervised living and working situations. Self-care skills like toileting, dressing, self-feeding and grooming are often worked on first, along with physical development and oral or signed communication”. In most schools students with moderate mental retardation spend much of their time in special class programs , but some are in regular classes for a considerable part of the day. Almost always, classroom teachers who have students with moderate mental retardation receive special assistance and such students receive at least some special instruction outside the regular class.

Because the emphasis for education of students and adults with moderate mental retardation is ability to function successfully in the community, it is important that such individuals associate with non-disabled peers to the greatest extent. In other words, learning to function alongside non-disabled persons is a significant part of their educational program. Learning to read significant words such as men, women, ladies room and danger is important , as is a basic understanding of money and use of the telephone. Skills such as counting , telling time, and basic cooking are also important. Memorizing home address, phone number, parent’s name, and other significant words and facts, along with learning work skills (such as being on time and completing tasks) are essential parts of specialized curriculum. In most instances, the curriculum is taught by a special teacher. For this reason, providing experiences alongside students in regular classrooms is important. The manner in which such experiences are provided varies in



relation to age of the students involved, the educational activities involved, and a host of other variables. In almost all instances, however such activities are planned jointly by a special education teacher or consultant and the regular classroom teacher.

### **Curriculum for individuals with Mild Mental Retardation**

A variety of special education supportive services should be available to regular classroom teachers, regardless of the level of mental retardation of the students under consideration. The following discussion, which targets instruction of students with mild mental retardation, assumes the existence of at least a moderate range of services.

In the first and second grades, the provision of teaching suggestions and special materials may permit students with mild mental retardation to remain full time in regular classrooms. If the disability is greater, part-time placement in a resource room may be an essential part of the total educational plan. In resource rooms, students receive much more individual help in developing basic reading and number skills and special teachers determine the approaches that best provide maximum growth when the students are in regular classes.

Many students mild mental retardation are later able to return to regular classes on a full-time basis; however, some need to move into part-time special class programs if the resource room setting proves to be insufficient to provide for their educational needs. A few students may continue in a part-time special program throughout their school years, but every effort should be made to help students function successfully in regular classes. If a student receive the benefit of several years of special programming that helps others return to regular classes but is of much less help to him or her, by age 12 or 13 a more special program must be considered. Such a program should focus on social skills, habits, attitudes and understandings that maximize the ability of the student to obtain and retain employment.

In conjunction with the emphasis on employability, special efforts to help the student become a knowledgeable consumer and a responsible parent and citizen must be initiated. Students in such programs still have some involvement with regular class programs, with emphasis on classes like driver education, typing, metal work, body and fender work and various semiskilled trades. Special educators always hope that a remedial effect will permit return to regular classrooms.

### **Classroom Settings**

**Following are several suggestions to maxi-mize classroom learning.**

1. Build Motivation to Learn in All Possible Ways.
2. Be Aware of Skills, Information, and Concepts
3. Use Concrete Rather Than Abstract Examples Whenever Possible.
4. Make Maximum use of Group Experiences as Vehicles for learning.
5. Create Opportunities for Verbal Expression.
6. Be Alert to Special Needs in the Abilities to Generalize and Conceptualize.
7. Use a Variety of Techniques to support or Simplify Learning Tasks. Following are several suggestions:
  - I. Reduce distractions in the learning environment whenever possible.
  - II. Provide for frequent review.

- III. Simplify instructions.
- IV. Introduce new vocabulary words before making new assignments.
- V. Assign problems in smaller clusters.
- VI. When practical, use peer tutors.
- VII. Whenever possible, use filmstrips or films to introduce broad new concepts, such as the tropics or the polar regions, or to introduce topics such as novels or classics that the class will discuss for a considerable period of time.
- VIII. Provide an outline of important points of reading assignments.
- IX. Use color coding when appropriate.
- X. Use picture and arrows on direction sheets or other written assignments.
- XI. Avoid true-false tests that require an understanding of language that the student may not have.

### **2.2.7 Suggested Questions**

- Q.1. How can we classify the mentally retarded children?
- Q.2. Give the characteristics of mentally retarded children?
- Q.3. What are the causes of mental retardation?
- Q.4. What educational provisions should be made for the different type of mentally retarded children?

### **2.2.8 Suggested books and web sources**

- 3 Heward, William L. and Orlansky, Michael D. (1992). Exceptional children. Fourth Edition. New York : Macmillan Publishing Company.
- 4 Gearheart, Bill R., Weishahn, Mel W. and Gearheart, Carol J. (1992). The Exceptional student in the regular classroom. Fifth Edition. New York: Macmillan Publishing Company.
- 5 Kotwal, Parijit. (2008). Special Education. Delhi : Authors press Jawahar Park Laxmi Nagar
- 6 Kaur, Rajpal. (2005) Special Education. Delhi : Deep and Deep Publications.
- 7 [www.education.com](http://www.education.com)>Learning and Your child>Mental Retardation
- 8 [www.minddisorders.com](http://www.minddisorders.com)>Kau-Nu

**SPECIAL EDUCATION : LEARNING DISABLED CHILDREN**

**STRUCTURE OF THE LESSON**

- 2.3.1 Objectives**
- 2.2.2 Introduction**
- 2.2.3 Causes**
- 2.2.4 Characteristics/Identification**
- 2.2.5 Educational approaches**
- 2.2.6 Suggested Questions**
- 2.2.7 Suggested Books and Web sources**

**2.3.1 Objectives:**

**After reading this lesson, the students will be able to:**

- 5. Define 'learning disabled children'.
- 6. Describe the causes of learning disability.
- 7. Explain the identification of learning disabled.

**2.3.2 INTRODUCTION**

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

A learning disability is any problem or disorder that interferes with the development of basic skills, and negatively affects a person’s ability to learn. Most people affected by learning disabilities are of average intelligence and had a normal upbringing and education. Learning disabilities are often defined in terms of academic deficits, but the underlying sources of the disability is in the person’s ability to understand and retain skills and knowledge. Learning disabilities may result in problem with attention, memory, reasoning, communication, behavior, or coordination.

Alan O. Ross has defined a learning disabled child as, “A child of at least average intelligence whose academic performance is impaired by a developmental

lag in the ability to sustain selective attention. Such a child requires specialized instruction in order to permit the use of his full intellectual potential.”

Kirk defined learning disability as, “A learning disability refers to retardation, disorder, or delayed development in one or more of the processes of speech, language, reading, spelling writing or Arithmetic resulting from a possible cerebral dysfunction or emotional or behavioral disturbance and not from mental retardation, sensory deprivation or cultural or instructional factors.”

### **2.3.3 CAUSES**

The first potential cause is minor brain or nerve damage. Even minor damage to part of the brain or the nerves leading to the brain can result in problems with memory, orientation, perception, or language. Malnutrition or illness can also result in a learning disability, since the brain may be deprived of oxygen or nutrients. Prolonged malnutrition or chemical imbalance can delay and parentally damage the development of the nervous system. Abnormally fast or slow fetal development is linked to learning disabilities, as well as the lack of frontal lobe development and dopamine pathways in the brain.

A mother’s use of drugs, tobacco, or alcohol during pregnancy causes the unborn child’s brain to be deprived of oxygen, and often causes brain damage that results in a learning disability. Medical research has also shown that children who require certain medications, or who are exposed to hazardous substance (such as mercury or lead), are more likely to have learning disabilities.

**A disability may also develop from lack of early learning experiences, or inadequate mental stimulation. Learning disabilities may also be inherited.**

### **2.3.4 CHARACTERISTICS / IDENTIFICATION**

1. Perceptual disorders hinder the brain’s ability to interpret and organize sights and sounds. Those affected by perceptual disorders often have trouble reading since they may not be able to pinpoint where one word ends and the next begins. They may also have trouble learning to speak, since they may not be able to distinguish between words that sound alike.
2. Learning disabilities affects memory. These disabilities make it difficult to recall what common items look like, or what sounds certain objects and animals sound like. Those affected by memory disabilities often have difficulty learning sequences such as the alphabet.
3. Learning disabilities interfere with a person’s ability to concentrate on a single task. These are known as attention deficit disorders (ADD). Those affected by ADD are easily distracted, daydream, and cannot focus their attention on a single task for more than a few minutes. Another type of concentration disorder is preservation and those affected by it cannot easily shift their attention from one task to another.
4. Behavior problems are also caused by learning disabilities, Hyperactivity is a common condition which affects children, resulting in them not being able to sit still. They act and speak on impulse and quickly become impatient.

Emotional liability is a disorder that causes mood changes for no apparent reason.

5. Orientation-related disabilities' affect a person's sense of direction, distance, and space. People with this condition are often unaware of where they are, even if they are in a familiar setting. They often have difficulty distinguishing up from down and left from right. This often causes reading problems, since they cannot remember which direction to read in or distinguish between similar letters (such as 'b' and 'd')
6. Muscle control disorders can cause clumsiness and balance problems. Some of these learning disabilities prevent certain types of movement. Two common muscle control disorders are dyspraxia (the inability to properly move the lips and tongue during speech) and dysgraphia (problems controlling the finger muscles for writing and typing).
7. Psycholinguistic disorders are learning disabilities that block the development of language skills. The most common psycholinguistic disorder is dyslexia, which interfere with the person's ability to properly understand written words and numbers. Dysphasia is a disorder that hinders the person's ability to produce or understand speech.
8. Nonverbal learning disabilities interfere with the ability to understand facial expressions and body language, often resulting in social problems and inappropriate behaviour.

### **2.3.5 EDUCATIONAL APPROACHES**

#### **1) Ability Training**

Ability training believe that a child's observed performance deficit (learning problem) is due to weakness in a particular ability thought necessary to perform a given task. A number of distinct approaches can be identified within the ability-training model. The most popular of these approaches are the visual-perceptual approach and the perceptual-motor approach according to kephart, motor development precedes visual development; lack of proper perceptual-motor development, such as eye-hand coordination, is often a cause of reading difficulty. In kephart's program four areas of motor development are taught balance and posture, locomotion, contact, and receipt and propulsion.

Another approach to teaching children with learning disabilities is the multisensory approach. Although in this approach teachers are more likely to work directly on academic skills. It is still based primarily on an information-processing model. As its name suggests, the multisensory approach employs as many of the child's senses as possible in an effort to help him learn. In learning a new letter, for example , the child would see the letter (visual), hear the letter (auditory) and trace the letter (kinesthetic and tactile).

#### **2) Skill Training**

Skill trainers believe that a child's demonstrated performance deficit is the problem: it is not the sign of an underlying disability, but the result of the child's not having had an appropriate opportunity to learn. For example , if a child

cannot master a complex behavior (such as reading a sentence) and she has had sufficient opportunity and she wants to succeed, a skill trainer would conclude that she has not learned the necessary prerequisite skills (such as reading single word, reading letter sounds and so on).

Skill trainers use (1) precise, operational definitions of the specific behaviors they intend to teach, (2) task analysis to break down complex skills into smaller units, or sub-skills, requiring the learner to master only one component of the task at a time, (3) direct teaching methods that require the learner to practice the new skill many times and (4) direct daily measurement to monitor the child's progress and evaluate instruction. Applied behavior analysis, direct instruction and precision teaching are some of the skill-training approaches. All are closely related to one another and all systematically manipulate aspects of the child's environment (materials, instructions, cues, rewards and so on) in an attempt to facilitate the child's acquisition and retention of the new skill.

One skill-training teaching program is the Direct Instructional System for teaching Arithmetic and Reading (DISTAR), developed by Siegfried Engelmann and his colleagues. DISTAR programs are available for arithmetic, reading and language. Each DISTAR program consists of a highly sequenced series of skills, materials and activities designed to help children practice those skills and precise instructions for the teacher. The teacher works with a small group of children (4 to 10) who respond both individually and in unison to a fast-paced series of teacher-generated prompts and cues. Sometimes the teacher uses hand signals to direct and guide the children's response. Corrective feedback for incorrect responses and praise for correct responses are also used.

### 3) **The Regular Classroom**

Current legislation requires that handicapped children are to be educated with their non-handicapped peers to the maximum extent possible and that they should be removed from normal settings only to the extent that their disability necessitates. This means that some learning disabled children remain in the regular classroom and others are placed there for some time each day. Several factors combine to help make the regular classroom an effective learning environment for many learning disabled children today. These factors include the increased use of individualized instruction, teaching aids and peer tutoring programs in many regular classrooms. In addition, school districts are providing more in-service teacher-training programs, many of which focus on the identification, assessment and remediation of children's learning problems. Regular classroom teacher should promote independence, cooperative functioning and problem solving ability among all students. Provide varieties of options to motivate each child. Keep close contact with parents. Use short, brief directions and colour cues. Always write directions on the chalkboard. Classroom teacher always use diagrams or pictorial illustrations.

4) **The Consultant Teacher**

A consultant teacher provides support to regular classroom teachers and other school staff who work directly with learning disabled children. The consultant teacher helps the regular teacher select assessment devices, curriculum materials and instructional activities for the learning disabled children in that teacher's classroom. The consultant may even demonstrate new teaching methods or behavior management strategies. The major advantage of this model is that the consultant teacher can work with several teachers and thus indirectly provide special education services to many children.

5) **The Itinerant Teacher**

The itinerant teacher is a combination consultant teacher and learning disabilities tutor "on wheels". An itinerant teacher serves several schools in a given district or geographical area. She acts as a consultant to the regular classroom teachers her route and also serves as a tutor, providing direct assessment and instruction for some children. The itinerant teacher model attempts to combine the consultant teacher model and the resource room concept in areas where one school does not have enough learning disabled children to warrant its own program. In some rural areas, where learning disabled children are spread over a large area, this may be the only realistic way to provide special education services and allow learning disabled children to remain in the regular classroom .

6) **The Resource Room**

The resource room is the most widely used service delivery model for education children with learning disabilities . A resource room is a specially staffed and equipped classroom where learning disabled children come for one or several periods during the school day to receive individualized instruction. The resource teacher is a specially trained and certified learning disabilities specialist whose primary role is to teach needed skills to those children who are referred to the resource room. Most of the children are in their regular classrooms for most of the school day and they come to the resource room only for specialized instruction in the academic skills-usually reading or mathematics – or social skills they need to smooth their integration into the regular classroom. Other children may receive all of their academic instruction in the resource room and attend the regular classroom only for such periods as art, music and social studies. In addition to teaching learning disabled children, the resource teacher also works closely with each student's regular teacher to suggest and help plan the child's program in the regular classroom.

Some advantages of the resource room model are that (1) the children do not lose their identity with their peer group, so there is a smaller chance they will be stigmatized as "special"; (2) the children can receive the intense, individualized instruction they need every day, which might be impossible for the regular teacher to provide (with 29 other students); and (3) flexible scheduling allows the resource room to serve a fairly large number of learning disabled students.

**7) The Self-Contained Classroom**

In a self-contained classroom the learning disabilities teacher is responsible for all the educational programming for a group of 6 to 12 learning disabled children. The academic achievement deficiencies of some learning disabled children are so severe that they need to be full-time in a learning setting with a specially trained teacher. In addition their poor work habits and inappropriate social behaviors make some learning disabled children candidates for the self-contained classroom, where distractions can be minimized and individual attention stressed. However, it is important that placement in a self-contained class not be considered permanent. Children should be placed in a self-contained class only after unsuccessful attempts to serve them adequately in other less-restrictive environments.

**2.3.6 SUGGESTED QUESTIONS**

- Q.1. Define 'learning disability'.
- Q.2. Give characteristics of learning disabled children.
- Q.3. Explain the causes of learning disabled.
- Q.4. What special steps should be taken for the education of learning disabled?

**2.3.7 Suggested Books and Web sources:**

1. Heward, William L. and Orlansky, Michael D. (1992). Exceptional children. Fourth Edition. New York : Macmillan Publishing Company.
2. Gearheart, Bill R., Weishahn, Mel W. and Gearheart, Carol J. (1992). The Exceptional student in the regular classroom. Fifth Edition. New York: Macmillan Publishing Company.
3. Kotwal, Parijit. (2008). Special Education. Delhi : Authors press Jawahar Park Laxmi Nagar
4. Kaur, Rajpal. (2005) Special Education. Delhi : Deep and Deep Publications.
5. [www.helpguide.org/.../learning disabilities](http://www.helpguide.org/.../learning_disabilities)
6. [ldaamerica.org/types-of-learning-disabilities](http://ldaamerica.org/types-of-learning-disabilities)
7. <https://en.wikipeida.org/wiki/learning-disability>



**SPECIAL EDUCATION : ORTHOPEDICALLY HANDICAPPED CHILDREN**

**STRUCTURE OF THE LESSON**

- 2.4.1 Objectives**
- 2.2.2 Introduction**
- 2.2.3 Orthopedic Impairments**
- 2.2.4 Causes**
- 2.2.5 Characteristics**
- 2.2.6 Educational Provisions**
- 2.2.7 Suggested Questions**
- 2.2.8 Suggested Books and Web sources**

**2.4.1 Objectives:**

**After reading this lesson, the students will be able to:**

1. Define ' Orthopedically Handicapped Children'.
2. Explain the types of Orthopedic Impairments.
3. Identify the causes of Orthopedic Impairments.
4. Describe the characteristics of Orthopedic Impairments.

**2.4.2 INTRODUCTION**

Students grouped in this broad category range from those with asthma to those with cerebral palsy to those born without a limb or having lost a limb in an accident. One student may have limited use of hands but have good use of legs, or the opposite may be true. Another students may have good use of extremities but have difficulty breathing or have difficulty attending to learning tasks because of substance abuse by the mother prior to his or her birth. One student may be completely mobile in the classroom, but another may require crutches for mobility, and still another may need a wheelchair.

The focus of programming for students with orthopedic impairments is modification and as much as possible, elimination of physical barriers. The phrase "least restrictive environment" is concerned with appropriate placement of students who have disabilities. Least restrictive environment has special meaning when applied to students with orthopedic impairment. The least restrictive environment for these students is appropriate academic placement in a carefully considered physical environment.

Several other factors should also be given serious consideration before students with orthopedic impairments are placed in regular classrooms. Of

course, the willingness and ability of regular classroom teachers to accept and make changes for these students are of concern. The availability of support and ancillary personnel (resource teachers and therapists) is another factor. The degree of acceptance and positive interaction with nondisabled classmates is very important, too.

Specific student variables that should be considered are (a) modes of communication ; (b) stamina ; (c) intellectual ability ; (d) achievement level; (e) personality; (f) relative independence in ambulation and mobility ; (g) ability to profit from large-group instruction and (h) personal interest, motivation and commitment to being served in a regular classroom setting .

If it is recommended that a student who is orthopedically impaired be placed in a regular classroom, a resource teacher or consultant must begin specific planning to determine the best possible educational placement and arrange for transportation and therapeutic services as required. The mere presence or placement of the student in a regular classroom and accomplishment of assigned academic tasks may represent only a small part of the total educational need for the individual.

Independent ambulation is an important factor in the total development of students, possibly more important to students than many of the academic challenges. Movement is essential for not only maintaining and improving motor function but also facilitating important psychosocial interactions. Teacher should be aware of the effects that lack of movement has on students and their interactions with peers. Schools and classrooms should be arranged to enable movement to all areas. Independent ambulation must be given priority if students are to be allowed equal opportunities to grow socially, educationally, and emotionally.

Because of the diversity of problems presented by students who are orthopedically impaired, a complete continuum of educational services must be offered, ranging from full-time special class placement for students who are multiply disabled or severely physically disabled to full-time regular class placement for those able to function and achieve in a regular class environment. Children temporarily disabled by infectious diseases or accidents may receive hospital or homebound instruction, however, the primary goal should be education in regular classrooms wherever possible.

Today, it is possible for more children to be educated in regular classes than in years past because of the reduction of architectural barriers. Some modifications include bathroom stalls made wider and deeper, sinks and water fountains lowered to enable individuals in wheelchairs to use them, classroom doors widened to accommodate wheelchairs, and chalkboards lowered and hinged to allow individuals in wheelchairs to write comfortably.

### **2.4.3 ORTHOPEDIC IMPAIRMENTS**

This section discusses the most commonly found serious orthopedic impairments: (a) amputation, (b) arthritis, (c) cerebral palsy , (d) spina bifida, (e)

muscular dystrophy, (f) scoliosis, (g) hip disorders, and h) osteogenesis imperfecta. More than two hundred possible conditions are included in the category of orthopedic impairments; however, this section discusses the conditions found most commonly in regular classrooms.

### **1. Amputation**

#### **Nature of condition**

A missing limb may be a congenital condition, or a result of amputation made necessary by trauma, disease, or infection. In nearly all instances, the student will have been fitted with an artificial arm or leg (prosthesis). Generally, the student with a congenital condition has been fitted with a prosthesis very early and has adapted to it by the time he or she begins school. A prosthesis may be made of wood, metal, or plastic. Plastic materials are used more commonly today because of their light weight.

### **2. Arthritis**

#### **Nature of condition**

Although arthritis is a condition that occurs primarily in adults, it can begin at any age. The most common form of arthritis in students is juvenile rheumatoid arthritis.

Rheumatoid arthritis attacks the joints of the body and may involve many organs, such as the heart, liver, and spleen. There may be a skin rash, inflammation of the eyes, retardation of growth, and swelling and pain in the fingers, wrists, elbows, knees, hips, and feet. As the disease progresses, the joints may stiffen, making movement difficult and painful. Osteoarthritis, or the wear-and-tear type of arthritis, is generally confined to one joint and does not affect the whole body.

### **3. Cerebral Palsy**

#### **Nature of condition**

Cerebral palsy is not a disease but a group of conditions that may seriously limit motor coordination. Cerebral palsy is most commonly present at birth, but it may be acquired at any time as the result of a head injury or an infectious disease. It is characterized by varying degrees of disturbance of voluntary movements resulting from brain injury. Because of brain injury, the majority of students with cerebral palsy have multiple disabling conditions, such as mental retardation, hearing impairment, visual difficulties, language disorders, and speech problems.

The two most common types of cerebral palsy are spastic and athetoid. Spastic cerebral palsy is characterized by jerky or explosive motions when the student initiates a voluntary movement. For example, in a severe type, a student who is asked to draw a line from one point to another may demonstrate erratic or jerky movements.

A student with athetosis also has difficulty with voluntary movements, but controlling movement in the desired direction is an added problem. In other words, this student demonstrates extra or purposeless movements. In drawing a

line from one point to another, the student may have considerable uncontrolled movement.

#### **4. Spina Bifida**

##### **Nature of condition**

Spina bifida is a serious birth defect in which bones of the spine fail to close during the 12<sup>th</sup> week of fetal development. As a result, a cyst, or sack, is present in the lower back when the child is born. This protrusion is generally surgically treated during the child's first 24 to 48 hours of life. The extent of the disability resulting from this condition varies enormously. Some individuals have little or no disability, whereas others have varying degrees of paralysis of the legs and incontinence (lack of bowel and bladder control). In addition to the degree of paralysis and incontinence, the child may have impaired autonomic nervous system functioning (absence of perspiration) and absence of sensation below the level of the spinal defect.

Because of the deficiency of nerve fibers, a student may not be able to tell when his or her bladder is full. The bladder may overflow, and the student may not be aware of the situation until he or she sees the wetness through the outer clothing. There is a threat of infection from residual urine in the bladder, and the student may also have difficulty with bowel control.

Surgical procedures can assist in accommodating this condition, or artificial devices may be worn to collect urine. The student may also regulate fluid intake and adhere to a systematic voiding schedule. Generally, the student is able to take care of toileting needs, but young children may need some assistance from a classroom aide, volunteer, parent, or resource or itinerant teacher.

#### **5. Muscular Dystrophy**

##### **Nature of condition**

Muscular dystrophy is a progressive condition in which the muscles are replaced by a fatty tissue. The most common and most serious type, Duchenne's disease, occurs in male children. Early signs of the condition include a tendency to fall easily, clumsiness in walking, difficulty in climbing stairs, and difficulty in rising from the floor.

There is a progressive decline in the child's ability to walk. The child falls more frequently and eventually needs crutches to move about. As the child continues to lose strength, it is necessary to move from crutches to a wheelchair. Later, nearly all large muscles are involved and the child is bedridden. During the later stages, the child may be unable to raise his arms, sit erect, or hold his head up. Fortunately, the small muscles of the hands and fingers maintain some strength even during the most advanced stages.

#### **6 Scoliosis**

##### **Nature of condition**

Scoliosis means lateral (side-to-side) curvature to spine. The normal spine has several curvatures in a front-to-back direction but no curvature from side to

side. The most common type of scoliosis, idiopathic (cause unknown), is most commonly but not exclusively found in young adolescent girls. The second most common form, paralytic, is often associated with conditions such as cerebral palsy, spina bifida, muscular dystrophy, or poliomyelitis.

Teachers should watch for a difference in shoulder height, differing contours of normal flanks, or a hump when a child bends over.

## **7. Hip Disorders**

### **Nature of condition**

The two most common commonly found hip disorders in school-age children are congenital dislocation of the hip and Legg-perthes disease. Congenital dislocation of the hip occurs as a result of an abnormally formed hip joint. The hip may be completely dislocated, partially dislocated, or generally unstable. Medical intervention is initiated at an early age by gentle reduction of the misalignment and maintenance in the realigned position through the use of casts or splints. In more severe cases, surgery is required to release tightened tendons in the hip area.

Like congenital dislocation of the hip, Legg-perthes disease is a problem that can be corrected by bracing, casting, or surgery. It is a condition of unknown origin and results from a disruption of the blood supply in the head of the long bone of the thigh (the femur). The lack of blood supply to the growth center of the femur causes disintegration and flattening of the femoral head at the hip joint.

Legg-perthes disease is more common among males than females and is seen during the elementary school years (3 to 11 years of age). In some cases, surgery is required to reshape the hip socket or the head of the femur.

## **8. Osteogenesis Imperfecta**

**Nature of condition** Osteogenesis imperfecta, commonly called brittle bones, is a defect in the development of bone structure. Because of structural weakness, the bone breaks very easily. In addition, affected individuals often have deformity, dwarfism, and hearing loss. During the early years, it may be necessary for a child to live in a protective environment to minimize breaks and fractures.

### **2.4.4 CAUSES OF ORTHOPAEDICALLY HANDICAPS**

The causative factors of all types of handicaps are many. But a thorough knowledge of some main causative factors is necessary for planning a programme for them. The main factors are as follows:

- (i) **Hereditary Causes:** This anomaly passes down from generation to generation because of some sort of disturbance in the working of inherent gene mechanism. However, it may be noted that a particular condition may be hereditary and yet it may not manifest itself at birth or might not have appeared before the individual's immediate family.
- (ii) **Congenital Cause:** Congenital defects are those that are present at birth. Common congenital defects include club foot, dislocation of hip, missing

bones, bow leg, webbed finger etc. these defects are possible due to infection, nutritional deficiency, X-rays, glandular disorder of the mother, maternal malnourishment etc.

- (iii) **Acquired Cuses:** Acquired defects include birth injury, accidents, nutrition deficiency, defective bones or joints, viral infection, etc.

#### **2.4.5 CHARACTERISTICS/IDENTIFICATION OF ORTHOPAEDICALLY HANDICAPED CHILDREN**

**The various characteristics of orthopaedicapped children may listed as given below:**

1. The orthopedically handicapped children have poor motor control and coordination.
2. These children walk awkwardly or with a limb.
3. These children show signs of pain during physical exercise.
4. These fall frequently.
5. They show deformity in fingers, legs, hands, spine, and neck.
6. They often complain for pain in joints.
7. They have difficulty in sitting, standing, walking.
8. They have shaky movements.
9. They experience difficulty in picking, holding and putting in some place.
10. They are less creative than normals.
11. They show inability to learn.
12. They show withdrawal tendency.
13. They have poor ego, unconscious guilt feelings and a strong sense of fear.
14. They often feel inferior which may result in lack of confidence in their abilities and cause barriers in their personal and social adjustment.
15. They are passive, less persistent having shorter attention span, engage themselves in less exploration and display less motivation.
16. They are more dependent on adult and interact less with peers.
17. They have poor body image, high anxiety and frustration.
18. They are found to be quiet, conforming, tenderminded and somewhat tense.

#### **2.4.6 Educational Provisions**

##### **1) MEDICATION IN SCHOOLS**

1. A physician must provide written orders, including the name of the drug, dosage, how often it is to be taken, why it is needed and approximate termination date.
2. The medication for use in school must be in a container labeled by a pharmacist.
3. If the medication is administered by school personnel, proper authorization must be obtained, the medications stored in a locked space, and a record kept (date, time of day, and individual who administered).

##### **2) SPECIAL EQUIPMENT**

The modifications necessary depend on the age of the student, the severity of the impairment, and the primary use of the classroom. Young students may

need more specialized equipment, since they have not yet developed daily living skills or modes of ambulation. They may also require more assistance in the care of crutches, braces or wheelchairs.

**3) SPECIALIZED CLASSROOM FURNITURE**

1. Floors with nonskid surfaces, such as carpeting .
2. Doors with automatic door checks that allow them to remain open for wheelchairs and crutch walkers.
3. Lowered chalkboards (about 24 inches from the floor).
4. Classrooms with two doors, one near the front and another near the back.
5. Sinks accessible from three sides.
6. Toilet facilities near classroom.
7. Facilities for students who need additional rest.
8. Sliding doors on storage spaces.
9. A variety of equipment, such as standing tables, adjustable seats and adjustable desks.

**4) COMMUNICATION DEVICES**

There are many different types of communication systems, ranging from direct selection communication boards with the letters of the alphabet to highly sophisticated microcomputers . Communication boards are commonly used to help nonverbal students express themselves and answer questions. When using a manual communication board, a student points to numbers, letters, words or phrases. Other boards employ a scanning procedure, in which a student moves a light to indicate the word selected. Boards may require changes as students develop new vocabulary or pursue new areas of study.

Electronic communication boards are available from several sources. AutoCom displays student comments and responses on a television screen, enabling teachers to include the students in classroom discussions . Handi Voice provides a voice output from a self-contained vocabulary of over 400 words. These are only a few examples from the array of devices available. It is exciting to think about technological advances that greatly enhance the communication process for individuals with expressive or upper-extremity motor control difficulties.

**5) CLASSROOM AIDS**

Because of difficulty with movement, students who have orthopedic impairments may use a number of learning aids not typically found in regular classrooms. The aids may be very simple modifications, such as clay-wrapped pencils to assist with grasping and holding, four-fingered scissors, or clipboards or elastic tape to hold paper on writing surfaces. Page turners are useful for students with limited arm use; wrist or hand weights may assist students who have limited control. Conventional and modified type-writers are used extensively .

Talking books, previously available for the blind only are now available for individuals with impairments that prevent them from handling books comfortably . Resource or itinerant specialists in consultation with physical and occupational therapists may recommend other ways to modify materials.

**2.4.7 Suggested Questions**

- Q.1. Who are orthopedically handicapped? What are their characteristics? Explain in detail.
- Q.2. What special provisions can be made in school, at home and in society for the education of orthopedically handicapped?
- Q.3. Write short notes on:**
- Types of orthopedically handicapped children.
  - Causes of orthopedically impairments.

**2.4.8 Suggested Books and Web sources:**

- Heward, William L. and Orlansky, Michael D. (1992). Exceptional children. Fourth Edition. New York : Macmillan Publishing Company.
- Gearheart, Bill R., Weishahn, Mel W. and Gearheart, Carol J. (1992). The Exceptional student in the regular classroom. Fifth Edition. New York: Macmillan Publishing Company.
- Kotwal, Parijit. (2008). Special Education. Delhi : Authors press Jawahar Park Laxmi Nagar
- Kaur, Rajpal. (2005) Special Education. Delhi : Deep and Deep Publications.
- [www.ehow.com>Health](http://www.ehow.com/Health)
- <https://archive.org/details/childrenwithorth00shar>
- [www.disabled-world.com>DisabilityInformation>childDisability](http://www.disabled-world.com/DisabilityInformation/childDisability)



**SPECIAL EDUCATION: VISUALLY IMPAIRED CHILDREN**

**STRUCTURE OF THE LESSON**

**Structure of the Lesson**

**2.5.1 Objectives**

**2.5.2 Introduction**

**2.5.3 Identification**

**2.5.4 Causes**

**2.5.5 Educational Provisions**

**2.5.6 Suggested Questions**

**2.5.7 Suggested Books and Web Sources**

**2.5.1 Objectives**

After reading this lesson students will be able to:-

1. Define visually impaired children.
2. Explain the characteristics of visual impairment.
3. Describe the causes of visual impairment in children.

**2.5.2 Introduction**

The American Federation for the Blind (1987) suggests that terms such as visually impaired, low vision and partially sighted be used when referring to individuals who have usable sight, reserving the term blind for those who have no usable sight. Visual impairment which even with correction, adversely affects the child's educational performance. The term both includes partially seeing and blind children.

Barraga states, "A visually handicapped child is one whose visual impairment interferes with his optimal learning and achievement, unless adaptations are made in the methods of presenting learning experiences, the nature of the materials used, and/or in the learning environment".

The functional ability of the student is also important to consider. A student whose vision is unreliable, who finds it necessary to rely on other senses, and who cannot use print even with maximum magnification may be classified as functionally blind. A student who can perform visual tasks but does so with reduced precision and endurance and at reduced speed is likely to be considered as having low vision.

**2.5.3 Identification**

1. **Rubbing eyes:-** One behavior that may be an indication of a vision problem is eye rubbing. The rubbing may be observed in excessive amounts or during close visual work.
2. **Shutting or covering one eye:-**A student who is having difficulty seeing may close one eye or tilt or thrust the head forward.
3. **Light sensitivity:-**Some students with an undetected vision problem may demonstrate unusual sensitivity to bright or even normal light by shutting their eyes or squinting.

4. **Difficulty with reading:-** A student who have little difficulty with oral or spoken directions or tasks but experiences difficulty with visual work may have vision loss.
5. **Losing place during reading:-** A student who has a tendency to lose his or her place in a sentence or page while reading may have a vision problem.
6. **Unusual facial expressions and behaviors:-** A student who demonstrates an unusual amount of squinting, blinking, frowning or facial distortions while reading or doing other close work should be observed and possibly referred for further examination.
7. **Eye discomfort:-** The student who complains for burning, itching, or scratchiness of the eyes may be experiencing a vision problem and should be referred to the school nurse for closer examination.
8. **Holding reading material at an inappropriate distance:-** Behavior that may indicate a student have a visual problem is holding reading materials too close or too far or frequently changing the distance from near to far or far to near.
9. **Discomfort following close visual work:-** A student who complains for pains or aches in the eye, headaches, dizziness, or nausea following close visual work may have a vision problem.
10. **Difficulty with distance vision:-** A student who experiences difficulty in seeing distant objects or who avoids gross motor activities may have visual loss. Such a student may prefer reading or other academic tasks to playground activities.
11. **Blurred or double vision:-** A student who complains of blurred or double vision should be referred for a visual examination as soon as possible.
12. **Letter confusion:-** A student who confuses letters of similar shape ( o and a, c and e, n and m, h and n, f and t) may have impaired vision.
13. **Poor spacing:-** Poor spacing in writing and difficulty in staying on the line may be an indication of visual impairment.

#### 2.5.4 Causes of visual impairment

This discussion considers three major classifications of visual impairment. First, it considers refractive errors. Next, it considers muscle disorders, and then a varied group of impairments that may result in such problems as a reduced field of vision, reduced visual acuity, and blurring of vision.

#### Referative Errors

1. Myopia or nearsightedness:-An increased curvature of the eyeball, resulting in the focus of the light rays in front of the retina, causing difficulty in seeing distant objects clearly.
2. Hyperopia or farsightedness:- A decreased curvature of the eyeball, resulting in the focus of the light rays beyond the retina, causing difficulty in seeing clearly objects that are near.
3. Astigmatism:- Irregularities or unevenness in the cornea, causing light to be refracted differentially rather than at one point, resulting in blurred or distorted vision.

#### Muscular Defects

1. Nystagmus:- A circular or side to side, rapid, involuntary movement of the eye ball.

2. Strabismus:- An inability of the muscles to pull equally, resulting in crossed eyes or eyes pulled out –ward, usually requiring surgery for correction.
3. Amblyopia:- A loss of vision due to a muscle imbalance that results in double vision. The brain attempts to reduce the confusion by suppressing the vision in one eye, and the unused eye may atrophy, resulting in a loss of sight. This may often be corrected by surgery or by wearing a patch over the unaffected eye to force the affected eye to focus.

### **Other disorders**

Among the more common conditions that result in reduced field vision, blind spots, reduced visual acuity, or blurring of vision are glaucoma, cataract, retinal detachment, retinitis pigmentosa, muscular degeneration, corneal pathological condition, and diabetic retinopathy.

### **2.5.5 Educational Provisions**

If a student is not able to read material in printed form, the material may be provided through the tactile(touch) or auditory channels. If the student can read printed material but only with considerable difficulty, the material may be enlarged or the student may use magnification devices or reading machines. The primary nature of special education services for students who are visually impaired is modification and adaptation of educational materials.

Students who are blind or have low vision follow the same curriculum as their peers but need additional help. They study reading, math and social studies but may need Braille instructions, orientation and mobility training, typewriting, and training in the use of abacus. Generally, compensatory skills are taught by a resource or itinerant teacher and are not a responsibility of a regular classroom teachers.

### **Adapted Educational Equipments**

1. Braillewriters, Slates, and Styluses:-A braillewriter is a six key machine that is manually operated and types Braille. The slate is a metal frame with openings the size of the Braille dots, the stylus is a pointed object used to emboss the dots. The slate and the stylus can be carried in a pocket and are often used to take notes.
2. Raised –Line Drawing Boards:- A raised line drawing board is a board covered with rubber. A piece of acetate is placed on the board and a pen or pointed object is used to “raise” the drawings so that the student may feel them. A teacher may use a raised-line drawing board to draw geometric shapes, script letters, or diagrams.
3. Cassette Tape Recorders:- Tape recorders may be used to take notes, formulate compositions, listen to recorded texts, or record assignments.
4. Talking Book and Other Recorded Programs:-A wide variety of textbooks and leisure reading is offered on disks and cassettes.

5. Variable Speed Attachments:-Variable speed attachments can be used to vary the speed at which the student listens to a tape, allowing the student to listen to the material at a slower or a faster rate.
6. Portable Braille Recorders:- It may be interfaced with a computer that will convert Braille to standard print and vice versa.
7. Text Magnification Software:- Software that is compatible with a variety of brands and types of computers magnifies the text on the computer screen from 2 to 8 times the original width and height.
8. Speech Synthesizers:- Synthesizers are devices attached to computers that are able to read words or numbers displayed on the computer screen. They read at 3 times the normal rate of conversational speech.
9. Talking Calculators:- It is an electronic calculator that presents results visually and auditorily.
10. Closed Circuit-Television:- It is a system that enlarges printed material on a television screen It can be adjusted to either black on white or white on black.
11. The student's seating should be arranged for the best possible lightning conditions, but this does not mean that all students with low vision should be in brightly lighted areas. Some visual impairments require no special lightning, whereas others require lower level of illumination. Resource or itinerant teachers and reports from eye specialists should be of particular value in this matter.
12. Mobility is one of the most important factors in the total educational program. Programming efforts should be directed toward academic and social development, but if the area of travel is neglected, the student may be denied opportunities to move freely and independently in the school and the community. The concepts of orientation and mobility are interrelated because mobility cannot be achieved unless an individual is oriented. Regular classroom teachers are not responsible for formal training in orientation and mobility. Specialists are required for this purpose.
13. Whenever possible a student with low vision should be allowed to explore physically rather than have the process explained verbally. Closely related is the need to integrate experiences and concepts as often as possible. A young child may not be able to relate one isolated concept to another because of lack of previous experience with the particular concept.
14. When writing on the chalkboard the teacher should be certain to explain verbally the concept or actual writing being presented.

#### **2.5.6 Suggested Questions:-**

- Q1. Define visual impairment.
- Q2. Discuss the characteristics of visual impaired child.
- Q3. What are the causes behind visual impairment?
- Q4. What actions should the teacher take if a student has a visual impairment?

**2.5.7 Suggested Books and Web Sources:-**

- 1 Heward, William L. and Orlansky, Michael D. (1992). Exceptional children. Fourth Edition. New York : Macmillan Publishing Company.
- 2 Gearheart, Bill R., Weishahn, Mel W. and Gearheart, Carol J. (1992). The Exceptional student in the regular classroom. Fifth Edition. New York: Macmillan Publishing Company.
- 3 Kotwal, Parijit. (2008). Special Education. Delhi : Authors press Jawahar Park Laxmi Nagar
- 4 Kaur, Rajpal. (2005) Special Education. Delhi : Deep and Deep Publications.
- 5 <https://en.wikipedia.org/wiki/Visual-impairment>
- 6 [www.familyconnect.org/info/...for....visually-impaired-children](http://www.familyconnect.org/info/...for....visually-impaired-children)
- 7 [www.brighthubeducation.com>SpecialEd>VisualImpairments](http://www.brighthubeducation.com/SpecialEd/VisualImpairments)

**SPECIAL EDUCATION : LOCOMOTOR IMPAIRED**

**STRUCTURE OF THE LESSON**

**2.5.1 Objectives**

**2.6.2 Introduction**

**2.6.3 Causes**

**2.6.4 Types**

**2.6.5 Educational Provisions**

**2.6.6 Suggested Questions**

**2.6.7 Suggested Books and Web Sources**

**2.6.1 Objectives**

After reading this lesson, the students will be able to:-

1. Define 'Locomotor Impairment.'
2. Explain the causes of locomotor impairment.
3. Describe the types of locomotor impairment.

**2.6.2 Introduction**

Locomotor disability is defined as a person's inability to do any activities associated with moving both himself and objects, from place to place. This inability is due to the problem in the musculo-skeletal (muscles, bones and joints) system and or nervous system.

**Locomotor disability** – Disability of the bones, joint or muscles leading to substantial restriction of the movement of the limbs or a usual form of cerebral palsy. Some common conditions giving raise to locomotor disability could be poliomyelitis, cerebral palsy, amputation, injuries of spine, head, soft tissues ,fractures, muscular dystrophies etc.

**Locomotor Disability**

1. The child is not able to raise both the arms fully without any difficulties.
2. The child is not able to grasp objects without any difficulty.
3. The child has absence of any part of the limb.
4. The child has a difficulty in walking.

**CATEGORIES OF LOCOMOTOR DISABILITIES**

Permanent Physical impairment of Upper Limb

Permanent Physical impairment of Lower Limb

Permanent Physical impairment of Trunk (Spine)

Permanent Physical impairment in case Short Stature/ Dwarfism

Permanent Physical impairment in Amputees

Longitudinal deficiencies

Permanent Physical impairment in Neurological conditions

Permanent Physical impairment due to cardiopulmonary Diseases

Locomotor children have poor motor control and coordination. These children have shaky movements, pain in joints, difficulty in sitting, standing, walking, fall frequently, difficulty in picking, holding and putting some objects from one place to another.

### **2.6.3 Causes**

Locomotor Disability could be the result of disease, injury or malformation of bones, joints, muscles, nerves, spinal cord and brain. This may be congenital or acquired.

1. Congenital
  - Congenital Talipes Equinovarus or Club Foot
  - Congenital Dislocation of Hip
  - Congenital Malformation or deformities of bones and joints
2. Infective causes
  - Tuberculosis-Spine or Joints
  - Acute Poliomyelitis
  - Leprosy
  - AIDS(Acquired immune deficiency syndrome)
3. Traumatic Causes
  - Traffic Accidents
  - Domestic Accidents
  - Bullet Injuries, Explosions
  - Sports injuries
  - Natural Catastrophes like earthquakes, floods and landslides
4. Vascular Causes
  - Cardiovascular Accidents (CVA), Stroke
  - Amputations due to peripheral vascular disease
5. Metabolic Causes
  - Rickets
  - Diabetic Neuropathy
  - Vitamin B/12 deficiency
  - Gout

### **2.6.4 Types of Locomotor Disabilities**

1. Polio
2. Rickets
3. Spinal Bifida
4. Congenital deformities of hips and limbs
5. Deformities of spine
6. Muscular Dystrophy Pseudo-hyper-trophy(Myopathy)
 

Poliomyelitis is an infectious disease. It is caused by a virus and affects the spinal cord and damages the motor cells. It is transmitted by droplet infection and oral ingestion. The incubation period varies from 3-30 days.

In children, vitamin D deficiency is the common cause of Rickets. It can be seen amongst children usually between 6 months to 24 months of age and

above. This deficiency leads to softening of bones of limbs resulting in deformity of lower limbs-commonly, bow legs-and upper limbs. This is a preventable disease and can be treated medically if it is detected at early stage. Spina bifida is a serious birth defect in which bones of the spine fail to close during the 12<sup>th</sup> week of fetal development. As a result, a cyst, or sack, is present in the lower back when the child is born. This protrusion is generally surgically treated during the child's first 24 to 48 hours of life. The extent of the disability resulting from this condition varies enormously. Some individuals have little or no disability, whereas others have varying degrees of paralysis of the legs and incontinence (lack of bowel and bladder control). In addition to the degrees of paralysis and incontinence, the child may have impaired autonomic nervous system functioning (absence of perspiration) and absence of sensation below the level of the spinal defect. Because of the deficiency of nerve fibers, a student may not be able to tell when his or her bladder is full. The bladder may overflow, and the student may not be aware of the situation until he or she sees the wetness through the outer clothing. There is a threat of infection from residual urine in the bladder, and the student may also have difficulty with bowel control.

Mascular dystrophy is a genetic disorder disease that generally affects young children, males more than females. Initially start with muscles weakness and then there is gradual deterioration of muscles. It is progressive disease and there is no cure.

### **2.6.5 Educational Provisions**

#### **1. Access and a Barrier-Free Environment**

- i. To ensure barrier free environment for children with disability we must consider the following factors:-
  - For children who are on a wheelchair
  - Who use walker
  - Crutches or walking sticks of various types
- ii. Access for getting in and out of the school
- iii. Getting on and off transportation(ramp, seat belts)
- iv. Moving within the school and in different classrooms
- v. Going to toilet and playground
- vi. Eating and drinking
- vii. Furniture
- viii. Creating a supportive environment in the school by changing attitude of other students, teachers and other staff who are in contact with children with disability

#### **2. How it can be done**

- i. Ensuring ramps
- ii. Wide doors and enough space inside the bathroom for easy access for wheelchair users clearly marked



- iii. Teaching simple skills to all staff and peer groups for helping children with disability
- iv. Floors with nonskid surfaces
- v. Providing appropriate furniture
- vi. Creating awareness about children with disability, their needs, rights and the role of other students, teachers and staff.

### **3. Special Equipment**

The modification necessary depend on the age of the student, the severity of the impairment, and the primary use of the classroom. Young students may need more specialized equipment, since they have not yet developed daily living skills or modes of ambulation. They may also require more assistance in the care of crutches, braces or wheelchairs.

#### **2.6.6 Suggested Questions**

- Q 1. Who are locomotor impaired children?
- Q 2. Explain the types of locomotor impairment.
- Q 3. Describe the causes of locomotor impairment.

#### **2.6.7 Suggested Books and Web Sources**

- 1 Heward, William L. and Orlansky, Michael D. (1992). Exceptional children. Fourth Edition. New York : Macmillan Publishing Company.
- 2 Gearheart, Bill R., Weishahn, Mel W. and Gearheart, Carol J. (1992). The Exceptional student in the regular classroom. Fifth Edition. New York: Macmillan Publishing Company.
- 3 Kotwal, Parijit. (2008). Special Education. Delhi : Authors press Jawahar Park Laxmi Nagar
- 4 Kaur, Rajpal. (2005) Special Education. Delhi : Deep and Deep Publications.
- 5 enabled.in>Home>Locomotor disability
- 6 vikaspedia.in/health/mental-health/.....of-children...../types-of-disabilities
- 7 ssa.nic.in/inclusive- education/training-module-for....children/...../file