B.ED. SPL. EDUCATION

CURRICULUM DESIGNING, ADAPTATION AND EVALUATION

SES LD 02

MADHYA PRADESH BHOJ (OPEN) UNIVERSITY

CURRICULUM DESIGNING, ADAPTATION AND EVALUATION

B.Ed. Spl. Ed

(SES LD 02)

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Bachelor of Special Education

B.Ed. Spl. Ed.

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BLOCK – 1 : CURRICULUM DESIGN

INTRODUCTION

Early *childhood* is the period of a child's life from conception to age eight. This time frame is consistent with developmental psychology's view of the continuum of children's development. There is a general pattern or sequence for development that is true of all children. However, the rate, character, and quality of development vary from child to child. Culture influences development in different ways, and the goals for children differ from culture to culture

A child should develop in all areas of development. There can be deficits in the development of the child. The reasons for delays or deficits in the development is not necessarily because of disabilities alone but could also be due to social, cultural and health factors of the child. It is intrinsically important to identify any delays in early childhood development, since early identification would lead to optimum use of residual potential in every child.

The universal intervention model is known as the portage. Portage guide is basically a system for teaching skills to pre-school children with developmental delays. The portage project is a home based training system which directly involves parents in the education of their children in the early childhood ie., 0-6 years of age.

Behavioural Modification skills are widely used in changing a behaviour. We can change only operant behaviors. Operant behaviors are those behaviors that are seen. Behaviors can be added or changed. Behavioural Modification skills is a double edged sword. Skinner's Behavioural Modification skills are used worldwide in many sectors- in education, in HRD, management of animal behaviour, so on so forth.

OBJECTIVES

After going through this Block you will be able to develop an understanding of :

- early childhood development;
- early identification and assessment;
- early intervention at home of children with disabilities;
- behaviour modification techniques.

UNIT – 1 : CURRICULUM DESIGN– CONCEPT, DEFINITION AND PRINCIPLES

STRUCTURE

1.1 INTRODUCTION

Early Childhood Care and Development: A Definition

Children do not just grow in size. They develop, evolve, and mature, mastering ever more complex understandings of the people, objects and challenges in their environment. There is a general pattern or sequence for development that is true of all children. However, the rate, character, and quality of development vary from child to child. Culture influences development in different ways, and the goals for children differ from culture to culture.

Early Childhood Care and Development (ECCD) refers not only to what is happening within the child, but also to the care that child requires in order to thrive. For a child to develop and learn in a healthy and normal way, it is important not only to meet the basic needs for protection, food and health care, but also to meet the basic needs for interaction and stimulation, affection, security, and learning through exploration and discovery.

ECCD activities are those that support young children appropriately and seek to strengthen the environments in which they live. ECCD includes working with parents to strengthen parenting skills, working with siblings and other family members to recognize the specific developmental needs of younger children, working to provide or strengthen day care options, developing preschools and other early childhood education programs that address the child's needs in holistic ways, as well as striving to bolster the community in its economic, physical, and moral support of families and young children.

When discussing Early Childhood Care and Development (ECCD), it is important to have a common understanding of what is meant by the term. There are three parts to the phrase: *early childhood* -- *care* -- and *development*.

Early Childhood.

..*Early childhood* is defined as the period of a child's life from conception to age eight.

There are two reasons for including this age range within a definition of ECCD. First, this time frame is consistent with developmental psychology's view of the continuum of children's development. Children below the age of eight learn best when they have objects they can manipulate; when they have chances to explore the world around them; when they can experiment and learn from trial-and-error within a safe and stimulating environment. At about the age of nine they begin to view the world differently. They can manipulate ideas and learn concepts mentally and are

less dependent on objects. Thus in terms of learning theory, the birth through age eight time period presents a developmental continuum.

Second, the international definition of early childhood includes the early primary years (ages six- eight) because of the importance of the transition for children either from home or from a pre- school programme into the primary school. If pre-school programmes for children are to be effective, there needs to be some interface between what happens in the pre-school and lower primary school. This does not mean that early childhood programmes should become formal experiences for young children. Rather, there is a need for early primary teachers to become more aware of the experiences, skills and knowledge that children bring with them into the primary school if they have had an early childhood programme experience.

Care...

In the 1980s, the term *care* was added to the phrase early childhood development. This was in recognition of the fact that young children need care and nurturing. They need attention to their health and nutrition, their evolving emotional and social abilities, as well as their minds. The term *care* was chosen, rather than *education*, to move policy makers and program providers away from thinking exclusively in terms of pre-schooling.

Development...

In the definition of ECCD being used throughout this article *development* is defined as the process of change in which the child comes to master more and more complex levels of moving, thinking, feeling and interacting with people and objects in the environment. Development involves both a gradual unfolding of biologically determined characteristics and the learning process. *Learning* is the process of acquiring knowledge, skills, habits and values through experience and experimentation, observation, reflection, and/or study and instruction. Both the child's physical growth (the child's health and nutrition history and current health and nutritional status) are crucial in the child's overall development. The child's current developmental status either facilitates or inhibits future learning. Thus learning is part of the development process. (Myers, The Twelve Who Survive 1992; 1995)

In many cases, the terms *care* and *development* also refer to the arrangements people make for their children. Day care, community or programme development, and child care are issues to look at in addressing the needs and supporting the healthy growth of young children.

1.2 OBJECTIVES

After going through this Unit you will be able to learn about

- the definition of early childhood development;
- the process and stages of cognitive development;
- the milestones of gross and fine motor development;
- the development of language and communication;
- the stages of social development.

1.3 COGNITIVE DEVELOPMENT

The Importance of Early Childhood Cognitive Development

Early childhood generally refers to the period from birth through age 5. A child's cognitive development during early childhood, which includes building skills such as pre-reading, language, vocabulary, and numeracy, begins from the moment a child is born. Developmental scientists have found that the brain acquires a tremendous amount of information about language in the first year of life even before infants can speak. By the time babies utter or understand their first words, they know which particular sounds their language uses, what sounds can be combined to create words, and the tempo and rhythm of words and phrases.

There is a strong connection between the development a child undergoes early in life and the level of success that the child will experience later in life. For example, infants who are better at distinguishing the building blocks of speech at 6 months are better at other more complex language skills at 2 and 3 years of age and better at acquiring the skills for learning to read at 4 and 5 years of age. Not surprisingly, a child's knowledge of the alphabet in kindergarten is one of the most significant predictors of what that child's tenth grade reading ability will be.

When young children are provided an environment rich in language and literacy interactions and full of opportunities to listen to and use language constantly, they can begin to acquire the essential building blocks for learning how to read. A child who enters school without these skills runs a significant risk of starting behind and staying behind.

Early Childhood Care and Education

Young children are cared for in a wide variety of settings. According to data from the National Center for Education Statistics, 38 percent of children of age 5 or younger receive care on a regular basis from parents only. The remaining 62 percent of children are in one or more arrangements, including care by other relatives (24

percent), non-relatives (17 percent), or center-based programs (34 percent), including Head Start (6 percent). Children between the ages of 3 and 5 are more likely than children younger than 3 to be cared for in a center-based program, such as child care and Head Start. Children under the age of 3 are more likely to be in the care of a parent than are children older than 3.

Parents are a child's first and most important teachers. It is significant that nearly 40 percent of young children are cared for primarily by a parent.

Jean Piaget (1896-1980) was one of the most influential researchers in the area of developmental psychology during the 20th century. Piaget originally trained in the areas of biology and philosophy and considered himself a "genetic epistimologist." He was mainly interested in the biological influences on "how we come to know." He believed that what distinguishes human beings from other animals is our ability to do "abstract symbolic reasoning. The writings of Piaget (e.g., 1972, 1990; see Piaget, Gruber, & Voneche) and Vygotsky (e.g. Vygotsky, 1986; Vygotsky & Vygotsky, 1980), along with the work of John Dewey (e.g., Dewey, 1997a, 1997b), Jerome Bruner (e.g., 1966, 1974) and Ulrick Neisser (1967) form the basis of the constructivist theory of learning and instruction.

While working in Binet's IQ test lab in Paris, Piaget became interested in how children think. He noticed that young children's answers were qualitatively different than older children which suggested to him that the younger ones were not dumber (a quantitative position since as they got older and had more experiences they would get smarter) but, instead, answered the questions differently than their older peers because they thought differently.

There are two major aspects to his theory: the process of coming to know and the stages we move through as we gradually acquire this ability.

Process of Cognitive Development. As a biologist, Piaget was interested in how an organism adapts to its environment (Piaget described as intelligence.) Behavior (adaptation to the environment) is controlled through mental organizations called schemes that the individual uses to represent the world and designate action. This adaptation is driven by a biological drive to obtain balance between schemes and the environment (equilibration).

Piaget hypothesized that infants are born with schemes operating at birth that he called "reflexes." In other animals, these reflexes control behavior throughout life. However, in human beings as the infant uses these reflexes to adapt to the environment, these reflexes are quickly replaced with constructed schemes.

Piaget described two processes used by the individual in its attempt to adapt: assimilation and accommodation. Both of these processes are used thoughout life as the person increasingly adapts to the environment in a more complex manner.

Assimilation is the process of using or transforming the environment so that it can be placed in preexisting cognitive structures. Accommodation is the process of changing cognitive structures in order to accept something from the environment. Both processes are used simultaneously and alternately throughout life. An example of assimilation would be when an infant uses a sucking schema that was developed by sucking on a small bottle when attempting to suck on a larger bottle. An example of accommodation would be when the child needs to modify a sucking schema developed by sucking on a pacifier to one that would be successful for sucking on a bottle.

As schemes become increasingly more complex (i.e., responsible for more complex behaviors) they are termed structures. As one's structures become more complex, they are organized in a hierarchical manner (i.e., from general to specific).

Stages of Cognitive Development.

Piaget identified four stages in cognitive development:

1. **Sensorimotor stage** (Infancy). In this period (which has 6 stages), intelligence is demonstrated through motor activity without the use of symbols. Knowledge of the world is limited (but developing) because its based on physical interactions / experiences. Children acquire object permanence at about 7 months of age (memory). Physical development (mobility) allows the child to begin developing new intellectual abilities. Some symbolic (language) abilities are developed at the end of this stage.

2. **Pre-operational stage** (Toddler and Early Childhood). In this period (which has two sub-stages), intelligence is demonstrated through the use of symbols, language use matures, and memory and imagination are developed, but thinking is done in a nonlogical, nonreversable manner. Egocentric thinking predominates

3. **Concrete operational stage** (Elementary and early adolescence). In this stage (characterized by 7 types of conservation: number, length, liquid, mass, weight, area, volume), intelligence is demonstrated through logical and systematic manipulation of symbols related to concrete objects. Operational thinking develops (mental actions that are reversible). Egocentric thought diminishes.

4. **Formal operational stage** (Adolescence and adulthood). In this stage, intelligence is demonstrated through the logical use of symbols related to abstract concepts. Early in the period there is a return to egocentric thought. Only 35% of high school graduates in industrialized countries obtain formal operations; many people do not think formally during adulthood.

Many pre-school and primary programs are modeled on Piaget's theory, which, as stated previously, provides part of the foundation for constructivist learning. Discovery learning and supporting the developing interests of the child are two primary instructional techniques. It is recommended that parents and teachers challenge the child's abilities, but NOT present material or information that is too far beyond the child's level. It is also recommended that teachers use a wide variety of concrete experiences to help the child learn (e.g., use of manipulative, working in groups to get experience seeing from another's perspective, field trips, etc).

Piaget's research methods were based primarily on case studies [they were descriptive]. While some of his ideas have been supported through more co-relational and experimental methodologies, others have not. For example, Piaget believed that biological development drives the movement from one cognitive stage to the next.

The Cognitive milestones in the first 3 years of the child are as follows:

0-8 months	• Looks from one object to another • Looks after fallen objects • Pulls stings to get object • Uncovers toy he has seen hidden
8-14 months	• Imitates use of toy • Finds hidden toy (emergence of memory) • Begins demonstrating cause and effect

14-24 months	• Uses objects as tools • Fits related objects together • Uses trial and error • Can arrange objects by size
24-36 months	• Ability to use abstractions • \Draws recognizable face • Understands 1 , 2 etc • Names common color • Makes associations

1.4 MOTOR DEVELOPMENT

Development is a continuous process from conception to maturity and should not be measured in mere milestones. The motor development starts very early in life. All important parts of the body are already developed in the womb. There is a great deal of mobility that takes place in the first year of a child's life. The pattern of motor development in the first year are by and large common irrespective of soico-cultural-economic conditions even though slight variations may occur. In the early years of life, various primitive reflexes are seen in the child such as grasp reflex, neck reflex, walking reflex, etc. Before any milestone is reached every child has to undergo various preceding stages of development. The sequence of development remains the same but the rate may vary from child to child. For e.g. A child has to learn to sit before he learns to walk, but the age at which he learns to sit may vary from child to child. Certain primitive reflexes anticipate corresponding voluntary movement and have to be lost before voluntary movement takes place for e.g. grasp reflex and walking reflex of the newborn. Another is the reciprocal kicking of the legs which disappears when walking begins. In children with developmental delay, these primitive reflexes are likely to persist for a longer time.

Motor movements can be classified into gross and fine motor.

Milestones in Gross and fine motor

0-8 months	• Head control • Turns over • Sits • Crawls	• looks at hands • follows with eyes 180 degrees • brings hands together • reaches • explores objects with hands • transfers objects hand to hand
8-14 months	• Pulls to stand • Cruises • Lowers self from standing position • Walks alone • Climbs upstairs	• Pincer grasp • Scribbles • Pushes toys • Pokes at objects • One hand helps other
14-24 months	• Stops and recovers • Climbs into chairs • Stands on one foot • Walks up/down stairs holding on • Kicks/throws ball • Rides mobility toy	• Builds tower of cubes • Completes simple puzzles • Turn pages of book • Turns knobs
24-36 months	• Runs, climbs • Jumps in place • Pulls wagon • Rides tricycle	• String beads • Works latches and hook • Turns pages of book singularly • Snips with scissors

It should be noted that no area of development can take place in isolation. All areas are mutually complementary and any delay in one area may affect another

area of development. Therefore as teachers, you must pay attention to the holistic development of the child. For e.g. if there is a child who has polio or cerebral palsy without difficulties in learning you still need to observe the child in all areas of development because difficulties or delays in motor development can affect cognitive development, socialization etc.

1.5 DEVELOPMENT OF LANGUAGE AND COMMUNICATION

Language involves receptive and expressive forms. When receptive language ability is limited expressive development is affected. Speech is only one form of expressive language. It is the most useful and most widely used form in expressing our thoughts and feelings. If speech is to be an useful form of communication, the speaker must use words used by others. There are three major tasks in learning to speak.

Building vocabulary,

Learning to pronounce work

Combining words into grammatically correct sentences.

Speech contributes to children's personal and social adjustment by satisfying their needs and wants. There are four forms of communication before children learn to speak namely,

Crying

Gesutues,

Babbling and

Emotional expressions.

Speech can be learned by (a) trial and error, (b) limitation and (3) training or teaching. There are 6 essential factors in learning to speak :

1. Mental readiness,
2. Physical rediness,
3. Good model to imitate,
4. Opportunities to practice,
5. Motivation and
6. Guidance

Gestural communication can be encouraged in children who have difficulty in speaking.

Factors associated with language development

Health : The child who suffers from a major physical illness especially that affects the brain may get speech defect.

Intellectual level : Bright children tend to learn and master speech earlier than others. Mental Retardation shows delayed development of speech, as langugae development is directly linked to cognitive development.

Family : A healthy, stimulating and rewarding environment facilitates languages development.

1.6 SOCIAL DEVELOPMENT

Social development refers to development of the ability to behave in accordance with social expectations, which involves social perception, thinking and reasoning about people, one self and social relationship. These are called "Social Cognition". The process of Learning the standards of behaviours, roles and values in a given culture is called "Socialisation". Socialisation is largely determined by child's cognitive development as well as social stimulation available to the child.

During infancy (0-2 years) a new born is almost unresponsive to social stimuli. Responses are largely reflexive, and confined to the physical dimensions of stimuli (example, light, sound, texture, taste or smell). Social stimuli like other's smile, gesture, vocalisation or approach does not seem to be meaningful. These behaviours acquire meaning due to prolonged association with pain and pleasure. Mother's approach of example, becomes meaningful because it is associated with gratification of child's. A three month old infant therefore expressive pleasure in mother's approach and cries in her absence. He is capable of distinguishing mother's voice from that of the others. 'Social Smile'appears around 2-3 months age in the form of smiling in response to mother's smile or vocalisation. Around 4 months, infant shows anticipatory adjustments in day-to-day life and in decision making.

As the child grows, he develops social competencies to interact effectively with his environment which includes, home, family, negihbourhood, school and finally community. The experiences he has since birth through the stages are responsible for his values, beliefs and attitudes as an adult.

Erik Erikson, a psychoanalysis, has formulated a theory of human development with stress on social aspects by covering the entire span of the life cycle. The 'Eight stages of life Cycle' are as follows:

Stage 1. Basic trust versus mistrust (birth to about 1 year)

Stage 2. Autonomy versus shame and doubt (about 1 to 3 years)

Stage 3 . Initiative versus guilt (3 to 5 years)

Stage 4 Industry versus inferiority (6 to 11 years)

Stage 5 Identify versus role of diffusion (11 years through end of adolescence)

Stage 6 Intimacy versus isolation (21 to 40 years)

Stage 7 Generatively versus stagnation (40 to 65 years).

Stage 8 Integrity versus despair (over 60 years)

These stages are marked by one or more internal crises, which are defined as turning points. If one crisis is mastered successfully, the person gains strength by which he/she can move onto the next stage.

The ages of 6 to 8 are years when the child's social environment expands rapidly. The life of the child beings to centre around the school and the children and activities that are found there. The child now has authority figures other than the mother and father who seek to guide him. Peers take on greater importance, and the group phenomena being to influence the child's behaviour and growth. Family influences lessen as the external socialization process makes its impact. Since his whole being revolves around his friends and peers, the child must learn social skills and communication skills that will enable him to maintain successful relationships. Learning to get along well with others is often difficult, and lack of social experiences or of good teaching modes (mothers, fthers, and other acceptable adults) can be handicapping.

As early as the age of 6 years, when he enters school, the child becomes more independent than previously by virtue of being on his own and by making more independent decisions. By the age of 8 years he makes an important discovery – he suddenly realises that adults can make mistakes, that they do not know everything, and that they can be criticised. This knowledge provides a giant step toward self-autonomy. Because of increasing intellectual development, the 9 to 12 year old reaches a point where he can see more clearly the shortcomings of adults. They challenge the thinking and decisions of persons in positions of authority. Soon they reject or question many of the standards of their parents and of adults in general. This characteristic does not imply that the children become discipline and behaviour problems, but it does mean that they are not as ready to accept rules and standards unquestioningly as they did an earlier age. Clashes may result, overtly or covertly.

1.7 UNIT SUMMARY

- Early childhood generally refers to the period from birth through age 5.
- A child's **cognitive development** during early childhood, which includes building skills such as pre-reading, language, vocabulary, and numeracy, begins from the moment a child is born.Piaget identified four stages in cognitive development: **Sensorimotor stage** (Infancy), **Pre-operational stage** (Toddler and Early Childhood), **Concrete operational stage** (Elementary and early adolescence), **Formal operational stage** (Adolescence and adulthood).
- The **motor development** starts very early in life. All important parts of the body are already developed in the womb. There is a great deal of mobility that takes place in the first year of a child's life. The pattern of motor development in the first year are by and large common irrespective of soico-cultural-economic conditions even though slight variations may occur. In the early years of life, various primitive reflexes are seen in the child such as grasp reflex, neck reflex, walking reflex, etc. Before any milestone is reached every child has to undergo various preceding stages of development. The sequence of development remains the same but the rate may vary from child to child.
- **Development of Language and Communication**: There are four forms of communication before children learn to speak namely Crying, Gestures, Babbling and Emotional expressions There are three major tasks in learning to speak. building vocabulary, learning to pronounce work, combining words into grammatically correct sentences.
- **Social Development** :As the child grows, he develops social competencies to interact effectively with his environment which includes, home, family, neighbourhood, school and finally community. The experiences he has since birth through the stages are responsible for his values, beliefs and attitudes as an adult.

1.8 CHECK YOUR PROGRESS

What are the different stages of cognitive development?

What are the major milestones in cognitive development for children under 3 years?

What are the Milestones in Gross and fine motor ?

What are four forms of communication before children learn to speak?

How the values, beliefs and attitudes are developed in life?

1.9 ASSIGNMENT

Values, beliefs and attitudes of a person are parts of social development. How positive values, and attitudes can be developed in children Give your own opinion and suggestions in a comprehensive manner from your own experience.

1.10 POINTS FOR DISCUSSION AND CLARIFICATION

After going through the Unit you may like to have further discussion on some points and clarification on other. Note down those points below:

1.10.1 Points for Discussion

-

1.10.2 Points for Clarification

1.11 REFERENCES/FURTHER READINGS

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UNIT – 2 : PRINCIPLES OF INCLUSIVE CURRICULUM

STRUCTURE

2.1 INTRODUCTION

A child should develop in all areas of development as stated above. There can be deficits in the development of the child. The reasons for delays or deficits in the development is not necessarily because of disabilities alone but could also be due to social, cultural and health factors of the child. It is intrinsically important to identify any delays in early childhood development, since early identification would lead to optimum use of residual potential in every child. Neglect during early years of life leads to secondary disabling conditions such as the child may be hard of hearing, but lack of early identification and intervention would lead to deficits in language development which in turn would affect the cognitive, social development etc.

2.2 OBJECTIVES

After going through this Unit you will be able to :

- realize the importance and need of early identification and assessment ;

- know about the approaches to assessment of the child
- become familiar with the assessment tools.

2.3. APPROACHES TO ASSESSMENT OF THE CHILD

There are two types of approaches to assessment of the child.

a. Norm referenced Data (NRD)

b. Criterion referenced Data. (CRD)

NRD refers to use of testing tools such as IQ tests, etc. which is based on the norm. This approach unless developed for specific socio-cultural context could give wrong assessment of the child. Besides NRD talks about what is lacking in the child in comparison with the norm and does not give step by step guide to the teachers on how to help the child to progress in different areas of development. Internationally for educational purpose Criterion Referenced Data is used. The use of CRD has gained tremendous popularity in the education sector. A CRD is a checklist of behaviors in different areas of development is also age appropriate. The age appropriateness is reflected both in terms of chronological and developmental age. It is therefore very easy to understand the expected development and any delays in the specific areas of development. There are two types of functional assessment forms for use of teachers to identify children and assess children with special needs.

2.4. ASSESSMENT TOOLS

There are two types of functional assessment forms for use of teachers to identify children and assess children with special needs. FORM A is designed for Brief record of identification of disability of children under 6 years. Form B is designed for the identification of Impairment in children in the age group of 0- 6.

Form A.: based on the Questionnaire of WHO with 10 question. This is basically a screening tool. There are two types of forms means for children of age group 0-6 and 6-14. This form contains simple questions **which a teacher should fill only after testing the child. The form should never be filled either by guessing or by simply eliciting information from the parents.** After filling this form you will come to know if there is a possibility of a child having a disability. These **screening forms are also coded with boxes for responses.** If there is a tick mark in any one box then you have to conduct the functional assessment of the child (Form B). **Functional assessment is a method of finding out the impact of disability on the functions of various parts of the body, daily living activities, and other age appropriate activities of the child.**

FORM A

Brief Record of Identification of Disability of Children Under 6 Years

Village_____ House No_____
Number of the child _____

a) Name of the child
_____
_____

b) Age (date of birth)
_____

c) Father's Name
_____
_____

d) Mother's Name
_____
_____

Mark [√] against the correct answer for the following questions

Did delivery take place before full term? YES [ ] NO [ ] DON'T KNOW [ ]

Compared to other children was there delay in the following -

a) Neck control? YES [ ] NO [ ] DON'T KNOW [ ]

b) Sitting?

c) Walking?

Does the child turn it's head or eye towards the direction of sound? YES [ ] NO [ ] DON'T KNOW [ ]

Is there any difficulty for the child to understand when someone talks to him/her? YES [ ] NO [ ] DON'T KNOW [ ]

When compared to other children, does your child have difficulty in - YES [ ] NO [ ] DON'T KNOW [ ]

a) reading?

b) understanding?

c) remembering?

d) carrying out daily activities?

Is there any difficulty in hearing? YES [ ] NO [ ] DON'T KNOW [ ]

Is there any physical disability? YES [ ] NO [ ] DON'T KNOW [ ]

Does the child mix well with others? YES [ ] NO [ ] DON'T KNOW [ ]

Is there any deformity in the eye/eyes? YES [ ] NO [ ] DON'T KNOW [ ]

Is there any difficulty in seeing? YES [ ] NO [ ] DON'T KNOW [ ]

Is there any difficulty for others to understand your child's talk? YES [ ] NO [ ] DON'T KNOW [ ]

Is there any Spasm in any of your child's organs? YES [ ] NO [ ] DON'T KNOW [ ]

Is there any problem in understanding your child's talk by people outside the child's family? YES [ ] NO [ ] DON'T KNOW [ ]

FOR THOSE WHO FILL THE FORMS

Do they refuse to give information? YES [ ] NO [ ] DON'T KNOW [ ]

Do the family members feel that there is no use in providing information to you? YES [ ] NO [ ] DON'T KNOW [ ]

REMEMBER:

Even if there is a single [√] mark in any one box in this brief record, a FORM B has to be filled.

FORM B

Detailed form for the Identification of Impairment in Children in the Age Group of 0- 6

Village Name: House Number:
Number of child:

a) Name of the child: Age of child:

b) Sex of the child:

c) Father's Name:

d) Mother's Name:

Mark { □ } against the correct answer for the following questions.

1	Did the child cry immediately after delivery?	Yes	No	Don't know
2	Is the size of the head of this child unusually larger than the size of the head of another child of the same age?	Yes	No	Don't know
3	Is the size of the head of this child unusually smaller than the size of the head of another child of the same age?	Yes	No	Don't know
4	Is there any lump or injury in the back of the child?	Yes	No	Don't know

5	Does the child stiffen his/her body when the mother carries the child?	Yes	No	Don't know
6	Does the child roll over to the side?	Can count	Can't count	Don't know
7	Does the child attempt to reach for the toys placed near him/her?	Can count	Can't count	Don't know
8	Does the child recognize familiar people?*	Can identify	Can't count	Don't know
9	Does the child look at the light when a torch is moved to and fro, drawing the child's attention towards it?	Yes	No	Don't know
10	Does the child respond when called his name from behind at a distance of 10 feet?	Can respond	Can't respond	Don't know
11	Does the child respond when called his name from behind at a distance of 5 feet?	Can respond	Can't respond	Don't know
12	Does the child talk clearly?	Yes	No	Don't know
13	Is there any difficulty for others to understand child's talk?	Yes	No	Don't know
14	Does the child have the fits?	Yes	No	Don't know
	If yes,			
	Does the child have an attack			
	a). Daily?	Yes	No	
	b) Once a week?	Yes	No	Don't know
	c) Once in a month?	Yes	No	
	d) Once in six months?	Yes		Don't know

	e) does the child take medicine			Don't know
	f)Does the child examined by the doctor?			
15	While working petty jobs Does the child spill, drop not having the articles?	Yes	No	Don't know
16	Does the child keeps quiet while there is a discharge from the nose?	Yes	No	Don't know
17	When compared to other children of his age does the child seems to be less intelligent?	Yes	No	Don't know
18	Does the child appears to be dull always in his/ her activities?	Yes	No	Don't know
19	Is there any difficulty for the child to concentrate on work when compared to other children of his age?	Yes	No	Don't know
20	Compared to other children of his age , does the child play mischief?	Yes	No	Don't know
21	Does the child, instead of his own age children likes to mix with younger children?	Yes	No	Don't know
22	Does the child knows the dangers of fire, water etc.?	Yes	No	Don't know
23	Can the child tells his/her name?	Tells	Does not tell	Don't know
24	Does the child suffers from utter discharge from	Yes	No	Don't

	the eyes?			know
25	Does the child always rubbing his/ her eyes?	Rubs	Does not rub	Don't know
26	Is there any serious of eye sight problem in reading, writing and seeing?	Yes	No	Don't know
27	Doe the child walks on his own without anybody's help?	Walks	Does not walk	Don't know
28	Is there any difficulty in running and doing exercises at school?	Yes	No	Don't know
29	Compared to others , is there less progress in studies/ play?	Yes	No	Don't know
30	Even though there is interest in doing all works, can't do any work?	Yes	No	Don't know
31	Can he/she keeps the books and articles carefully and clearly just like other children of his/ her age	Yes	No	Don't know
32	Compared to other children of his age, do he/ she works slowly	Yes	No	Don't know
33	Does the child suffer from ear-ache?	Yes	No	Don't know
34	Is there any discharge from the ears?	Yes	No	Don't know
35	Is there any difficulty in telling stories and arithmetic?	Yes	No	Don't know

36	Does the child turns away completely to the sides while listening to talks?	Yes	No	Don't know
37	Does the child hurts himself/ herself often?	Yes	No	Don't know
38	Does the child produces sound, while talking to himself/ herself continuously	Yes	No	Don't know
39	Does the child use spectacles?	Yes	No	Don't know
40	Does the child use hearing aids?	Yes	No	Don't know
41	Is there slight difficulty in hearing?	Yes	No	Don't know
42	Can the child has total hearing problem?	Yes	No	Don't know
43	Is there any problem in one leg?	Yes	No	Don't know
44	Is there any problem in both legs?	Yes	No	Don't know
45	Does he/ she does not walk properly?	Yes	No	Don't know
46	Is there any problem in both hands?	Yes	No	Don't know
47	When compared to others of his age is there any difficulty in writing?	Yes	o	Don't know
48	Is there any difficulty in carrying out daily activities?	Yes	No	Don't know

49	Does he/she have polio in the child hood?	Yes	No	Don't know
50	Does he/she have Tuberculosis in the child hood?	Yes	No	Don't know
51	Does he/she have Brain fewer (meningitis) in child hood?	Yes	No	Don't know
52	Does he/she have any lump in the back of the child?	Yes	No	Don't know
53	Does he/she understands, remembers and learn well?	Yes	No	Don't know
54	Has polio drops been administered?	Yes	No	Don't know
55	Has triple antigen being given?	Yes	No	Don't know

1. Name of the person who filled this form:
2. Teacher's name
3. School Address
4. Is she an Anganwadi worker?

Experience

Address

Qualification

5. Name of the person who gave information about the child:

Teacher

Mother

Father

Others

6. Date of survey

In the opinion of surveyor what kind of disability does the child have?

7. Mental Retardation know Don't know	Yes	No	Don't
8. Physical Handicap know	Yes	No	Don't
9. Hearing impairment know	Yes	No	Don't
10. Visual impairment know	Yes	No	Don't

11. Other (specify)

2.5 UNIT SUMMARY

- Early identification and intervention help in language development which in turn affect the cognitive and social development.
- The Norm Reference Data (NRD) refers to use of testing tools such as IQ tests. Internationally for educational purpose Criterion Referenced Data is used. A CRD is a checklist of behaviors in different areas of development; it is also age appropriate. The age appropriateness is reflected both in terms of chronological and developmental age.
- There are two types of functional assessment forms for use of teachers to identify children and assess children with special needs.
- FORM A is designed for Brief record of identification of disability of children under 6 years.
- Form B is designed for the identification of Impairment in children in the age group of 0- 6.

2.6 CHECK YOUR PROGRESS

1. Define : (a) NRD, (b) CRD.
2. Why early identification and assessment of the child with special needs is essential ?

2.7 ASSIGNMENT

- Prepare an Assessment Report using FORM A

2.8 POINTS FOR DISCUSSION AND CLARIFICATION

After going through the Unit you may like to have further discussion on some points and clarification on other. Note down those points below:

2.8.1 Points for Discussion

Points for Clarification

2.9 REFERENCES /FURTHER READINGS

UNIT 3:TYPES OF CURRICULUM– CORE, COLLATERAL, SUPPORT, HIDDEN

STRUCTURE

3.1 INTRODUCTION

Portage is the most recognized and used early intervention model in the world. '**Portage Basic Training Course for Early Stimulation of Pre-School Children in India**' is an Indian adaptation as well as translation in Hindi of "Portage Guide to Early Education" by S.M.Bluma, M.Shearer, A.H.Frohman and Jean M.Hilliard (USA). It has also been translated in 9 Indian languages by CBR Network, Bangalore and is available in the form of CD.

Portage guide is basically a system for teaching skills to pre-school children with developmental delays. The portage project is a home based training system which directly involves parents in the education of their children in the early childhood ie., 0-6 years of age. The training is provided by a specially trained teacher or a public health worker with a special training and experience in the field of child development. However, the key person in the home based programme is parents/family members.

It can be used by para-professionals like the staff of anganwadis, balwadis, non-professionals like parents, siblings, professionals such as pre-school educators, psychologists, and doctors.

3.2 OBJECTIVES

After going through this Unit you will be able to :

- realise the importance of early intervention;
- learn about the Portage which is the early intervention model in the world and its Indian adaptation;
- use portage kit with the help of portage guide.

3.3 PORTAGE, THE EARLY INTERVENTION MODEL

Portage is the most recognized and used early intervention model in the world. There isn't any place or person providing special education or early intervention services who hasn't heard of Portage. One unique aspect of Portage is that it is complex in design but simple to implement. People use it because it is inexpensive, because it focuses where it should, with the families in the child's natural environment and it works.

The basic premise of the Indian Portage model is:

- Parents care about their children and want them to attain their maximum potential,
- Parents can, with instruction, modeling and reinforcement, learn to be more effective teachers of their own children,
- The economic, educational or intellectual level of the parent does not determine their willingness to teach their child nor the extent of gains the child will attain as a result of parental instruction.

In its beginning, most of the components of the Portage Model were thought to be revolutionary. Such components as ongoing assessment, individualized curriculum planning, parents as the child's primary teacher, and embedding developmental activities into the child's and family's daily routine are widely accepted and used by today's early intervention programs as "standard practice". The components are so enmeshed in current intervention practice that professionals no longer associate them with the original Portage Model. Indeed many early interventionists today may view Portage as "outdated" or "unfashionable" when, in fact, what they consider to be today's accepted standards of current practice originated in the Portage Model.

The key components of the Portage model include:

Parents as Primary Teachers: Portage emphasizes the parent's role as the child's primary teacher. Parents as teachers can motivate children, can reinforce newly acquired skills in the home and can provide valuable information for others working with the child. In the Portage Model, the potential for larger and longer lasting effects in the child increases because of the amount of time spent with the parent and the amount of opportunities to practice what was learned. The role of parents as the child's primary teacher is not dichotomous, differentiated by presence or absence of participation. Involvement is a continuum along which parents can progress based on their individual needs and circumstance and with the expectation that they do not wish to remain static at any given point.

Precision Teaching Method – Precision teaching is an established approach that is based on bbehavioural principles and has been particularly successful with children with disabilities. This method utilizes a set of simple but effective procedures that teachers or home visitors and parents follow to identify, monitor, and make decisions about critical skills or behaviors a child needs. All of us who work in early childhood intervention need to be reminded that development proceeds rapidly during the first years of a child's life. Intervention approaches that facilitate development are heavily based on theory and methodology and support a tendency toward "trial and error". Infants and young children cannot afford to wait 3 to 6 months to see if a particular intervention is successful.

Precision teaching reduces the use of trial and error. It emphasizes watching and recording behavior to identify the unique strengths or problems of the child and recording their responses to determine results of the intervention.

Home Teaching Process – the centrality of the home teaching process to the other components is not by accidental design. The home teaching process is the "heart and soul" of Portage, the point which all of the components converge and where successful intervention occurs. This process focuses on teaching the parents the teaching skills of particular activities so that they can serve as the child's main teacher in the home throughout the week.

Reporting: Recording, reporting and evaluation are on going activities that provide documentation of the services to all children in a program and their families.

Portage builds a partnership in the provision of the child's program and in the decision making of what will be included in the child's program. Partnership has become a commonly used word in this field, but in the Portage Model, families must be partners or the program will simply not succeed.

The focus is on the parents and their teaching and nurturing skills. Most early intervention programs focus primarily on the child and child outcomes. In the Portage approach, the focus is on the entire family.

Portage conducts the child's intervention in his natural environment that focuses primarily in the child's home but also assist in helping the child learn across environmental settings.

Through training and the use of a systematic approach, the professional's ability to provide a comprehensive early intervention service to the children and families they serve is improved.

The Indian Portage model addresses the need to involve the community in the child and family's lives. It means that we assist in planning for the child to be included in many community activities.

The Indian Portage model helps the child to become a valued member of the community and to develop into a contributing member of the community. This leads to dignity, independence and a positive self-image of every child. Dignity follows learning and accomplishments and competency. Independence only comes within a framework of meaningful relationships within the community and in the home and the child's self image comes with the person being successful in who he is and what he attempts to do. This must begin in early intervention services.

Using Portage in CBR and Early Childhood Care and Education Programme

The normal development of a child is measured by the developmental milestones achieved by the child. When the same milestones are not achieved in the given time (as compared to other children in the community), the child may have some form of delay in the development.

This handbook is a guide on how to stimulate 'Every child 'to develop to its 'fullest potential'. Some of the major areas of child development are as follows.

1. Self help skills
2. Socialization development
3. Motor development
4. Cognitve development
5. Language and communication

A majority of the development of the brain takes place within the womb of the mother. The balance neural development takes place within the first 2 years after birth. Most of the fundamental conceptual learning takes place in the first six years of the child's life. This forms the foundation for further development and growth of the child.

It is important to create an environment and human assistance to ensure holistic development of the child. This holistic development is important because if there is any lacunae or deficits in any area of development this will lead to difficulty in learning. Sometimes child may not perform activities in between. For example child performs 5-10 activities but cannot five and eight. This is known as idiosyncratic development

Points to note:

The behaviors (activities) listed here may be modified to suit the local socio-cultural practices as these may differ from region to region. However each activity should be equivalent to the activity listed .

Step by Step Guide

1. Fill the screening forms for every child .There are two types of forms. See earlier unit for the sample form.
2. Fill the functional assessment form only to those children who may have developmental delay. This functional assessment gives information on the functional difficulties in seeing, moving, hearing, communication, learning.
3. Informal assessment: List 25 activities child can do and 25 activities child cannot do. while listing activities child can do compare the child with new born child .List all the activities (do not forget to include even very simple tasks child performs). A list is made of the child's strengths and weaknesses. For e.g. 14 year old Raghu is mentally retarded. Before starting the stimulation/intervention program the parents are asked to list 25 strengths and 25 weaknesses of the child. (If the parents are illiterate, the teacher should prepare the list in consultation with the parents.) This would help the parents to focus on the strengths and abilities of the child rather than his/her disabilities. The teacher can also focus on the abilities and plan the education appropriately. Where possible the teacher should plan the education activities in consultation/partnership with the parents. This would help to reinforce the confidence of the parents in the intervention strategies being adopted.
4. Establish current levels of learning. This is known as baseline. This baseline gives list of activities child can do in all the 5 areas of development. E.g. A child of chronological age (actual age based on date of birth) 5 may have a developmental age of 3 years. Remember to establish baseline in all areas of development
5. Prepare annual /half yearly /quarterly/monthly development plans for each child. Development in all the 5 areas is interdependent. For instance, cognition is connected to both socialization and language development. Language itself is a prerequisite for socialization. Physical growth and self-help are also interdependent. Therefore to assess the learning of the child it is necessary to assess in all areas and not only in the area of perceived disability. The stages of a child's development should be informed to the parents through the means of self-help groups, parents' workshops etc. This would help the parents to appreciate the learning achievements of the child and would also learn to reward the child for the same.

Practice for Parents and Teachers

Parents and teachers review the child's strengths and weaknesses. Using the Indian Portage Guide the teacher identifies the baseline of learning levels of the child in all the areas. It is much simpler to plan the intervention when the assessment is detailed and perfect.

After the baseline is taken, the teacher starts teaching the activities one by one in all the areas simultaneously as explained in the behavior modification techniques. After each activity, an evaluation is made to examine if the child has learnt the activity thoroughly. When the child performs the activity successfully in a minimum of 6 different circumstances, the learning may be said to be complete. These may be called as definite activities? Every activity must therefore be properly planned. For e.g. if a child is capable of identifying colors within the SHG, but is not able to relate it to the general environment, the learning is not useful/relevant. All activities must be reviewed to understand their significance and usefulness in the daily life of the child to make it relevant.

Some difficulties that may arise when using the Guide

Development of the child may not be as per the stages described in the guide. This is especially true for children with disabilities who may have idiosyncratic development. The following difficulties may arise when using the guide:

E.g. 1: The child may know activity 96 in Cognition but may not know activities 86 to 96. It is therefore necessary to teach the child all the activities from 86 to 96 and not proceed from 96 onwards.

E.g. 2: Some of the activities may not be suitable. Although the activities have been Indianised it may still not be totally suitable to the local practices. Therefore it is necessary to modify the activity to suit the local customs and practices. While modifying or finding similar activities it is necessary to choose the activity carefully. For e.g. if an activity states that the child ties his/her shoelace, and it is not socially relevant then the matching activity cannot be that the child wraps a muffler by himself, as the cognitive levels as well as the motor coordination required for both these activities are different.

Finally it is important to build on the strengths inherent in the child and the family. Every child has the capacity to perform, and it is the duty of the teacher to bring out the latent talent.

Checklist of Age-Appropriate Activities

The checklist given in the next page provides a list of activities along with the age appropriateness of each activity. Please list the activities that the child can do and stimulate the child to do the activities that it cannot do. For stimulation the Indian Portage Guide developed by CBR Network is available on the CD.

Cognitive Development

Name of the Child:					
CARD	**AGE**	**BEHAVIOR**	**TARGET STARTED ON**	**NO. OF TARGET**	**TARGET ACHIEVED ON**
1	0-1	Removes cloth from face, that obscures vision			
2	0-1	Looks for object that has been removed from direct line of vision			
3	0-1	Removes object from open container by reaching into container			
4	0-1	Places object container in imitation			
5	0-1	Places object in container on verbal command			
6	0-1	Shaker a sound making toy on a string			

7	0-1	Puts 3 objects into a container empties container			
8	0-1	Transfers object from one hand to the Other to pick up another object			
9	0-1	Drops and picks up toy			
10	0-1	Finds object hidden under container			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGET	TARGET ACHIEVED ON
12	0-1	Removes circle from board			
13	0-1	Places round peg in pegboard on request			
14	0-1	Performs simple gestures on request			
15	1-2	Individually takes out 6 objects from container			

16	1-2	Points to one body part				
17	1-2	Stacks 3 blocks on request				
18	1 to 2	Matches like objects				
19	1 to 2	Scribbles				
20	1 to 2	Points to self when asked "where's (name)?"				
21	1 to 2	Places 5 round pegs in pegboard on request				
22	1 to 2	Matches objects with picture of some object				
23	1 to 2	Points to named picture				
24	1 to 2	Turns pages of book 2-3 at a time to find named picture				
25	2 to 3	Finds specific book on request				
26	2 to 3	Completes 3 piece form-board				

27	2 to 3	Names 4 common pictures			
28	2 to 3	Draws a vertical line in imitation			
29	2 to 3	Draws a horizontal line in imitation			
30	2 to 3	Copies a circle			
31	2 to 3	Matches textures			
32	2 to 3	Points to big and little upon request			
33	3 to 4	Draws (+) in imitation			
34	2 to 3	Matches three colors			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGET	TARGET ACHIEVED ON
35	3 to 4	Places objects in, on and under upon request			
36	2 to 3	Names objects that make sounds			
37	2 to 3	Puts together 4 part nesting toy			
38	2 to 3	Names action pictures			
39	2 to 3	Matches geometric form with picture of shape			
40	2 to 3	Stacks 5 or more rings on a peg in order			
41	3 to 4	Names big and little objects			
42	3 to 4	Points to 10 body parts on verbal command			
43	3 to 4	Points to boy and girl on verbal command			
44	3 to 4	Tells if objects is heavy or light			

45	3 to 4	Puts together 2 parts of shape to make whole			
46	3 to 4	Describes two events or characters from familiar story or T.V. program			
47	3 to 4	Repeats finger plays with words and actions			
48	3 to 4	Matches 1 to 1 (3 or more objects)			
49	3 to 4	Points to long and short objects			
50	3 to 4	Tells which objects go together			
51	3 to 4	Counts to 3 in imitation			
52	3 to 4	Arranges objects into categories			
53	3 to 4	Draws a V stroke in imitation			
54	3 to 4	Draws a diagonal line from corner to corner of 4 inch square of paper			

55	3 to 4	Counts to 10 objects in imitation			
56	3 to 4	Builds a bridge with 3 blocks in imitation			
CARD	**AGE**	**BEHAVIOR**	**TARGET STARTED ON**	**NO. OF TARGET**	**TARGET ACHIEVED ON**
57	3 to 4	Matches sequence or pattern of blocks or beads			
58	3 to 4	Copies series of connected V strokes WWWWW			
59	3 to 4	Adds leg and/or arm to incomplete man			
60	3 to 4	Completes 6 piece puzzle without trial and error			
61	3 to 4	Names objects as same and different			
62	3 to 4	Draws a square in imitation			
63	3 to 4	Names three colors on request			

64	3 to 4	Names three shapes,			
65	4 to 5	Picks up specified number of objects on request (1-5)			
66	4 to 5	Names five textures			
67	4 to 5	Copies triangle on request			
68	4 to 5	Recalls 4 objects seen in a picture			
69	4 to 5	Names time of day associated with activities			
70	4 to 5	Repeats familiar rhymes			
71	4 to 5	Tells whether objects is heavier or light- er (less than one pound)			
72	4 to 5	Tells what's missing when one objects is removed from a groud of three			
73	4 to 5	Names eight colors			
74	4 to 5	Names penny, nickel and dime			

75	4 to 5	Matches symbols (letters and numerals)			
76	4 to 5	Tells color of named objects			
77	4 to 5	Retells five main facts from story hreard 3 times			
78	4 to 5	Draws a man (head, trunks, 4 limbs)			
79	4 to 5	Sings five lines of song			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGET	TARGET ACHIEVED ON
80	4 to 5	Builds pyramid of 10 blocks in imitation			
81	4 to 5	Names long and short			
82	4 to 5	Places objects behind, besides, next to			
83	4 to 5	Matches equal sets to sample of 1 to 10 objects			
84	4 to 5	Names or points to missing part of			

		pictured object			
85	4 to 5	Counts by rote 1 to 20			
86	4 to 5	Names first, middle, and last position			
87	5 to 6	Counts up to 20 items and tells how many			
88	5 to 6	Names 10 numerals			
89	5 to 6	Names left and right on self			
90	5 to 6	Says letters of alphabet in order			
91	5 to 6	Prints own first name			
92	5 to 6	Names five letters of alphabet			
93	5 to 6	Arranges objects in sequence of width and length			
94	5 to 6	Names capital letters of alphabet			
95	5 to 6	Puts numerals 1 to 10 in proper			

		sequence			
96	5 to 6	Names position of objects first, second, third			
97	5 to 6	Names lower case letters of alphabet			
98	5 to 6	Matches capital to lower case letters			
99	5 to 6	Points to named numerals 1 to 25			
100	5 to 6	Copies diamond shape			
101	5 to 6	Completes simple maze			
102	5 to 6	Names days of a week in order			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGET	TARGET ACHIEVED ON
103	5 to 6	Can add and subtract combination to three			
104	5 to 6	Tells month and day of birthday			
105	5 to 6	Sight reads 10 printed words			
106	5 to 6	Predicts what happens next			
107	5 to 6	Points to half and whole objects			
108	5 to 6	Counts by rote 1 to 100			

LANGUAGE AND COMMUNICATION

Name of the Child:

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
1	0-1	Repeats sound made by others			
2	0-1	Repeats same syllable 2-3 times (ma, ma,ma)			
3	0-1	Responds to gestures with gestures			
4	0-1	Carries out simple direction when accompanied by gestures			
5	0-1	Stops activity at least momentarily when told "no" 75% of the time			
6	0-1	Answers simple questions with nonverbal response			

7	0-1	Combines two different syllables in vocal play			
8	0-1	Imitates voice intonation patterns of others			
9	0-1	Uses single word meaningfully to label object or person			
10	0-1	Vocalizes in response to speech of other person			
CARD	**AGE**	**BEHAVIOR**	**TARGET STARTED ON**	**NO. OF TARGET**	**TARGET ACHIEVED ON**
11	1 to 2	Says five different words (may use same word to refer to different objects)			
12	1 to 2	Asks for "more"			
13	1 to 2	Says "all gone"			
14	1 to 2	Follows 3 different one step directions			

		without gestures			
15	1 to 2	Can "give me" or "show me" upon request			
16	1 to 2	Points to 12 familiar objects when named			
17	1 to 2	Points to 3-5 pictures in a book when named			
18	1 to 2	Points to 3 body parts on self			
19	1 to 2	Says his own name or nickname upon request			
20	1 to 2	Answers question "what's this?" with object name			
21	1 to 2	Combines use of words and gestures to make wants known			
22	1 to 2	Names 5 other family members including pets			

23	1 to 2	Names 4 toys			
24	1 to 2	produces animal sound or uses sound for animal's name (cow is "moo-moo")			
25	1 to 2	Asks for some common food items by name when shown (milk, biscuit etc.)			
26	1 to 2	Asks questions by a rising intonation at end of word or phrase			
27	1 to 2	Names 3 body parts on a doll or other person			
28	1 to 2	Answers yes/no question with affirmative or negative reply			
29	2 to 3	Combines noun or adjective and noun in two word phrase (ball chair)(my chair)			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGET	TARGET ACHIEVED ON
30	2 to 3	Combines noun and verb in two word phrase(daddy go)			
31	2 to 3	Uses word for bathroom need			
32	2 to 3	Combines verb or noun with "there" "here" in 2 word utterance (chair here)			
33	2 to 3	Combines 2 words to express possess- ion (daddy car)			
34	2 to 3	Uses "no" or "not" in speech			
35	2 to 3	Answers question "what's _____ doing?" for common activities			
36	2 to 3	Answers "where" questions			
37	2 to 3	Names familiar environmental sounds			

38	2 to 3	Gives more than one object when asked using plural form (blocks)				
39	2 to 3	Refers to self by own name in speech				
40	2 to 3	Points to picture of common object described by its use				
41	2 to 3	Holds up fingers to tell age				
42	2 to 3	Tells sex when asked				
43	2 to 3	Carries out a series of two related commands				
44	2 to 3	Uses "ing" verb form (running)				

45	2 to 3	Uses regular plural forms (book/books)			
46	2 to 3	Uses some irregular past tense forms consistently (went, did, was)			
47	2 to 3	Asks question, "what's this (that)?"			
48	2 to 3	Controls voice volume 90% of the time			
49	2 to 3	Uses "this" and "that" in speech			
50	2 to 3	Uses "is" in statements (this is ball)			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
51	2 to 3	Says "I, me, mine" rather than own name			
52	2 to 3	Points to object that "is not _____" (is not a ball)			
53	2 to 3	Answers "who" question with name			
54	2 to 3	Uses possessive form of nouns (daddy's)			
55	2 to 3	Uses articles: the, a in speech			
56	2 to 3	Uses some class names (toy, animal, food)			
57	2 to 3	Says "can" and "will" occasionally			
58	2 to 3	Describes items as open or closed			
59	3 to 4	Says "is" at beginning of			

		questions when appropriate				
60	3 to 4	Will attend for five minutes while story is read				
61	3 to 4	Carries out series of two unrelated commands				
62	3 to 4	Tells full name when requested				
63	3 to 4	Answers simple "how" questions				
64	3 to 4	Uses regular past tense forms (jumped)				
65	3 to 4	Tells about immediate experiences				
66	3 to 4	Tells how common objects are used				
67	3 to 4	Expresses future occurrences with "going to," "have to," "want to"				
68	3 to 4	Changes word order				

		appropriately to ask questions (can I, does he)			
69	3 to 4	Uses some common irregular plurals (men, feet)			
70	3 to 4	Tells two events in order of occurrence			
71	4 to 5	Carries out a series of 3 directions			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
72	4 to 5	Demonstrates understanding of passive sentences (boy hit girl, girl was hit by boy			
73	4 to 5	Can find a pair of objects/pictures on request			
74	4 to 5	Uses "could" and "would" in speech			
75	4 to 5	Uses compound sentences (I hit the ball and it went in the road)			
76	4 to 5	Can find top and bottom of items on request			
77	4 to 5	Uses contractions can't , don't, won't			
78	4 to 5	Can point out absurdities in picture			
79	4 to 5	Uses words sister, brother, grandmother, grandfather,			

80	4 to 5	Tells final word in opposite analogies			
81	4 to 5	Tells familiar story without pictures for cues			
82	4 to 5	Names picture that does not belong in particular class (one that's not an animal)			
83	4 to 5	Tells whether or not 2 words rhyme			
84	4 to 5	Uses complex sentences (she wants me to come in because_____)			
85	4 to 5	Can tell whether sound is loud or soft			
86	5 to 6	Can point to some, many, several			

87	5 to 6	Tells address			
88	5 to 6	Tells telephone number			
89	5 to 6	Can point to most, least, few			
90	5 to 6	Tells simple jokes			
91	5 to 6	Tells daily experiences			
CARD	**AGE**	**BEHAVIOR**	**TARGET STARTED ON**	**NO. OF TARGETS**	**TARGET ACHIEVED ON**
92	5 to 6	Describes location or movement through, away, from, toward, over,			
93	5 to 6	Answers why question with an explanation			
94	5 to 6	Puts together and tells 3-5 part sequence story			
95	5 to 6	Defines words			
96	5 to 6	Can "tell me the opposite of _____"			
97	5 to 6	Answers question "what			

		happens if... (you drop an egg)?"			
98	5 to 6	Uses Yesterday and tomorrow meaningfully			
99	5 to 6	Asks meaning of new or unfamiliar words			

Motor Development

Name of the Child:

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
1	0-1	Reaches for objects 6 - 9 inches in front of him/her			
2	0-1	Grasps object held 3 inches in front			
3	0-1	Reaches and grabs objects in front			

4	0-1	Reaches fro preferred objects			
5	0-1	Puts object in mouth			
6	0-1	Head and chest supported on arms while on stomach			
7	0-1	Holds head and chest erect supported on one arm			
8	0-1	Feels and explores object with mouth			
11	0-1	Moves forward one body length on stomach			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
12	0-1	Rolls from back to side			
13	0-1	Turns from back to stomach			
14	0-1	Pulls to sitting position when grasping adult fingers			
15	0-1	Turns head freely when body is supported			
16	0-1	Maintains sitting position for 2 mins.			
17	0-1	Puts down one object deliberately to reach for another			
18	0-1	Picks up and drops object on purpose			
19	0-1	Stands with maximum support			
20	0-1	Bounces up and down in standing position while being supported			

21	0-1	Crawls one body length to obtain object				
22	0-1	Sits self supported				
23	0-1	From sitting position, turns to hands and knees position				
24	0-1	Moves from stomach to sitting position				
25	0-1	Sits without hand support				
26	0-1	Flings objects hapharadly				
27	0-1	Rocks back and forth on hands & knees				
28	0-1	Transfers object form 1 hand to the other in sitting position				
29	0-1	Retains two one-inch cubes in one hand				
30	0-1	Pulls self to on-knees position				

31	0-1	Pulls self to standing position			
32	0-1	Uses pincer grasp to pick up object			
33	0-1	Creeps			
34	0-1	Reaches with one hand from creep position			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
35	0-1	Stands with minimum support			
36	0-1	Licks food from around mouth			
37	0-1	Stands alone for 1 minute			
38	0-1	Dumps object from receptacle			
39	0-1	Turns pages of book, several at a time			
40	0-1	Scoops with spoon or shovel			
41	0-1	Puts small objects in container			
42	0-1	Lower self from standing to sitting			

		position				
43	0-1	Claps hands				
44	0-1	Walks with minimum aid				
45	0-1	Takes a few steps without support				
46	1 to 2	Creeps upstairs				
47	1 to 2	Moves from sitting to standing position				
48	1 to 2	Rolls a ball in imitation				
49	1 to 2	Climbs into adult chair, turns and sits				
50	1 to 2	Puts 4 rings on peg				
51	1 to 2	Removes 1" pegs from pegboard				
52	1 to	Puts 1" peg in pegboard				

	2				
53	1 to 2	Builds tower of 3 blocks			
54	1 to 2	Marks with crayon or pencil			
55	1 to 2	Walks independently			
56	1 to 2	Creeps down stairs feet first			
57	1 to 2	Seats self in small chair			
58	1 to 2	Squats and returns to standing			
59	1 to 2	Pushes and pulls while walking			
CARD	**AGE**	**BEHAVIOR**	**TARGET STARTED ON**	**NO. OF TARGETS**	**TARGET ACHIEVED ON**
60	1 to 2	Uses rocking horse or rocking chair			
61	1 to 2	Walks upstairs with aid			
62	1 to 2	Bends at waist to pick up objects			

		without falling				
63	1 to 2	Imitates circular motion				
64	2 to 3	Strings 4 large beads in 2 minutes				
65	2 to 3	Turns door knobs, handles, etc.				
66	2 to 3	Jumps in place with both feet				
67	2 to 3	Walks backwards				
68	2 to 3	Walks downstairs with aid				
69	2 to 3	Throws ball to adult 5 feet away without moving feet				
70	2 to 3	Builds tower of 5 - 6 blocks				
71	2 to 3	Turns pages 1 at a time				
72	2 to 3	Unwraps small object				

73	2 to 3	Folds paper in half in imitation				
74	2 to 3	Takes apart and puts together snap-together toy				
75	2 to 3	Unscrews nesting toys				
76	2 to 3	Kicks large stationary ball				
77	2 to 3	Rolls clay ball				
78	2 to 3	Grasps pencil between thumb and forefinger, resting on third finger				
79	2 to 3	Forward somersault with aid				
80	3 to 4	Pounds 5 out of 5 pegs				
81	3 to 4	Puts together 3 piece puzzle or Form-board				
82	3 to 4	Snips with scissors				

83	3 to 4	Jumps from height of 8 inches			
84	3 to 4	Kicks large ball when rolled to him			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
85	3 to 4	Walks on tiptoe			
86	3 to 4	Runs 10 steps with coordinated, alternating arm movement			
87	3 to 4	Pedals tricycle 5 feet			
88	3 to 4	Swings on swing when started in motion			
89	3 to 4	climbs up and slides down 4-6 feet slide			
90	3 to 4	Somersaults forward			
91	3 to 4	Walks up stairs, alternating feet			
92	3 to 4	Marches			

93	3 to 4	Catches ball with 2 hands				
94	3 to 4	Uses templates				
95	3 to 4	Cuts along 8" straight line within 1/4" of line				
96	4 to 5	Stands on 1 foot without aid 4-8 secs.				
97	4 to 5	Runs changing direction				
98	4 to 5	Walks balance beam				
99	4 to 5	Jumps forward 10 times without falling				
100	4 to 5	Jumps over string 2 inches off the floor				
101	4 to 5	Jumps backward 6 times				
102	4 to 5	Bounces and catches large ball				
103	4 to 5	Makes clay shapes put together				

		2-3 parts			
104	4 to 5	Cuts curve			
105	4 to 5	Screws together threaded object			
106	4 to 5	Walks downstairs alternating feet			
107	4 to 5	Pedals tricycle turning corner			
108	4 to 5	Hops on 1 foot 5 successive times			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
109	4 to 5	Cuts out 2 inches circle			
110	4 to 5	Draws simple recognizable pictures such as house, man, tree			
111	4 to 5	Cuts out and pastes simple shapes			
112	5 to 6	Prints capital letters, large, single, anywhere on paper			
113	5 to 6	Walks balance board forward, backward and sideways			
114	5 to 6	Skips			
115	5 to 6	Swings on swing initiating & Sustaining motion			
116	5 to 6	Spreads fingers, touching thumb to each finger			

117	5 to 6	can copy small letters				
118	5 to 6	Climbs up step ladders or steps ten feet high to slide.				
119	5 to 6	Hits nail with hammer				
120	5 to 6	Dribbles ball with direction				
121	5 to 6	Colors, remaining within lines 95%				
122	5 to 6	Can cut picture from magazine or catalog without being more than 1/4" from edge				
123	5 to 6	Uses pencil sharpener				
124	5 to 6	Copies complex drawings				
125	5 to 6	Tears simple shapes from paper				
126	5 to 6	Folds paper square two times on diagonal in imitation				

127	5 to 6	Catches soft ball or bean bag with one hand			
128	5 to 6	Can jump rope by self			
129	5 to 6	Hits ball with bat or stick			
CARD	**AGE**	**BEHAVIOR**	**TARGET STARTED ON**	**NO. OF TARGETS**	**TARGET ACHIEVED ON**
130	5 to 6	picks up object from ground while running			
131	5 to 6	Skates forward 10 feet			
132	5 to 6	Rides bicycle			
133	5 to 6	Slides on sled			
134	5 to 6	Walks or plays in water waist-high in swimming pool			
135	5 to 6	Steers wagon, propelling with one foot			
136	5 to 6	Jumps up and pivots on one			

		foot			
137	5 to 6	Prints name on primary paper using lines			
138	5 to 6	Jumps from height of 12 inches and lands on balls of feet			
139	5 to 6	Stands on one foot, no support, eyes closed, 10 seconds			
140	5 to 6	Hangs 10 seconds from horizontal bar bearing own weight on arms			

Self Help Skills

Name of the Child:					
CARD	**AGE**	**BEHAVIOR**	**TARGET STARTED ON**	**NO. OF TARGETS**	**TARGET ACHIEVED ON**
1	0-1	Sucks and swallows liquids			
2	0-1	Eats liquid food, baby cereal			
3	0-1	Reaches for bottle			
4	0-1	Eats strained food fed by parent			
5	0-1	Holds bottle without help while drinking			
6	0-1	Directs bottle by gulding it towards mouth or pushing it away			
7	0-1	Eats mashed food fed by parent			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
8	0-1	Drinks from cup held by parent			
9	0-1	Eats semi solid food fed by parent			
10	0-1	Feeds self with fingers			
11	0-1	Holds and drinks from cup using 2 hands			
12	0-1	Takes spoon filled with food to mouth with help			
13	0-1	Holds out arms and legs while being dressed			
14	1 to 2	Eats food with spoon independently			
15	1 to 2	Holds and drinks from cup with one hand			
16	1 to 2	Puts hands in water and pats wet hands on face in imitation			

17	1 to 2	Sits on potty or infant toilet seat for 5 minutes				
18	1 to 2	Puts hat on head and takes it off				
19	1 to 2	Pulls off socks				
20	1 to 2	Pushes arms through sleeves, legs through pants				
21	1 to 2	Takes off shoes when laces are untied and loosened				
22	1 to 2	Takes off coat when unfastened				
23	1 to 2	Takes off pants when unfastened				
24	1 to 2	Zips and unzips large zipper without working catch				
25	1 to 2	Uses words or gestures indicating need				

		to go to bathroom			
26	2 to 3	Feeds self using spoon and cup with some spilling			
27	2 to 3	Takes towel from parent and wipes hands and face			
28	2 to 3	Sucks liquid from cup using straw			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
29	2 to 3	Scoops with fork			
30	2 to 3	Chews and swallows only edible things			
31	2 to 3	Dries hands without help when given towel			
32	2 to 3	Asks to go to bathroom, even if too late to avoid accidents			
33	2 to 3	Controls drooling			
34	2 to 3	Urinates or defecates 3 times a week when placed on potty			
35	2 to 3	Puts on shoes			
36	2 to 3	Brushes teeth in imitation			
37	2 to 3	Takes off simple clothing that has been unfastened			

38	2 to 3	Uses bathroom for bowel movement, 1 daytime accident per week			
39	2 to 3	Gets water from faucet without help when stool or steps are placed			
40	2 to 3	Washes face and hands using soap when adult regulates water			
41	2 to 3	Asks to go to bathroom during day in time to avoid accidents			
42	2 to 3	Places coat on hook placed at child's height			
43	2 to 3	Stays dry during naps			
44	2 to 3	Avoids hazards such as sharp furniture corners, open stairs			
45	2 to 3	Uses napkins when reminded			
46	2 to 3	Stabs food with fork and brings to mouth			

47	2 to 3	Pours from small pitcher into glass without help			
48	2 to 3	Unfastens snap on clothing			
49	2 to 3	Washes own arms and legs while being bathed			
CARD	**AGE**	**BEHAVIOR**	**TARGET STARTED ON**	**NO. OF TARGETS**	**TARGET ACHIEVED ON**
50	2 to 3	Puts on socks			
51	2 to 3	Puts on coat, sweater, shirt			
52	2 to 3	Finds front of clothing			
53	3 to 4	Feeds self entire meal			
54	3 to 4	Dresses self with help on pullover shirts and fastener			
55	3 to 4	Wipes nose when reminded			
56	3 to 4	Wakes up dry 2 morning out of 7			

57	3 to 4	Males urinate in toilet standing up				
58	3 to 4	Initiates and completes dressing & un-dressing except 75% of time				
59	3 to 4	Snaps or hooks clothing				
60	3 to 4	Blows nose when reminded				
61	3 to 4	Avoids common dangers (broken glass)				
62	3 to 4	Puts coat on hanger and replaces hanger on low bar with instructions				
63	3 to 4	Brushes teeth when given verbal instructions				
64	3 to 4	Puts on mittens				
65	3 to 4	Unbuttons large buttons on button board or jacket placed on table				
66	3 to 4	Buttons large buttons on				

		button board or jacket placed on table			
67	3 to 4	Puts on boots			
68	4 to 5	Cleans up spills using own cloth			
69	4 to 5	Avoids poisons & all harmful substance			
70	4 to 5	Unbuttons own clothing			
71	4 to 5	Buttons own clothing			
72	4 to 5	Clears place at table			
73	4 to 5	Puts Zipper foot in catch			
CARD	**AGE**	**BEHAVIOR**	**TARGET STARTED ON**	**NO. OF TARGETS**	**TARGET ACHIEVED ON**
74	4 to 5	Washes hands and face			
75	4 to 5	Uses correct utensils for food			
76	4 to 5	Wakes from sleep during night to use toilet or stays dry all night			

77	4 to 5	Wipes and blows nose 75% of the time when needed without reminders				
78	4 to 5	Bathes self except for back, neck & ears				
79	4 to 5	Uses knife for spreading soft topping on toast				
80	4 to 5	Buckles & unbuckles belt on dress, pants or shoes				
81	4 to 5	Dresses self completely including all front fastenings except tie				
82	4 to 5	Serves self at table, parent holds serving dish				
83	4 to 5	Helps set table by correctly placing plates, napkins, & utensils with verbal cues				
84	4 to 5	Brushes teeth				

85	4 to 5	Goes to bathroom in time, undresses wipes self, flushes toilet and dresses unaided			
86	4 to 5	Combs or brushes long hair			
87	4 to 5	Hangs up clothes on hanger			
88	4 to 5	Goes about neighbourhood without constant supervision			
89	4 to 5	Laces shoes			
90	4 to 5	Ties shoes			
91	5 to 6	Is responsible for 1 weekly household task and does it upon request			
92	5 to 6	Selects appropriate clothing for temperature and occasion			
93	5 to 6	Stops at kerb, looks both ways, and crosses street without verbal reminders			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
94	5 to 6	Serves self at table and passes serving dish			
95	5 to 6	Prepares own cold cereal			
96	5 to 6	Is responsible for 1 daily household task (setting table, taking out trash)			
97	5 to 6	Adjusts water temperature for shower or bath			
98	5 to 6	Prepares own sandwich			
99	5 to 6	Walks to school, playground or store within 2 blocks of home independently			
100	5 to 6	Cuts soft food with knife (bananas etc)			
101	5 to 6	Finds correct bathroom in			

		public places			
102	5 to 6	Opens 1/2 pint milk carton			
103	5 to 6	Picks up, carries, sets down cafeteria tray			
104	5 to 6	Ties hood string			
105	5 to 6	Buckles own seat belt in car			

Social Development

Name of the Child:

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
1	0-1	Watches person directly in line of vision			
2	0-1	Smiles in response to attention by adult			
3	0-1	Vocalizes in response to attention			
4	0-1	Looks at own hands, often smiles or vocalizes			
5	0-1	Responds to being in family circle by smiling, vocalizing, or ceasing to cry			
6	0-1	Smiles in response to facial expression of others			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
7	0-1	Smiles and vocalizes to mirror image			
8	0-1	Pats and pulls at adults facial features (hair, nose, glasses, etc.)			
9	0-1	Reaches for offered object			
10	0-1	Reaches for familiar persons			
11	0-1	Reaches for, and pats at mirror image or another infant			
12	0-1	Holds and examines offered object for at least a minute			
13	0-1	Shakes or squeezes object placed in hand, making sounds unintentionally			
14	0-1	Plays unattended for 10 minutes			

15	0-1	Seeks eye contact often when attended for 2-3 minutes				
16	0-1	Plays alone contentedly near adult activity 15-20 minutes				
17	0-1	Vocalizes to gain attention				
18	0-1	Imitates peek-a-boo				
19	0-1	Claps hand, (pat-a-cake) in imitation of adult				
20	0-1	Waves bye-bye in imitation of adult				
21	0-1	Raises arms-"so-big" in imitation of Adult				
22	0-1	Offers toy, object, bit of foot to adult, but does not always release it				
23	0-1	Hugs, pats, kisses "familiar" persons				

24	0-1	Shows response to own name by looking or reaching to be picked up			
25	0-1	Squeezes or shakes toy to produce sound in imitation			
26	0-1	Manipulates toy or object			
27	0-1	Extends toy or object to adult and releases			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
28	0-1	Imitates movements of another child at play			
29	1 to 2	Imitates adult in simple task (shakes clothes, pulls at bedding, holds silverware			
30	1 to 2	plays with one other child, each doing separate activity			

31	1 to 2	Takes part in game, pushing car or rolling ball with another child 2-5 minutes				
32	1 to 2	Accepts parent's absence by continuing activities, may momentarily fuss				
33	1 to 2	Actively explores his environment				
34	1 to 2	Takes part in manipulative game (pulls strings, turns handle) with another person				
35	1 to 2	Hugs and carries doll or soft toy				
36	1 to 2	Repeats actions that produce laughter and attention				
37	1 to 2	Hands book to adult to read or share with him				

38	1 to 2	Pulls at another person to show them some action or object			
39	1 to 2	Withdraws hand, says "no-no" when near forbidden object with reminders			
40	1 to 2	Waits for needs to be met when placed in high chair or on changing table			
41	1 to 2	Plays with 2 to 3 peers			
42	1 to 2	Shares object or food when requested with one other child			
43	1 to 2	Greets peers and familiar adults when reminded			
44	2 to 3	Cooperates with parental request 50% of the time			
45	2 to 3	Can bring or take object or get person from another room on			

		direction			

CARD	AGE	BEHAVIOR	TARGET STARTED ON	NO. OF TARGETS	TARGET ACHIEVED ON
46	2 to 3	Attends to music or stories 5-10 minutes			
47	2 to 3	Says "please" and "thank you" when reminded			
48	2 to 3	Attempts to help parent with tasks by doing a part of the chore (holding dust pan)			
49	2 to 3	Plays "dress-up" in adult clothes			
50	2 to 3	Makes a choice when asked			
51	2 to 3	Shows understanding of feelings by verbalizing love, bad, sad, laugh, etc.			
52	3 to 4	Sings and dances to music			
53	3 to 4	Follows rules by imitating actions of			

		other children				
54	3 to 4	Greets familiar adults without reminder				
55	3 to 4	Follows rules in group games led by adults				
56	3 to 4	Asks permission to use toy that peer is playing with				
57	3 to 4	Says please and thank you without reminder 50% of the time				
58	3 to 4	Answers telephone, calls for adult or talks to familiar person				
59	3 to 4	Will take turns				
60	3 to 4	Follows rules in group games led by an older child				
61	3 to 4	Cooperates with adults requests 75% of the time				

62	3 to 4	Stays in own yard area			
63	3 to 4	Plays near and talks with other children when working on own project (30 minutes)			
64	4 to 5	Asks for assistance when having difficulty (with bathroom or getting a drink)			
CARD	**AGE**	**BEHAVIOR**	**TARGET STARTED ON**	**NO. OF TARGETS**	**TARGET ACHIEVED ON**
65	4 to 5	Contributes to adult conversation			
66	4 to 5	Repeats rhymes, song, or dances for others			
67	4 to 5	Works alone at chore for 20-30 minutes			
68	4 to 5	Apologizes without reminder 75% of the time			

69	4 to 5	Will take turns with 8-9 other children				
70	4 to 5	Plays with 2-3 children for 20 minutes in co-operative activity, (project or game)				
71	4 to 5	Engages in socially acceptable behavior in public				
72	4 to 5	Asks permission to use objects belonging to others 75% of the time				
73	5 to 6	States feelings about self: mad, happy. love				
74	5 to 6	Plays with 4-5 children activity without constant supervision				
75	5 to 6	Explains rules of game or activity to others				
76	5 to 6	Imitates adults roles				
77	5 to 6	Joins in conversation at mealtime				

78	5 to 6	follows rules of verbal reasoning game			
79	5 to 6	Comforts playmates in distress			
80	5 to 6	Chooses own friends			
81	5 to 6	Plans and builds using simple tools (inclined planes, fulcrum, lever, pulley)			
82	5 to 6	States goals for himself and carries out activity			
83	5 to 6	Acts out parts of story, playing part or using puppets			

3.4 UNIT SUMMARY

- Portage is the most recognized and used early intervention model in the world.
- **'.Portage Basic Training Course for Early Stimulation of Pre-School Children in India'** is an Indian adaptation as well as translation in Hindi of "Portage Guide to Early Education" by S.M.Bluma, M.Shearer, A.H.Frohman and Jean M.Hilliard (USA). It has also been translated in 9 Indian languages by CBR Network, Bangalore and is available in the form of CD.

- Portage guide is basically a system for teaching skills to pre-school children with developmental delays. The portage project is a home based training system which directly involves parents in the education of their children in the early childhood ie., 0-6 years of age.
- The Checklist of Age Appropriate Activities can be utilised for the purpose of intervention.

3.5 CHECK YOUR PROGRESS

1. Define portage.
2. What is portage guide?
3. What is the usefulness of the Checklist of Age Appropriate Activities?

3.6 ASSIGNMENT

- Apply Portage Guide and Kit on a child with any disability and prepare an Intervention Plan.

3.7 POINTS FOR DISCUSSION AND CLARIFICATION

After going through the Unit you may like to have further discussion on some points and clarification on other. Note down those points below:

3.7.1 Points for Discussion

Points for Clarification

3.7 REFERENCES/FURTHER READINGS

1. Portage Basic Training Course for Early Stimulation of Pre-School Children in India'

UNIT 4:UNIVERSAL DESIGN OF LEARNING FOR CURRICULUM DEVELOPMENT

STRUCTURE

4.1 INTRODUCTION

Behavioural Modification skills are widely used in changing a behavior. We can change only operand behaviors. Operand behaviors are those behaviors that are seen. For example sits in a chair is an operand behavior whereas the boy is sad is not

an operand behavior. Unless the behavior manifests itself in the form of operand/observable behavior such as boy is crying.

Behaviors can be added or changed. Behavioural Modification skills is a double edged sword. Skinner's Behavioural Modification skills are used worldwide in many sectors- in education, in HRD, management of animal behaviour, so on so forth.

Now let us understand, how a behavior is formed. Generally behaviors are formed by repetition and repetition takes place only there are positive reinforcements. These conditionings get consolidated when the behavior occurs repeatedly. Behavioural Modification skills is also used to modify undesirable behavior. There are 10 important skills one need to know which are extremely useful in teaching and learning environments.

4.2 OBJECTIVES

After going through this Unit you will be able to learn about

- Behaviour modification skills;
- Task Analysis;
- Reinforcement

4.3 TASK ANALYSIS

It is observed that children with mental retardation are not able to learn the task as a whole. But when presented the task in a simpler steps, they are able to make better progress. For example, mixing rice and dall and eating. This task has to be analyzed into simpler sub-tasks and to be taught step by step the sub-tasks.

4.3.1 What is task analysis?

To tell you in simple words, it is the analysis of a task into simple steps and arranging them in a sequential order. Macarthy (1987) states that task analysis is a teaching strategy in which the task is broken down into teachable components and arranged in a sequential order. It serves as a blue print through which a student should proceed to achieve the objective. It describes an end point of what must be learned but not the methods that will be employed for learning. Therefore, it is not a teaching methodology. A teaching methodology describes the procedure for teaching a task along with teaching material.

For example, if the task is sorting of vegetables (onion, chillies, brinjal), the task analysis for this task could be:

a) Sort onions from a group of vegetables containing onions and chillies.

b) Sort onions from a group of vegetables containing onions, chillies and brinjal.

c) Sort onions and chillies form a group of vegetables containing onions and chillies.

d) Sort onions and chillies from a group of vegetables containing onions, chilllies and brinjals.

e) Sort onions, chillies and brinjals from a group of vegetables containing onions, chillies and brinjals.

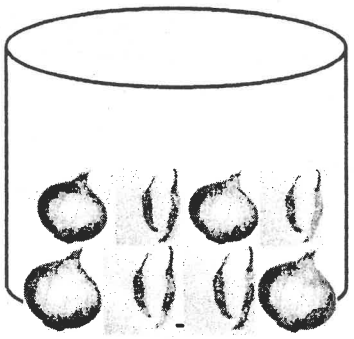
The steps stated above will tell you what is to be taught (content) and how it is to be taught (procedure). `How' is the procedure for teaching. It includes method of teaching, and the material to be used for teaching.

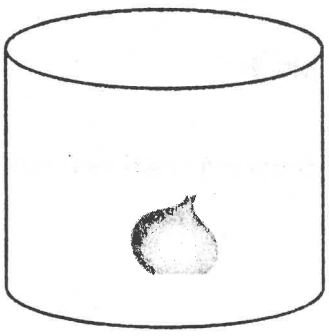
For example take the sub-task (a)

Sort onions from a group of vegetables containing onions and chillies.

The procedure for teaching the above as follows:

Take onions and chillies in a basket (A). Take one empty basket (B) and keep in front of the child. Pick up one onion and place in the empty basket (B) and say onion. Do two to three times. Later tell the child to pick up the onion from the basket (A) which has both onions and chillies. If the child picks up chilly say it is chilly and keep back in the basket (A). Take onion in your hand and bring closer to the onion in the basket (A), now tell the child to pick up the onion.





Basket-A **Basket-B**

By reading the above did you notice the difference between the content ie., what is to be taught and methodology ie., how the content is to be taught. Therefore, we say that task analysis tells us what is to be taught and it does not describe how it is to be taught.

4.3.2 Procedure for analyzing the task

Do you need to follow any procedure to analyze the task. Yes, you need to follow the steps given below.

- Identify and describe the task, which you want the student to learn.
- Then, analyze the task into its essential components and arrange them in a sequential order.
- Find out the current level functioning of the child in the task.
- Consider the need for task slicing of sub-task.

If a task has numerous sub-tasks, take few sub-tasks sequentially at a time, to teach. When the student learns them take a few more sub-tasks and finally link all of them from the total task.

Example-4:

Task: Brushing teeth with tooth paste and brush.

First you may teach I set of sub-tasks, later II set and III set can be linked together.

III	1. Go to the sink. 2. Take the tooth paste tube from the self. 3. Hold the tooth paste with left hand. 4. Open the cap with right hand. 5. Hold the tooth paste in the right hand. 6. Take the brush in the left hand. 7. Squeeze the paste on the brush. 8. Place the cap and keep the tooth paste back in the shelf.
I	9. Hold the brush and brush the front teeth. 10. Move the brush to the right side and brush the teeth. 11. Move the brush to the left side and brush the teeth. 12. Remove the brush from the mouth. 13. Open the tap and wash with water in the sink. 14. Split the foam in the sink.
II	15. Cup the hand and take water. 16. Gargle mouth with water. 17. Wash face with water. 18. Take towel and wipe face.

4.3.3 Methods for analyzing the tasks

For analyzing task, a few methods have been suggested, and, any of which you may use. After identifying and specifying the task to be taught, you have to do a systematic analysis of the task and organize the sub-tasks in a hierarchical order. The following are some of the methods.

a. **Watch a master**: In this method, you observe another person performing the task and write down the steps. Ask your friend to do the task, which you have selected for the student for teaching. Observe him/her keenly and write the steps.

b. **Self-monitoring**: perform the selected task by yourself and list the steps. Sometimes, doing the task and writing the steps may be difficult as the writing will interrupt the performance of task.

c. **Backward chaining**: In this method, focus at the terminal objective and write down the components in the preceding level of difficulty – i.e., recording from last step to first step.

d. **Brainstorming**: First, write down all the component steps irrespective of the sequence. Later, arrange the steps in a logical order.

To check whether your statements of sub-tasks are clear, or whether you have noted down all the components of the task, do the exercise as suggested below. We need two persons, one to read the statements and another to follow the instructions and perform. A few audience to observe the person performing the task will be helpful. Ask the person who has to read the statements to face the wall and the other to face audience. Instruct the person who has to perform the task to follow strictly the way the steps are read. The person will complete the task if the statements are clear, if not she will end up not completing the task. It is a very useful exercise to check the clarity of the statements and you will enjoy doing this activity, as well as correct errors in the listing.

4.4 REINFORCEMENT

If we observe events in our daily lives, certain behaviours we continue to perform as the consequences are reinforcing. For example, you maintain a good standards of work behaviour in your office for which you receive an appreciation from your boss. So you continue to maintain the same standards of behaviour. We hear from our friends the comments such as my boss never appreciates when I do a good job but he always points out when I make mistakes. This brings down the motivation of a person to work. Another example, say you have tried out a new recipe. If the dish prepared is tasty you will try again to prepare the same, otherwise you do not prepare the dish again. You use a blanket in winter because it gives you warmth and you do not use it in summer because you sweat. If you look at all these examples, we continue the behaviours when the consequences are pleasant (appreciation, tasty, warmth) and discontinue the behaviours when consequences are not pleasant (no appreciation, not tasty, sweating).

Sometimes this natural process of receiving pleasant consequences may be insufficient to maintain all desirable behaviours. Therefore, we need to look for more powerful ones that motivates learning.

What is reinforcement?

Reinforcement describes a relationship between two environmental events, a behaviour (response) and an event or stimulus (consequence) that follows the response. The relationship is termed reinforcement only if the response increases or maintains its rate as a result of the consequence. For example, a child completes a given assignment with in a given time (response) the teacher allows him to play his most favoured game (consequence). As he was allowed to play his most favoured game, he continues to complete a given assignment within a given time.

Definition

Reinforcement is frequently the critical component of programmatic attempts

- to teach new behaviours,
- to increase existing behaviours that are occurring infrequently, and
- to maintain behaviour at acceptable levels.

4.4.1 Types of reinforcers

Different types of reinforcers are used in teaching children with mental retardation. The reinforcers are as follows:

Edible reinforcers

Edible reinforcers include food and drink. They are usually used with young children and children with low ability. These are used when teaching new skills to children as they have higher motivational value. However, you need to remember the following if edible reinforcers are to be effective.

- See that the child is hungry/before using the reinforcer (food item). If you give the reinforcer after child had lunch, the child will not look forwarded to receive the reinforcer. Then the reinforcer is not effective in increasing the probability of occurring the target behaviour (it does not mean that the child should be starved).
- Another point is that the child gets satiated as he receives the food as a reinforcer. The enthusiasm, motivation will decrease in child as his hunger is

slowly satisfied by receiving the food. Follow the given points to prevent or delay satiation.

- Use different types of rienforcers (food/drink items) all along the day with a given child. Use the list of reinforcers you have prepared for each child.
- Plan short teaching sessions in which edible rienforcer is used. Shorter sessions with fewer trials decreases the chances of satiation.
- If satiation occurs switch to an alternative reinforcer. Alternating salty food and sips of liquid may be a very effective way of delaying satiation.
- Give small pieces of food/drink for correct response.

Tangible reinforcers

Tangible reinforcers are those which are immeidatley useful to the child (pen, pencil, crayons, games, toys) or are objects which have achieved reinforcing properties, such as stars marked for the correct response.

Exchangeable reinforcers

Exchangeable reinforcers are those which may be traded, or exchanged for other more valued secondary or back up reinforcers. For example, toknes, check marks are used as reinforcers which are exchanged for other things.

Activity reinforcers

Activity reinforcers are those which are activities (eg. Painting, colouring, playing a specific game or toy, listening to a specific song) that are of interest to children.

Social reinforcers

Social reinforcers are natural type of reinforcers and are most readily available with the trainer. Example, words of praise, smile, nodding, clapping, pat on the back, etc.

4.4.2 Shaping

Shaping refers to sequential, systematic reinforcement of successive approximations of target behaviour until the behaviour is achieved. For example, you have planned to teach Kiran to sit at one place for 20 minutes while working with him. But he is now sitting only for five minutes. Under these circumstances, a programme in which

Kiran earns a reinforcer for sitting 20 minutes will never happen and kiran will never earn a reinforcer. Instead, you can set up a graduated sequence of criteria .

Kiran remains in his seat for 5 minutes.

Kiran remains in his seat for 7 minutes.

Kiran remains in his seat for 10 minutes.

Kiran remains in his seat for 15 minutes.

Kiran remains in his seat for 20 minutes.

Reinforce each step in the sequence until established. Then shift the criterion for reinforcement.

Shaping procedures may be used to establish new behaviours of many kinds, ranging from verbal behaviours in severely disabled students to study behaviours in college students.

4.4.3 Chaining

Chaining refers to the actual process by which each of the responses is linked to one another to form the behaivoural chain. The identification of response sequence is done through task analysis.

Backward chaining

In backward chaining the last step is taught first, that is you start teaching the last step first and the next. For example

Forward chaining

When you use forward chaining start teaching from the first step in the chain. Once the child learns to do the first step to the criterion mentioned teach the next step.

Total task presentation

You can also use total task presentation. Here, the student is taught all the steps in a sequence until the entire chain is mastered. It is particularly useful to teach children with mental retardation who have higher ability. We don't have to teach step after step as explained earlier as students may have an ability to learn more than one step at a time.

4.4.4 Prompting and Fading

A prompt is a form of temporary assistance used to help a student perform in a desired manner. When a student is unable to perform a task, a prompt (temporary assistance) is used to help the student perform the task. As the student learns to perform the task, the prompt is faded (slowly removed) from use.

If a student does not perform a task/activity when we make a verbal request, prompts are introduced in the following manner until the student has made the desired response.

Level-1	Verbal Request (VR)
Level-2	VR + Verbal Prompt (VP)
Level-3	VR + VP + Gestural Prompt (GP)
Level-4	VR + VP + Modelling Prompt (MP)
Level-5	VR + VP + Physical Prompt (PP)

For example, a child is requested to wear a shirt. If he does not wear his shirt, give verbal prompt and wait for few seconds. When no response occurs, give the next level prompt (GP). Similarly depending on the response the prompt levels will be increased. The prompts are introduced in the "least-to-most prompts sequence" as indicated above. This helps in finding out precisely at what prompt level the student is able to perform a task and also in gradual fading of prompts.

Verbal request

The teacher requests the student to perform the task.

Verbal prompts

Giving additional instructions, emphasizing important words by saying them louder or longer, giving single word reminders, bringing attention to each important part of the instruction by pausing, are some of the verbal prompts used in teaching tasks.

Gestural prompts

Gestural prompts are pointing the place where the response is to be made, making noise by tapping finger where the response is to be made, and using finger to relate the part of the task along with a verbal prompt.

Modelling

Modelling is a method of teaching by demonstration. In this, the teacher models the performance of a task and the student imitates the model. The modelling prompt is used when student fails to perform the activity following a verbal prompt and gestural prompt.

Physical prompt

Here, a trainer uses her hands to support a student to go through the steps of a task. She may give complete physical support/partial physical support depending on the type of support required by the student.

See the example given below:

Task: Threading the beads.

- Verbal request:

  Thread the beads.

- Verbal prompt: Instructing verbally

  Hold the bead, pass the wire through the hole and pull the bead down the thread.

- Gestural prompt: pointing, signals and so on.

  Pointing bead, wire, signaling with the fingers how to pass the wire through the hole and pulling the bead down the thread.

- Modelling prompt: Teaching by demonstration.

  Taking the bead and wire and showing threading of a bead step by step and asking the student to do the same.

- Physical prompt: Helping the student or guiding student holding hand to learn the task.

  Helping student to hold the bead and the wire, and to pass the wire through the hole and pull the bead down the thread by holding students hand.

Among the above prompts in the order of least to most assistance, verbal prompt is the least assistance and physical prompt is the most assistance. That is if student requires verbal prompt during learning that means she needs less assistance/help

from you and if she requires physical prompt during learning that means she needs more assistance/help from you.

While providing prompts check the level of assistance required by student in the beginning so that appropriate assistance is provided and the student moves forward. As the child learn each step fade away the temporary assistance so that the child can perform the task by himself.

4.5 UNIT SUMMARY

- Different strategies are used in teaching children with mental retardation. They are task analysis, reinforcement, shaping, chaining, and prompting and fading.
- Task analysis is breaking up of a complex task into simpler sub-tasks and arranging them in a sequential order.
- Using task analysis helps us in pinpointing students functioning level on a specific task and also provides basis for sequential instruction.
- Task analysis checklist is useful for recording both assessment and evaluation data.
- Different methods are used in analyzing the data. They are watch a master, self-monitoring, backward chaining and brainstorming.
- Reinforcement is frequently the critical component of programmatic attempts to teach new behaviours, to increase existing behaivours that are occurring infrequently and to maintain behaviours at acceptable level.
- Careful selection of reinforcers are necessary to make learning effective.
- Present the reinforcer only when the child exhibits the correct response and the reinforcer should follow immediately after the correct response.
- The types of reinforcers include edible reinforcers, exchangeable reinforcers, activity reinforcers and social reinforcers.
- Shaping refers to sequential, systematic reinforcement of successive approximations of a target behaviour until the behaviour is achieved.
- Chaining refers to the actual process by which each of the responses is linked to one another to form a behavioural chain.
- A prompt is a temporary assistance given to a student to learn a task and is faded away as he learns the task.

- Physical prompt, modeling prompt gestural prompt and verbal prompt are some of the prompts used in teaching skills to children with mental retardation.

4.6 CHECK YOUR PROGRESS

Exercise-I

I. Answer the following questions.

1. Name some of the strategies used in teaching children with mental retardation.

2. Define task analysis and explain why task analysis is required.

3. Explain any two methods of analyzing the task.

II. Fill in the blanks.

1. Task analysis checklist is used both for _____ and _____.
2. The performance recorded in the entry level of checklist indicates the _____ performance of a student against a _____.
3. Task analysis tells you _____ to teach but not _____ to teach.

EXERCISE-II

1. Define the following.

a) Reinforcement

b) Shaping

c) _____

Chaining

2. What points you should remember while delivering the reinforcers.

3. List the types of reinforcers and give two examples to each one.

4. Explain schedules of reinforcement.

5. What is backward chaining and forward chaining?

6. Explain with an example different prompts used in teaching children with mental retardation.

AASSIGNMENT

- **What reinforcement will you suggest for developing desirable behaviour in a MR Child in your locality.? .**

4.8 POINTS FOR DISCUSSION AND CLARIFICATION

After going through the Unit you may like to have further discussion on some points and clarification on other. Note down those points below:

4.8.1 Points for Discussion

4.8.2 Points for Clarification

4.9 REFERENCES

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UNIT 5: NCF

STRUCTURE

1.1 INTRODUCTION

Most normally hearing children acquire spoken language skills during their first few years of life, effortlessly and without formal instructions. All they require is the chance to interact regularly with people who already use spoken language. But some children have hearing impairment – a difficulty to hear, detect and interpret sounds. The natural process of acquisition of language and speech is therefore impeded or prevented. Unless this problem is resolved, the long-term consequences are severe and wide-ranging.

In this unit we will look at the various techniques and technologies that can be used effectively for the training and development of HI children.

1.2 OBJECTIVES

After studying this Unit, you will be able to :

- **understand the process of communication and the various communication skills;**
- **gain knowledge about how hearing ability is assessed;**
- **know about the amplification devices used with H.I. children;**
- **understand the process of development of language in children;**
- **list out numerical skills to be developed in H.I. children;**
- **know the main factors involved in use of auditory training and teaching of speech for the H.I.**

1.3 INTRODUCTION TO VARIOUS COMMUNICATION SKILLS (NON VERBAL, VERBAL, MANUAL, BODY LANGUAGE)

1.3.1 Communication

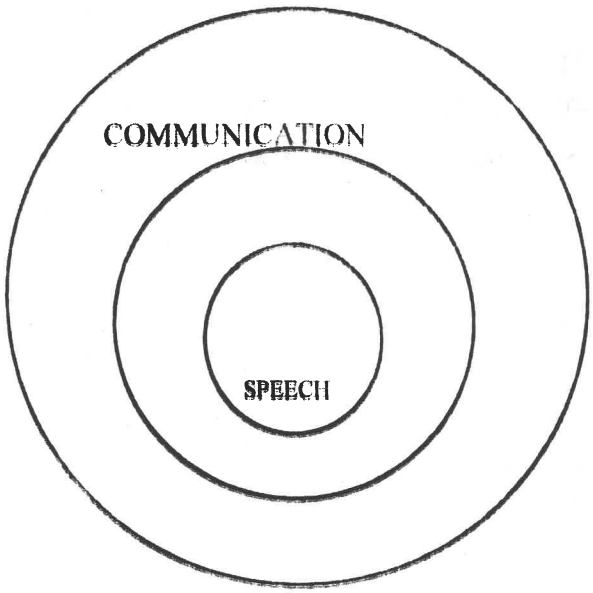
Communication means exchange or transfer of information, ideas, feelings, opinions etc. achieved in many different ways such as by mere touch, raising of eyebrows, signs, use of drawings, speech, written language, etc. In ordinary everyday dealings we use any one of these or a combination of these for exchanging messages, and we are not even aware of these as being different means of communicating. Therefore, for many people, the terms communication, language and speech are one

and the same thing. However, it is important particularly for teachers and parents of the deaf children to bear in mind that although not all communication is linguistic, language, by far, is the most powerful medium of communication, and their efforts must be geared to helping their HI child to move on gradually from use of signs and gestures to words and then sentences.

Many of us have perhaps faced the difficulties in communication while visiting places where the language used is not known to us. We experience same difficulties in trying to communicate with a hearing handicapped person who does not speak or understand any verbal language. In such situations, we resort to the use of physical guidance, gestures, signing, drawings, miming, pointing, etc. to convey intended messages. Thus all of these are different ways of communication used by us.

THE USE OF VERBAL LANGUAGE (ORAL/WRITTEN COMMUNICATION) IS ONE WAY OF COMMUNICATING WHICH IS SPECIFIC TO HUMAN BEINGS.

*THEN SPEECH HAS ALWAYS BEEN THE **PRIMARY** MEDIUM OF USE OF LANGUAGE FOR COMMUNICATION. (THEN CAME WRITING. BUT THE ORAL LANGUAGE/ SPEECH IS THE BASE OF WRITING WHICH IS NOTHING BUT AN EFFORT TO CAPTURE ORAL LANGUAGE THAT IS SOUND AND MEANINGS ON PAPER.) THUS GRAPHICALLY THESE CAN BE VIEWED AS :*



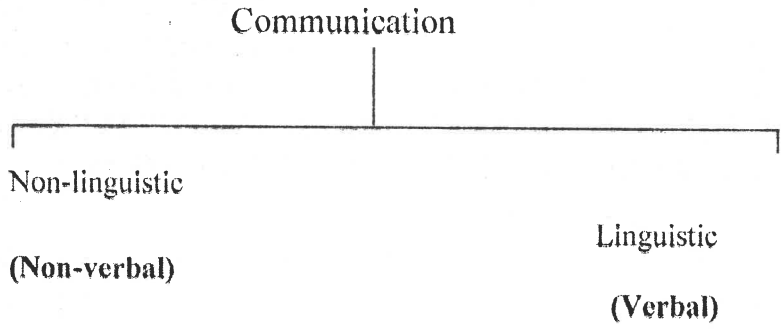
It can be seen from this figure that the word communication is most general of all these terms and language and speech come within it.

1.3.2 Animal Communication

Human beings as well as animals, communicate amongst themselves, e.g. ants, bees and primates (mainly apes and monkeys) establish contact in certain ways; dogs express their pleasure, anger, fear, through movements of the tail, barking, eye-gaze etc. But the level of this communication is primitive. Moreover it is habitual, specific to the situation, and is initiated by internal or external physical cues. Also, these are only a few limited sounds or other types of signals - these are **not symbolic**.

1.3.3 Human Communication

Communication in human beings can be classified mainly in two ways;



- **Non-verbal (Non-linguistic) Communication**

In communication, lot of information is conveyed by non-verbal means, such as gestures, which involve not only hand movements but also facial expressions and body movements and postures. A person's clenched fist, bared teeth, frowns, stamping feet in tantrums, voice intonation, all help in revealing the mood of the person. Mime, dance, drawing, painting, sculpture, are yet other ways of communicating ideas and information. However, exclusive use of such means not only will be difficult and cumbersome but also, not truly efficient and effective. As has been stated earlier, only the system of language can be truly effective for exchange of ideas and information of any kind. *However, an example of well-developed manual (body language) communication systems is the Sign Languages of the Deaf. The deaf amongst themselves can communicate almost any thing and everything to each other, but within their sphere of knowledge of course.*

- **Verbal (linguistic) Communication**

Learning and using language is solely a human activity. Listening-speaking and reading-writing are the two most common modalities used for language communication in the hearing society. It is this ability to communicate using language that differentiates humans from other known animals. Several attempts have been made in the past to teach the higher primates language (in the verbal mode), but all of these have met with failures. This inability in higher primates to learn language has been attributed to the structural differences between them and the humans in the peripheral sensory area (hearing) and the central nervous system (brain). In human beings, the sense of hearing and the brain facilitate the job of processing the incoming speech and help in acquisition of language.

In addition, man, with his more flexible vocal apparatus (organs of speech), has developed his cries (as against specific cries of animals) into a very efficient system of verbal communication i.e. language. By means of this, man can attain such complex social coordination as that of a moving army or can communicate to his fellows a theory of universe. In addition, the human language system has the potential to create new meanings such as **'space ship'**, or **'mouse'** and **'byte'** in a computer system. Research has shown that some animals (apes) after much training, have acquired some modified form of language; but these are only a very limited number of messages produced in non-vocal modality. Moreover, none of these has the complexity and versatility of even a 4-year-old human child's language. Also, human language allows us to talk about an infinite number of topics. As far as we know, animal communication refers only to the 'here and now', and neither bees nor primates, nor any other species other than man, can discuss abstract concepts like kinship, justice, democracy, peace, etc.

The modes of verbal communication generally used by hearing people are listening, speaking, reading and writing. But a system using manual code representing spoken languages can also be considered as a mode of linguistic communication. e.g. Signed English. This is widely used in Western countries to represent English language word by word through signs including word parts such as – ing, -ed, -ly, -s, -es, etc. Such a system is also used in India for Indian languages such as Signed Hindi, Signed Tamil, Signed Marathi, and Signed English also. This means that a person speaks and understands a spoken Hindi, reads Hindi script and /or signs and understands Signed Hindi – one language and three modality of use. The latter will also include the body language such as natural gestures, facial expressions, body postures, etc.

1.3.4 Sign Language

Sign language is a form of manual communication, which is used in every community of deaf persons. It is a visual-gestural language, which, for a long time, has been used by the deaf population for interpersonal communication. (Stokoe) 1960, 1980). It is a language like any other language, i.e. a language that has evolved naturally through the need of human to communicate with each other. It is as complicated and richly structured as any other human language, and not a shortened and ungrammatical form of spoken language. It has its own vocabulary, morphology and syntax. Sign languages will differ from country to country, and also within a country to some extent. Deaf persons learn it through associations with other deaf persons who use it.

1.3.5 Modes / Means of Communication Through Verbal language.

There are two more dimensions to language usage that a teacher of the deaf must understand very clearly. These are :

- Modes of using language as distinct from the language code itself; e.g. the language code is stored in our brain, and this is used through modalities like oral- aural, reading-writing, signing words and letters,
- Modes of using language as distinct from the methods of education such as conversation method, play way method, demonstration method, lecture method, project method, etc.

Thus though these three factors – language code, modes of using the code, and methods of teaching - are inextricably linked, while teaching the deaf children, the teacher will have to bear these differences in mind and plan her teaching accordingly to suit the deaf children's varying needs. It is also important to note that any combination of all these three factors cab be used for teaching.

The main approaches to verbal communication can generally be divided into two parts : Oralism and Manualism. These are only the modalities through which communication using human language code is carried out. These are not language itself. Some are specially developed for facilitating and enhancing use of language with the deaf.

a) Oral Approaches/Oralism (listening + lip/speech reading)

The main focus of this type of approach is to teach the child to **use his residual hearing and to speech read.** The earlier the child is fitted with a good hearing aid the better. It is through these **two avenues** that the child learns language. **Speech reading** is trying to read / guess spoken messages from the speaker's lips and the general context. I t is challenging because only 30 - 40 % of the sounds of a language are visible on the lips and many of these are homophonous and look like something else. Take for example the words 'pat, bat and mat' or maybe, 'baby and pay me' or mummy and puppy'. In order to speech read well a person has to guess what is being said based on the situation and context. This in itself presupposes an **excellent grasp of the target language.** Many prelingually deaf who are diagnosed late simply do not have the required language skills. Most deaf individuals do some amount of speech reading but only some have a truly good knack for this skill. Since the goal in oral approach is for the H.I. individual to understand speech and communicate through speech, intensive speech therapy is an integral and necessary component in the training process. The immediate benefit of this method is the ability to communicate with the hearing world at least to some extent.

Use of **reading and writing and in some finger spelling** is often coupled with oral approaches for children above 4-5 years of age.

- **Finger Spelling / Manual Alphabet**

It is using hand shapes to represent sounds (phonemes) or alphabet (letters) of speech. It can be said that instead of writing on paper one is writing in the air with hand shapes for letters. One should know the words and their spellings to be able to use finger spelling. Many deaf children and adults in India, even with very little knowledge of any particular language, have been using the two handed BSL (English) finger spelling for the names and other important words. The two handed American finger spelling is used in some schools mostly in big cities.

- **Indian Manual Alphabet (IMA)**

There are finger configurations used for some 50 speech sounds (vowels and consonants) and letters in Indo-Aryan and Dravidian languages. These hand shapes representing these sounds /letters (as they are almost entirely phonetic) are called finger spelling and the system is termed as Indian Manual Alphabet. Again it must be remembered that one must know the words and their spellings to use finger

spelling. It is like writing in the air instead of the paper and can be used any time easily. It is easy to do finger-spelling than to reading and understanding it.

b) Acoupedic / Unisensory / Auditory-verbal Approach :

This comprises use of one sense / hearing alone with suitable hearing aids. It is recommended that the child's residual hearing should be exploited to the maximum from infancy and, speech reading as far as possible should be specifically discouraged.

c) Manual Approaches

At the other end of the spectrum is the manual approach, introduced by a French priest, Roche-Ambriose Siccard in the early1800s. He advocated the use of sign language or manual communication to teach deaf children.

Due to inadequacies of a purely oral – aural approach or purely manual approach in the education of deaf children arose the philosophy of total communication.

d) Total Communication Approach

Total communication, a term coined by Roy Holcomb in 1967, is essence a philosophy / approach, not a method: one that accepts the child and his handicap and strives to meet the individual on his terms.

The total communication approach uses every form of input available to present **vocabulary, complete sentences and grammatical concepts** to deaf children. It involves oral skills, signing, finger spelling., cueing, auditory training, reading, writing and any other form of communication which stimulates a child to develop conceptual thinking, acquire language and encourages him to express thoughts in **correct language order.**

It is thus clear that total communication has all the elements of oralism. This sign per word system adequately supports the fragments of speech that are heard or seen on the lips by a deaf child.

Total communication has seen a tremendous growth in acceptance among educators and parents in UK, USA, China, Singapore, Australia, Scandinavia, Germany and France.

This philosophy represents a departure from the previous approach of trying to fit one method to all children. All aspects are used simultaneously depending on the need of the child. It is an attempt to provide the deaf child with a **clear, unambiguous, complete language input,** Lip reading and **aided listening** are

supplemented with signs, finger spelling, cues, mime where necessary thereby combining these elements to the extent possible to **provide a complete input.**

- **Indian Sign System (ISS-TC) - Total Communication**

It is an approach/philosophy that mainly involves simultaneous use of amplified speech and signs for each and every word in a sentence. It is not sign language but many signs are borrowed from the Indian Sign Language. E.g. it is like we speak Hindi, we write Hindi, and/or we sign Hindi –three modalities but use of one language only.

It is a system of signs/manual codes developed and used for vocabulary and grammatical inflections in Indian languages. It is mandatory in the use of this system to speak simultaneously with the use of signs. The written pattern also can be shown when and where necessary and possible.

Many of the signs (for noun, verbs and adjectives) in ISS are an adaptation from ISL excluding grammatical markers. (Markers are rarely if ever used in sign languages.)

In **ISS-TC,** while signs for the content words could remain the same across languages, there would be some differences in signing the function words and some grammatical elements of each language.

It is important to mention again at this juncture that **signed systems differ from sign language.**

Sign language is the natural language of the deaf community much like any other language with its own particular syntax.

Signed systems on the other hand, be they for English, Gujarati, Hindi, French, Chinese, Marathi or any other language, are **used to teach the language of the environment.**

The main idea is not to teach signs, but language through the use of signs, supported by speech reading and aided listening.

However, one should remember a few important points in this connection. Firstly, each child is a precious gift, an individual in his/her own right with his/her own strengths and weaknesses. Each child has a learning style unique to himself. Secondly, something that works wonderfully with one child may be a total failure with another. It is therefore important to **keep one's mind and options open.**

1.3.6 Ultimate Goal of an Education Program for the Hearing Impaired

The ultimate goal of an education program for the hearing impaired should be good communication, social skills and the development of an educational background that will allow the child to become independent and achieve his total potential.

It has already been discussed that the main problem faced by hearing impaired persons is effective communication. Communication through verbal language is still more difficult for them. All deaf children who are otherwise normal/able have the brain potential (innate /genetic ability) to learn language; but inability to hear prevents the verbal input to the brain, which is absolutely essential for the acquisition of language.

1.4 HEARING ASSESSMENT AND AMPLIFICATION DEVICES

1.4.1 How We Hear

Language acquisition requires access to the speech and language of self and others. Normal hearing provides access to the spoken language through the medium of sound. Let us now look at how we hear sound.

Our ears are fixed on either side of our head – the parts of the ear that we can see. This is the external or the outer ear. However, the most important parts of the ear are located inside the head. (Please see the figure given in Block 2 Unit 2. item-2.5.4.1.) The sound waves which are mechanical vibrations, travel from the outer ear through the ear canal beyond the eardrum to the middle ear; and from there these are conducted to the inner ear. At this stage, the mechanical vibrations are converted into electrical impulses in the part of the inner ear, known as cochlea. These impulses then travel through the auditory nerve to the auditory areas of the brain, which perceive them as sound.

Defect in or damage to any of these parts will result in hearing impairment of varying degrees and types, which will, **in turn, create innumerable problems for the child/person.**

1.4.2 Assessment of Hearing

The first step in the rehabilitation of a born or prelingually hearing impaired person is to get its hearing tested, to determine the degree and the type of hearing loss (Please refer to the previous Unit on hearing difficulty). In the case of the persons having sensory-neural loss, medical intervention is not possible. Therefore the next step should be to provide a suitable hearing aid as early in childhood, as possible. This also must be followed by counseling and guidance to the parents-caretakers for training of the child for getting good results.

We have already looked at the diagram of the ear, the main parts of the ear and types of deafness. To understand hearing tests and hearing aids, it is necessary to know something about sound and how it is measured.

1.4.2.1 What Is Sound?

Sound is a form of energy that is produced due to the vibration of the surrounding air or other medium such as gaseous, liquid or solid. Sound is that which is or may be HEARD.

Physical Properties of Sound

The physical properties of sound important to us are its Frequency **(oscillations per second of a particle of the medium which carries sound), and** Intensity **or amplitude of vibrations.**

Psychological Attributes

Sounds fall in the range of very high to very low frequencies such as shrill or bass sound, and/or very high to very low intensity such as very loud to very soft sound. Thus, when we hear a sound, we perceive/feel it as having certain qualities or characteristics. These are called the psychological attributes **of the physical properties of the sound. The important ones to us are** pitch **and** loudness..

Pitch **is the psychological attribute of frequency. The high or low frequency sounds are perceived as high or low-pitched sounds; e.g. voices of children or sound of a metallic bell or a whistle are high-pitched sounds. Sound of a drum or a buffalo, or a normal adult male voice are low-pitched sounds.**

Loudness **is the psychological attribute of intensity. Higher the intensity louder will be the sound; e.g. sound of airplanes crackers shouting** are **loud sounds, and whispers breeze are soft sounds.**

1.4.2.2 Measurement of Sound - Decibel Scale & HERTZ Scale

In everyday life, we use different types of units to measure different things; e.g. we use kilometers and meters to measure distance, liter and milliliter to measure volume of liquids, kilograms and grams to measure weight, and so on. Similarly, **decibel** is a unit used to measure intensity or loudness of sound, and **HERTZ** to measure frequency or pitch of sound.

Loudness or softness of sound is measured by using a decibel scale. Thus :

- **A person who can hear sounds as soft as 0 to 20 dB loudness is said to have** normal hearing;
- **A person who cannot normally hear sound below the level of 41 dB is said to have** mild hearing loss;
- **A person who cannot normally hear sound below the level of 56 dB is said to have** moderate hearing loss;
- **A person who cannot normally hear sound below the level of 71 dB is said to have** moderately severe hearing loss;
- **A person who cannot normally hear sound below the level of 91 dB is said to have** profound hearing loss. **(Please see the figure given in Block 2 Unit 2. item-2.5.4.1)**

A person may have profound sensory-neural hearing loss for high frequency sounds (4000 to about 6000 HERTZ) when he cannot hear these above 80/90 dB loudness level. In such cases it will be difficult for him/her to discriminate sounds, acquire language and speech and comprehend speech in normal circumstances even with the best of the hearing aids..

1.4.2.3 Loudness level of commonly known/heard sounds

- **Conversational voice is at loudness level of about 60-db which covers the frequency range 250 to 4000 Hz;**
- **Barking of a dog is at loudness level of about 80-db generally of frequency level of 500 Hz;**
- **Sound of a truck roaring by our side is at loudness level of about 110-db and frequency level of about 150 Hz,**
- **Sound of an air plane at take off is at loudness level of about 120-db and frequency level of about 4 KHz i.e. 4000 Hz, or a band played near us will be at loudness level of about 110-db and frequency level about 1 KHz i.e. 1000 Hz.**
- **Loudness level above 130-db is painful for human ears;**

1.4.3 Use of Amplification Devices

One of the ways to help a hearing impaired child is to provide him with a suitable hearing aid. However, it must be remembered that the children will not start hearing and understanding speech immediately. He will require lot of auditory training and exposure to spoken language from early childhood.

The function of a hearing aid is to amplify sounds to a degree and in a manner that will enable a hearing impaired person to utilize his or her residual hearing in an effective way. A hearing aid must be cosmetically acceptable to be effective.

Perhaps, the **first "amplification system"** to be used was the placing of a person's **hand behind the car.** This provided approximately 15 dB amplification. This amplification appeared to be just sufficient for a person with mild hearing loss to get the desired clarity of speech.

Mechanical hearing aids such as **horns and speaking tubes**, which were held at the ear-canal entrance of the affected person, were in use as early as the seventeenth century.

Mechanical hearing-aids were followed by **Carbon hearing-aids**, which came in use at the beginning of the last century. These were based on the principles of the telephone.

1938, **Vacuum-Tube Hearing-Aids** appeared and offered much greater amplification possibilities, a wider frequency response and lower harmonic distortion.

Today's hearing aids are based on the invention of the **transistor by Bell Telephone Laboratories**. Transistors were introduced into hearing aids in the 1950's. This development made possible much smaller sized aids, requiring less battery consumption. It also permitted a flexibility of design, which had never been possible before.

1.4.3.1 Hearing Aid Electronics

Hearing aids are available in different shapes and sizes. However, the basic electronics of all the aids is the same. Hearing aids are made up of the following parts:

a) Microphone : This picks up the sound energy and converts it into electrical energy.

b) Amplifier : This increases the strength of the electrical signal. A battery provides power to the amplifier. The battery used in a hearing-aid will depend upon the type and size of the hearing-aid.

c) Receiver (earphone) : This converts the electrical energy back into sound energy.

d) Telecoil : Telecoil is an optional feature in a hearing aid and when it is activated it converts the magnetic vibrations (related to telephone signals) into electrical signals, which are then fed to the amplifier. This enables a person to hear on telephone.

1.4.3.2 How does a hearing aid function with these components?

The microphone or telecoil of the hearing aid picks up the sound signals, and converts them into electrical signals. This low-energy electrical signal is fed to the amplifier, which converts it into a powerful electrical signal. This reaches the receiver, where the electrical signal is converted back into sound, and this now enters the ear of the hearing aid user. This in a simple way, is how a hearing aid works.

1.4.3.3 Types of Hearing–Aid Fittings

The following are the various hearing-aid fittings available.

- **Monaural :**

If the hearing aid is used only in one ear, the fitting is termed as monaural fitting.

- **Binaural or real binaural :**

If two hearing aids are used, [i.e. a separate aid for each ear] the fitting is termed as binaural or real binaural. Such a fitting provides several advantages, such as improved localization of sounds sources, better discrimination of speech in the presence of noise, and improved quality of sound. Binaural aids are recommended frequently for young children with severe or profound impairments. However, a binaural fitting almost doubles the expenditure, and it may not be possible for some to afford these.

- **Pseudo-binaural fitting :**

This type of fitting is possible only with pocket-model aids. Using one pocket-model aid with a V or Y-shaped cord and two receivers, sounds can be received in both ears simultaneously. Such fitting is called pseudo-binaural fitting.

1.4.3.4 Types of Individual Hearing Aids

A wide range of different types of hearing aids is available for the users. They are designed in a variety of shapes Assistant Director (Academics) sizes.

- **Body worn hearing aid (pocket-model) :** Body worn instruments are either worn in a pocket or with special harness or clipped to the clothing. This aid consists of a box, a receiver and a cord. The electronic circuit and components are inside the box.

The parts of the typical pocket-model aid are shown below:

1. On & Off switch
2. Microphone
3. Volume control

4. Tone control
5. Battery compartment
6. Clip
7. Cord
8. Receiver

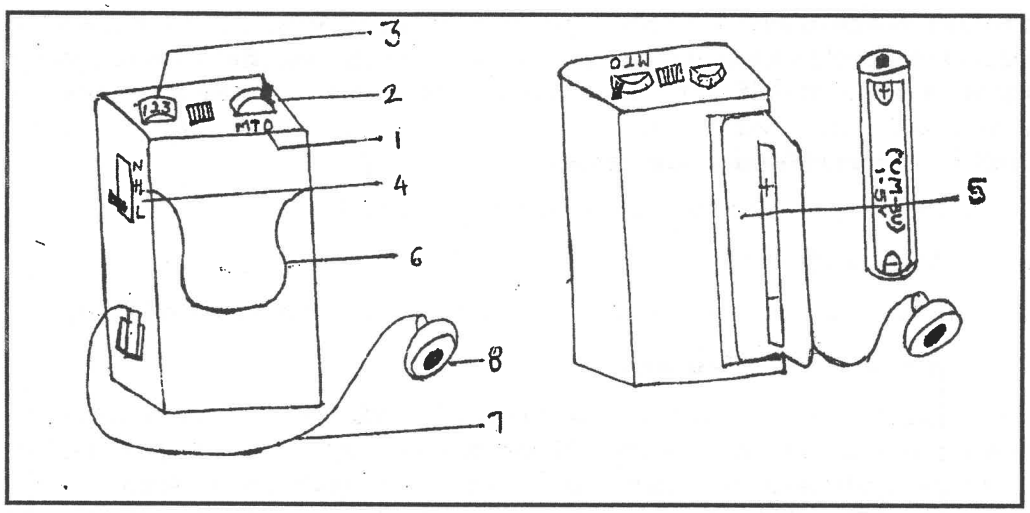


Diagram showing parts of a typical pocket model aid.

- **Advantages of body worn hearing aids**

These aids are robust, high power and relatively cheaper, as compared to other aids. In our country, this is definitely a positive point while selecting an aid. It also has an advantage for profoundly deaf children, as it is a mean for them to hear their own voices. The use of pencil size battery in this instrument makes it cost effective.

- **Disadvantages of body worn hearing aids**

The main disadvantage of this type of hearing aid is the size and weight of the hearing aid. As the hearing aid is seen easily, it has negative cosmetic value. The placement of the hearing aid on the person's chest makes it susceptible to 'body-baffle', which leads to relative emphasis on low frequency sounds. This occurs due to the absorption of high frequency energy by clothing and body tissues, while low frequency energy is reflected. The placement of the microphone on the chest also makes it more vulnerable to damage from spilt food, dribble and vomit, in case of children. A body worn hearing aid to not help is sound localization or identification of the source of sound.

1.4.3.5 Post-aural hearing aids

These are also referred to as "Behind-The-Ear" [BTE] aids. The body of this instrument is born behind the ear. A thin acoustic tube or a plastic hooks, which fits over the ear, connects the body of the aid to the receiver. The receiver is attached to the ear-mould or the ear-tip, which fits into the ear canal.

Children as well as adults can wear a BTE hearing instrument comfortably. Various sizes are available such as mini, midi and large, to fit all ears. Button-type batteries having size 13 or 675 are used for BTE hearing aids. Using BTE aids can compensate a wide variety of hearing losses. These even help those with severe and profound degree of hearing loss.

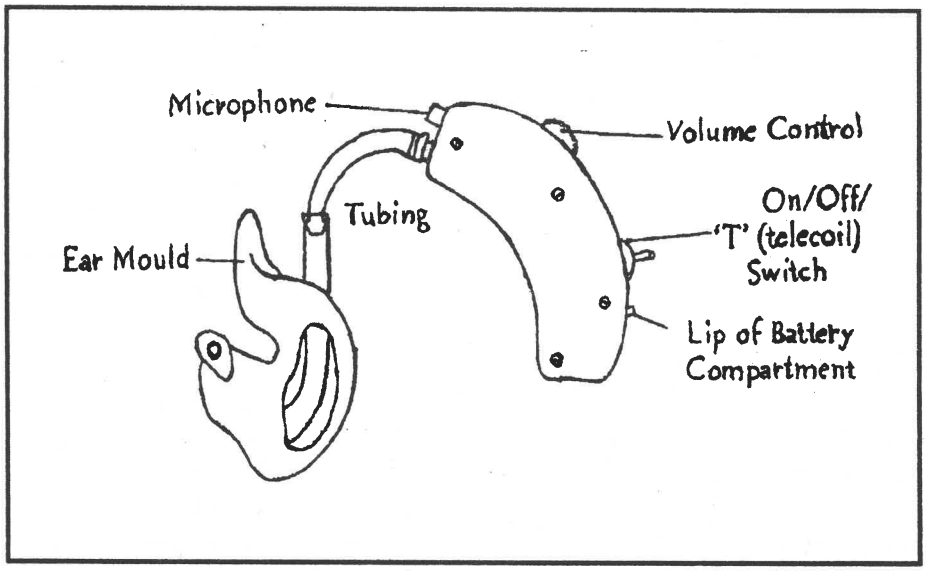


Diagram showing parts of behind the ear hearing instrument.

1.4.3.6 In-the-ear hearing instrument (ITE :

These aids consist of a hard plastic shell, which contain all the electronic components. These aids sit in the ear canal and conch.

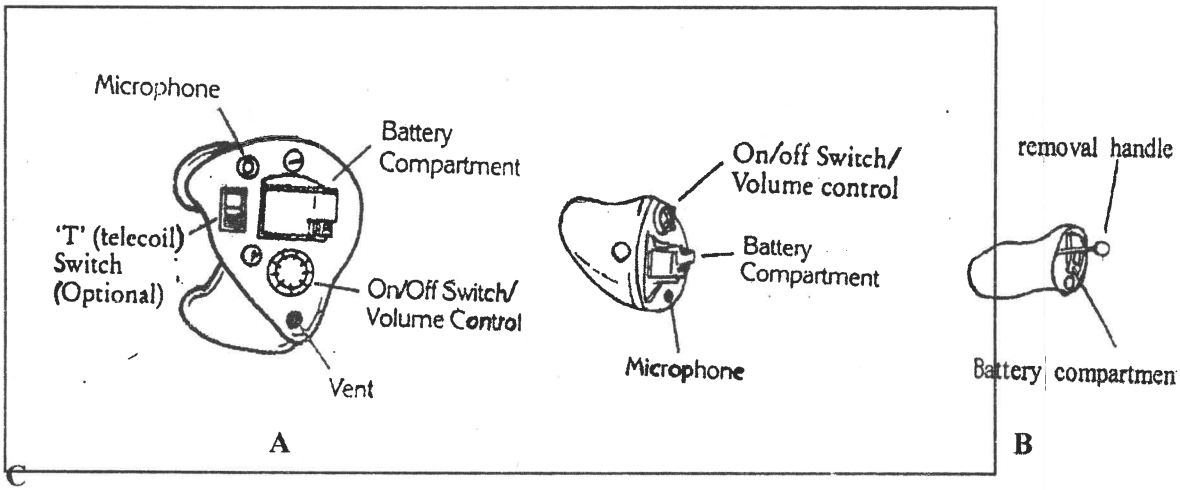


Diagram showing types and parts of in-the-ear hearing aids a) Concha b) ITC c) CIC.

1.4.3.7 Spectacle hearing aid :

Here, the hearing aid is incorporated into the frame of the spectacles. They may be provided monaurally or binaurally. In cases of young children, this type is not used due to the need to replace the frame as the child grows.

1.4.3.8 Programmable hearing aids :

Programmable hearing instruments are far more advanced then the conventional types. These type of hearing instrument incorporate integrated circuits with a memory chip that can store necessary information or data.

1.4.3.9 Digital hearing aids :

Digital hearing aids use state-of-the-art technology.

In essence, the digital hearing aid is a wearable computer. It eliminates the need for conventional components such as transistors, capacitors and resistors instead it has a microchip. This microchip identifies speech and noise. Every signal entering into the hearing and is analysed and enhanced only if it is speech and suppressed if it is noise. This technique solves the problem of background noise and feedback and presents very clear speech. It provides a solution to the various problems faced by hearing aid users. All the functions of this aid are programmed by software. Digital hearing aid can be fitted to all types of hearing losses.

1.4.3.10 Cochlear implant :

Cochlea is severely damaged in severe to profound hearing loss. Therefore, there is a breakdown in the conversion of mechanical sound energy into neural signals. Cochlear implant is a technology in which the device is inserted in the cochlea by surgery. This bypasses the defective sensory mechanism and directly simulates the auditory nerve and restores hearing in varying degrees depending upon the condition of the cochlea and the age of the patient and the training received after the implant. However, there are certain prerequisite tests that must be conducted to decide whether the child / person will benefit from the implant or not. Also, the cost of the implant and the surgery is very high (about Rs. 8/10 lakhs.) and post-surgery care and training for language and speech development in case of prelingually deaf children is very important. Children and adults who have become deaf after learning language well are likely to benefit a lot from the cochlear implant.

1.4.3.11 Auditory / speech trainer

This can be looked upon as a large size hearing aid, which can be used for an individual student. It can be used for different types of hearing losses.

1.4.4 Ear Moulds

Ear mould is a very important part of the hearing aid. It is made of some special plasic. It is fitted in the outer ear cavity and conducts the amplified sound from the hearing aid receiver to the ear canal. It is important to keep the ear mould always clean from wax and other dirt.

1.4.5 HEARING AID CARE

The parents and the children must be told how to take proper care of the hearing aid. As given below

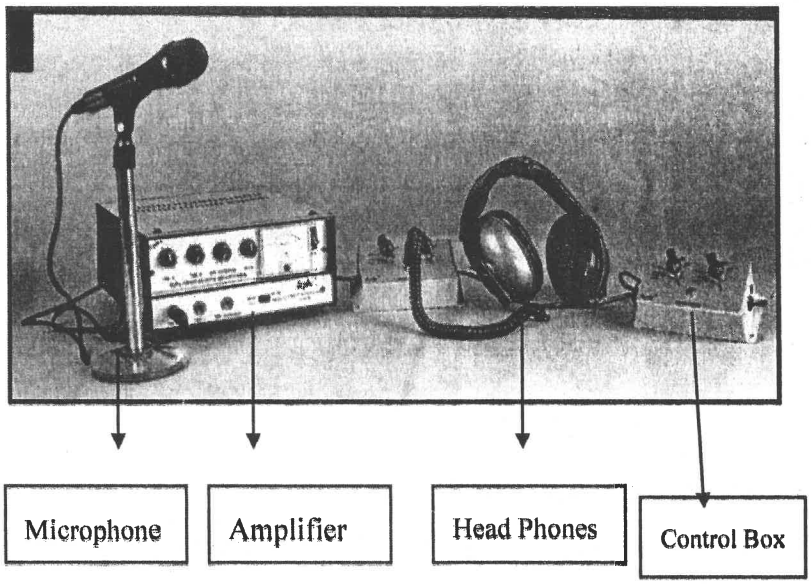
- Keep it in cool dry cool place
- Do not expose it to high temperature,
- Handle it carefully at all times,
- Protect it from water and other liquids,
- Switch it off before removing it from the ear,

- Use appropriate batteries,
- Remove the batteries if the hearing aid is not going to be used for a long time,
- Make a proper pocket in the dress for safe keeping of the hearing aid,
- Always check that the battery and the cord are in good condition
- Get the hearing aid serviced regularly,

1.4.6 GROUP HEARING AIDS

These are used in classrooms in Special Schools for the Deaf children or in resource rooms in the integrated educational set-up. By use of these, the teacher's voice can be heard simultaneously by the whole class. The system consists of teacher's microphone, amplifier and a few sets of head phones for the students.

This system requires constant maintenance.



1.5 DEVELOPMENT OF LANGUAGE

1.5.1 What Is Language ?

Language has been defined by P. Harriet (1970) as the term denoting **'the psychological processes which regulate speech.'** Language is a mental phenomenon, a body of knowledge about the speech sounds (vowels, consonants), meanings and syntax, which resides in the mind (brain) of the users. This knowledge can be put to use of course, but the speech or writing that results is merely a representation of language. It is not the language itself. The term 'a language' is used to refer to all systems of speaking, writing or signing common to a group of people. Thus 'Gujarati' is thought of as ' a language spoken by Gujarati people' or 'American Sign Language' as ' a language used by the deaf community in USA.'

All children have a genetic push (innate ability) to acquire language (Chomsky, 1965). Human children acquire / learn language without any conscious effort. However, studies indicate that, though children have the brain potential for verbal learning, it will occur only if suitable conditions are present in the child's environment. As children grow they get exposure to a variety of experiences. The accompanying language interaction, related to these shared by the adults and the child, helps the growth of vocabulary and comprehension. It is important to note that comprehension always comes before meaningful expressions. In the initial stages, since the child does not yet speak, it is the mother or the caretaker herself who plays a double role by asking questions and providing answers or commenting on the events. This makes the child aware of the role of language in everyday dealings. Soon he realizes that his own vocalizations are an efficient tool to to draw adult's attention and to satisfy his needs. People around him always encourage his attempts at speech. Thus it can be said that children usually learn their first language through abundant experience of its reception and production, and in situations that are meaningful to them. By age 3, they acquire the knowledge and use of grammar of the language too quite effortlessly as they communicate.

1.5.2 Language is learned through communication. Children acquire language comfortably and easily in a social setting and in an unconscious manner. Nobody teaches them particularly.

According to this it is important to preschool teachers of deaf children to provide a variety of experiences that are accompanied by appropriate language input. Communication is the key to language learning and this should be related to activities, which are real and meaningful to children and provide opportunities for them to communicate with the teacher with whom they are familiar. Activities, which are planed specifically, for encouraging communication, will also help to provide new knowledge and language about the environment and how to talk about the new information.

There is one important point that has to be borne in mind by the teachers and parents of the deaf children; - AT all times, any activity, any experience of the child, any lesson, has to be considered as an opportunity to provide language, and the event has to be accompanied or immediately followed by language usage – oral, and/or written, and/or **signs for all words used simultaneously with speech.** The language should be appropriate to his level of language ability.

1.5.3 Development of language and reading and writing skills.

Knowledge of language is necessary for any person to learn to read. When we teach hearing impaired children to read they are only matching the sounds of speech that they hear and produce to match with the letters that they see on paper, this is called 'Phonic Approach'. In the 'Whole Word Approach', teacher presents whole word to the child on a flash card e.g. ('ball' or 'catch') which he learns as a pattern of the word and then it is broken into separate sounds, if necessary. It is profitable to use both the approaches side by side for teaching reading. When the hearing child tackles reading, he already has mastery in oral language and a wide range of concepts. This enables him to understand the ideas behind the words he reads. But a hearing impaired child approaches reading with very little vocabulary and concepts and hardly has any facility with oral languages. For this purpose the teacher must provide lots of direct experience and immediate spoken and written expression to match his understanding.

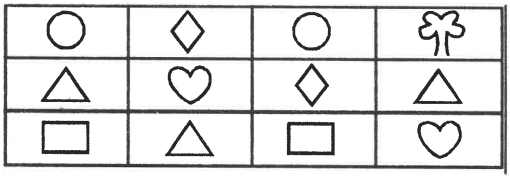
The exercises given below will help in the development of both language and reading skills.

I. Nursery Stage (age range 3-6)

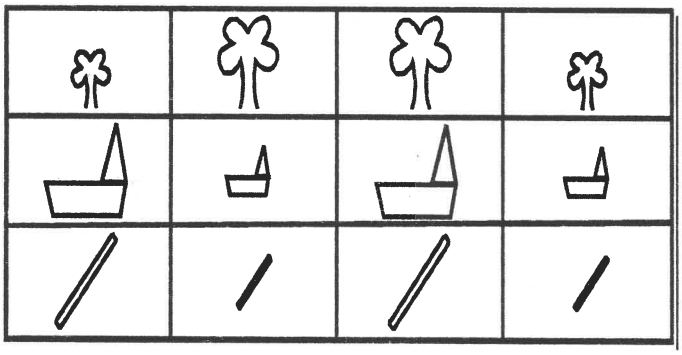
Hearing impaired children usually come to nursery grade without any understanding of language, and unless the comprehension and use of language are developed, reading can not be initiated effectively.

The activities that can be taken to develop these skills are :

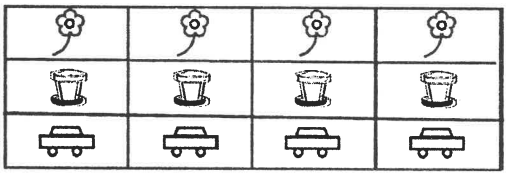
1. Tick the same shapes on the given card.



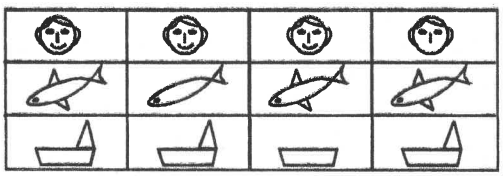
a. Tick the same size objects on the given card.



2. Tick the picture which has the same colour as the first one. (Four pictures in a Card)

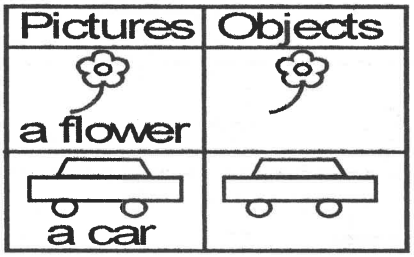


3. Find the missing parts.



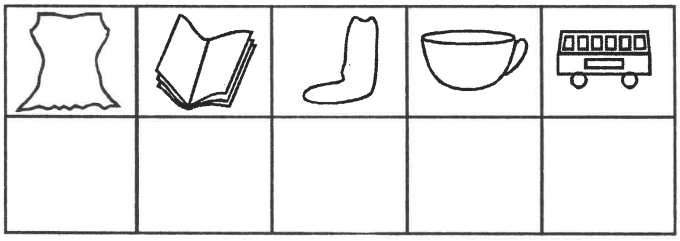
4. **Matching objects to objects** – Two similar objects such as balls, balloons, cars, kites could be matched. These objects should be taken from child's every day experiences and from conversations done in the class.

5. Matching objects to pictures.



6. Matching picture to picture.

(The teacher should make flash-cards of the same pictures for matching)



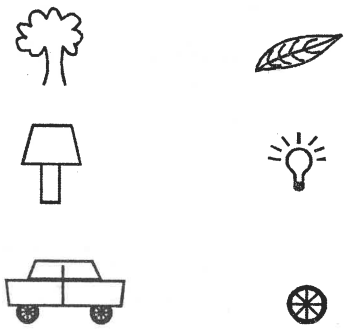
7. Classification

Children should classify and paste pictures in their scrapbooks of animals, bird, flowers, toys, etc., under proper headings.

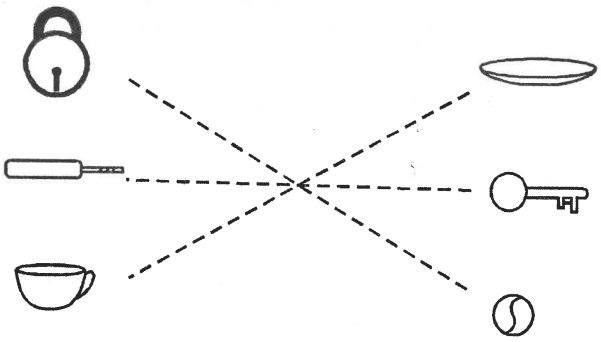
top	kite	apple	balloon

dog	cat	horse	crow	cow

8. Matching parts to whole.



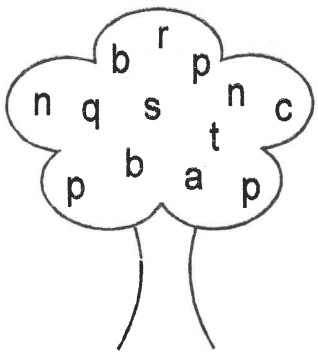
9. Matching things that go together.



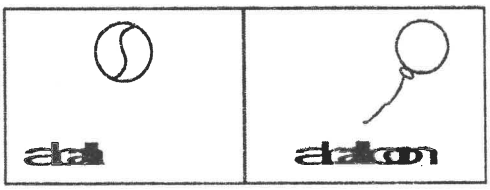
10. Matching similar picture as in the first column.

m	w	n	p	m
S	S	S	C	S

11. Circle the letter 'p'.

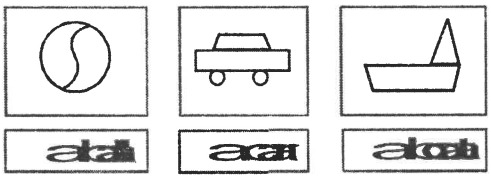


13. Match the picture + word to word.



A ball | A balloon

14. Match picture to word.



15. Match and tick the same word, which are the same as the first one.

bed	ded	✓bed	edd	ded	✓bed
no	on	mo	✓no	om	✓no

All the above exercises prepare the child to detect the difference between words that look essentially alike and then lead him step by step to reading of words and later on to sentences.

II. Pre-Primary & Primary Level

Reading at this stage will involve daily conversation, their graphic presentation and the text prepared by the teacher on this. For example:

- A child points to the new shoes of another child.
- The teacher says, "Yes, Ram is wearing new shoes".
- Another child tries to say, "Red"; and the teacher says, "Ram's shoes are Red".

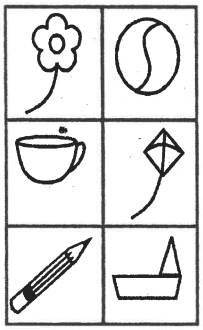
Then this is written as conversation on the board. Thus such graphic presentation of the conversation helps the child to look at the whole form of sentence and then in phrases and thought units (the underlined words). Such written conversation on different topics helps to introduce new words and sentence constructions to the children because these are things which they have experienced and understood. Repetition of such vocabulary and sentence construction helps the child to learn the use of language and understand it. These should be accompanied by use of questions related to the all every day class activities.

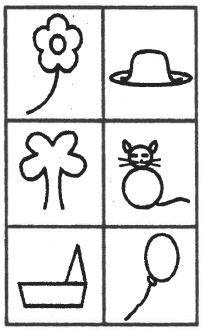
Language and Reading Exercises -

Reading exercises at this level could be graded in difficulty level through the exercises given below:

1. Simple word to picture matching.

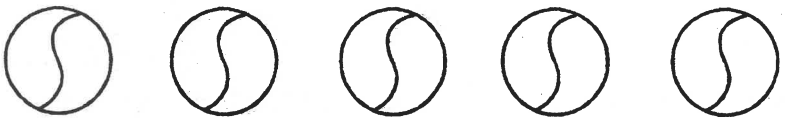
Cross the right picture on the card





a cup	a ball
a hat	a boat
a balloon	a cat
	a tree
	a pencil

2 Colour the balls



blue green yellow brown red

4. Match the words that go together.

3. Draw a circle round the right picture

a clock				
a book				
a fan				
a dog				

cup	carrot
shoes	brush
comb	butter
bread	saucer
rabbit	socks

5. Cross the word that does not belong.

cat	dog	horse	lion	lamb
frock	shirt	pin	tie	pants
nose	ring	eyes	arms	fingers
apple	potato	banana	mango	grapes
mother	brother	driver	sister	father

6. Join the words that mean the same.

Speak	gift

Small	large
Present	sad
Big	tiny
Sorry	talk

7. Join the words that are opposite.

Heavy	new
old	cold
Big	start
Hot	small
Finish	light

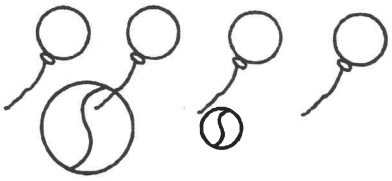
8. Use the correct word (verb)

(laughed, ate, drank, climbed, cried)

- Raju _____ breakfast before going to school.
- Mohan _____ water as he was thirsty.
- A cat _____ a tree.
- A baby _____ because he wanted milk.
- Children _____ at the funny clowns in the circus.

9. Colour / draw.

(a) Colour two trees green.

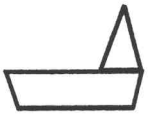


(b) Colour one balloon red, two green and the fourth blue.

10 Read and act.

- Take off your right shoe.
- Hop round the room
- Walk like an old man
- Answer the telephone
- Bring two cups in a tray
- Put on your raincoat, open an umbrella and go out.

11. This exercise requires a child to understand the whole sentence / complete instruction.



12. Based on the story or event, put the sentences in correct order.

13. Read and say what will happen next.

> Nitin came to the class at 9.30 a.m. in the morning. He put his bag near his desk and went to the blackboard to write the date. He saw a ten-rupee note on the teacher's table. He _____.

14. Read and say what is wrong in the story.

> Uncle was going to Nagpur by plane at 11 p.m. Mother, father and Komal went to see him off. They got ready, had their dinner and got into the car. They could drive easily to the railway station, as there were not many cars on the road.

Functional Reading and consolidation of related language

Before the hearing impaired children make a transition from informal to formal reading of primary standard, they are bombarded with the written form during the functional reading programme. All the activities done in the class are accompanied by written language. E.g. stories, directed activities, field trips to stores, the zoo, the police and fire station, the bazaar, the railway and bus stations, the post office etc. Projects on cleanliness, family, food, games, weather, etc., all have written information along with them either on the blackboard or on the newsprint or in teacher made books. As the children have experiential background of these activities, little by little many of the words involved become sight word, which the children can identify and interpret. The teacher guides them to read the accompanying information by using contextual clues.

The following activities give the vocabulary and concepts, which would emerge out of field trips and projects, which the children would learn to understand and read.

Field trips / Projects

1. A field trip to general stores to buy a few articles can reinforce words such as to buy and tell, to pay, shopkeeper, money, shelves, pretty things, etc. The concepts involved would be little, a lot, many, few, some, not enough, cheap and expensive.

2. Post Office – Vocabulary involved would be – letter, post card, envelop, stamps, address, post box, air mail, etc. Concepts to be introduced would be how a letter travels, far, near, local, foreign, time, distance, etc.

As the children and the teacher actively participate in the oral exchange of language during field trips and projects, the written language is understood and enjoyed in conjunction with these activities. Thus reading becomes extensive and satisfying.

Conversation can follow a field trip or vice versa and the text could be visualized on the blackboard and then written in the children's notebook. Follow up of these activities could be done through looking at and reading books about similar experiences and by experience records books wherein the experiences are written and pictures drawn.

Stories

Stories are a form of functional reading always enjoyed by the children. The words, expressions and structures of sentences, initially should be within their capacity to tackle and should be interesting and appropriate to the age and the particular stage of the children. A story as an approach to language teaching is being done regularly at the nursery and pre-primary stage using picture sequences and books.

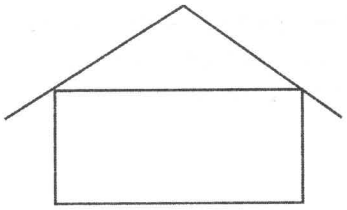
Reading of stories by the children without pictorial clues must also be done in the class as a group activities:

- The teacher reads the story with appropriate rhythm and intonation and the children follow her.
- Once again the children read the story in their mind and try to answer the questions put by the teacher in their notebooks or on the blackboard. This enables the teacher to get some idea of their general grasp of the story.
- Then a guided reading session can follow with the teacher interpreting new concepts with examples and even with simple dramatization.

Directed activities

These are planned by the teacher according to the age and maturity level of the children. The language is selected according to the language level of the children. For example, the aim of the lesson will be to introduce and consolidate the names of the things found generally in the house. At the nursery and pre-primary level, the children know and are familiar with these things but they do not have the words / language for these. In the methodology, the teacher may ask the children to draw the outline of the house or provide such sketches of the house to each child. She will draw a big sketch of the house (see the figure of the house given below) on the board and ask the children what they will have in the house. The children may come up with signs for

things like chair, fan, light, bed, table, glass, tap, etc., which the teacher will draw on the board in the house. She may deliberately draw the light on the floor and some children may point out that the light should go on the wall. This provides an opportunity to teach the word/ phrase 'on the wall'. In addition to the spoken word, depending upon the level of the children, she may choose to present the written word also to the children. Thus, in this lesson, her lesson objectives are to give the spoken and written pattern of the things in the house.



The other directed activities that the teacher may perform could be on topics such as making a paper boat or a kite, drawing and coloring different objects, preparing lemon sharbat in the class, etc.

Recreational Reading

Children should be exposed to the rich array of attractive books, so that during their free time they may browse in the reading corner. Sometimes they may just look through the colorful pictures of a book or may read it right with or without asking the teacher for help. But the teacher must keep readily available a variety of reading books. Where necessary she will have to spend time with child to explain the new words and concepts that the child may come across while reading. With these reading experiences the children will be ready for reading of primary standard.

Functional Reading

The children should be presented with different types of material for reading. They should be exposed to newspaper items, information given in the text books of different subjects of their syllabus, stories, workbooks and rapid readers.

The story units at this level become longer than at the previous stage so that the children learn to read in cumulative thought units. They should be able to follow a story sequentially as the events unfold. A battery of tests, checking their comprehension of the main idea, the sequence of events, vocabulary and inferences should accompany the stories.

These activities should be followed by different types of exercises such as suggest what should be good title for the story, answering the simple questions, arranging sentences in proper sequences, etc.

III. Reading at Secondary Level

Reading at Secondary level is not considered as a subject within the curriculum for the deaf children. But it is the primary tool whereby children can gather information. The deaf who have received some education are more dependants on getting information and communicating with others through the written word.

The text books used in regular schools are actually written for children who are already fluent with oral language. They know to use all type of sentence and questions and also know to follow and give instructions in verbal language. Many deaf children who are permitted to secondary level i.e. 7th or 8th class may not have full grasp of syntax and vocabulary of language, therefore, it may become necessary to re-write lessons for deaf children in very simple language. However, the knowledge content will have to be retained to the extent possible.

To learn to think with language takes gradual nurturing, beginning with simple operations upon concrete and familiar content and ending with formal (thinking in mind) operations on abstract content. It is important to keep in mind that academic growth takes place through language, but the language growth is through content, hence the importance of textbooks in education.

1.6 DEVELOPMENT OF NUMERICAL SKILLS AND ARITHMETIC

Given below is a list of topics that can be used to give language and interesting information to children. Each topic can be presented in a manner to suit the language and maturity level of the child.

Units In Content Areas

SCIENCE	SOCIAL STUDIES
• **Ourselves – our body The self**	
Parts of our body	**The family and social relationships**
Our sense organs	**Our environment**
Care of our body	**- home**
Growth of our body	**- school**
• **Foods we eat**	**- neighbourhood, i.e. park, market,**
• **Clothes we wear**	**hospital, station, etc.**
• **Animals – wild**	**Our emotions**

- farm and pet
- water
- insects
- birds

Our country
Our world
Recreation or games and entertainment
Our helpers
Our festivals

- **Plants**
- **Weather and Seasons**
- **Water**
- **Air**
- **The earth**
- **The sky and the Universe**
- **Machines, Force and Matter**
- **Transport**
- **Living and Non-living Things**

Each of this topic can provide opportunities through play to teach number concepts and values of numbers to children , for example : counting fingers on the child's and your own hands and toes; counting beads, balls, etc., asking questions such as – How many grapes chocolates ? How many legs does the doggy have? How many pockets to your shirt ? How many flowers ? How many w heels for the car? etc

The maths concepts given below should be taught progressively to the children at the primary level. Once these are well understood and consolidated, the same curriculum for math as is followed at the regular schools can be used with the HI children. How ever it is very important to give ample practice with simple word problems to these children.

Math Concepts :

- **Shape and Form**
- **Number**
- **Size, length, area**

- **Weight, volume**
- **Time**
- **Classification and Categorization of Sets**
- **Comparatives**
- **Spatial Relations**
- Beginnings of Addition and Subtraction

1.7 AUDITORY TRAINING & SPEECH THERAPY

Most hearing impaired children have some residual hearing ability which can be optimally utilised to develop their language and speech skills with the help of suitable hearing aids and developing listening skills.

The auditory and speech skills to be developed are described below :

1.7.1 Auditory Skills

- Auditory Reception – ability to receive sound input
- Auditory Localization – ability to recognize direction where sound originates
- Auditory Discrimination – ability to note similarities and differences between sounds, words, however subtle, using the auditory mode alone
- Auditory Analysing – ability to perceive the order in which sound comes
- Auditory – Vocal Association – ability to relate concepts presented orally and react to them vocally
- Auditory Sequential Memory and Recall – ability to recall and retain auditory stimuli presented, in correct sequential order
- Auditory Synthesizing – ability to synthesize separate parts of a word and pronounce it using only auditory clues
- Auditory Closure – ability to identify objects from an incomplete presentation
- Auditory Rhythm and Sequencing – ability to perceive and imitate auditory rhythms and sequences

- Auditory – Visual Integration – ability to integrate auditory and visual stimuli

1.7.1.1 Listening Skills To Be Developed : Sound Awareness

In order to become aware of sound, the following listening skills need to be developed

- Detection of arrange of meaningful sounds across the speech spectrumin stimulus-response activities.

A whole range of vehicles, animals and birds provide endless joyful listening opportunities for the hearing-impaired toddlers. Educators and parents need to remember to speak in a melodious voice so that the / bh^b bh^b bh^b / of the boat is as interesting to listen to as the /brr…,/ of a scooter. Speech must act as the signal for an event. Hence it is crucial to use speech stimulus as a cue to the actual object. For example: a child listening to the /trbruk trbruk/of a horse must indicate; (however subtly) that he has heard the auditory cue, and will later try to imitate the sound presented, before the related toy is brought into his field of vision and he is allowed to play with it.

Games such as these pre-suppose that the child has learnt turn-taking for which a third person (parents are the ideal partners) is needed to be used as a model; for the one making the sound cannot be the one to respond.

- Detection of a range of sounds, across the speech spectrum at an increased distance

Once the hearing impaired baby has begun to respond to a set of speech stimuli, the same should be given at an increased distance from the child. This distance should be monitored and evaluated every week. e.g. when playing with a cow, a lion and a monkey in which an eighteen month old baby moves the related animal in response to its appropriate call from a distance of 1 foot, the distance may be increased to 1 ½ feet and the same game repeated.

- Production of sound in stimulus response activities

The little, new listener must be encouraged to play inter active games in which speech triggers fun. E.g. the aeroplane lights up only when/after the child says a-a-a or the swinging monkey jumps only when the hearing impaired child says "up, down". The child needs to be encouraged to vocalize before the toy moves/lights up or before he has his turn.

Parents need to be convinced of the need to adopt **listening as an on-going mode of inter-acting** with their hearing–impaired babies throughout all their waking hours and to consistently and immediately reward his vocalizations. e.g. Every time parents need to call attention to their baby they must call out to him by name, watching his

reaction until they come into his field of vision. They need to make a note of the distance at which their baby hears his name being called, each week.

Through the day, parents need to be given plenty of ideas on how to use listening when playing with, feeding and bathing their babies and on how to sing their babies to sleep.

They must be trained to speak in a well-inflected voice so as to make listening interesting for their baby. Infants raised in this stimulating auditory environment will eventually became good listeners and grow up to develop early, clear speech.

1.7.1.2 Listening Skills To Be Developed : Sentence Level

As the young hearing-impaired child develops better and better sound awareness, he should be introduced to sequentially graded discrimination at the sentence level. Some of these listening tasks as recommended by Dr. Sylvia Romanik are discussed below:

- **Identifying familiar stereotypic phrases or sentences :**

  The young hearing impaired listener will at first use context to help himself understand simple instructions such as "Wave goodbye" or "wash your hands" but will soon understand, repeat and carry out instructions even if they are out of context.

- **Recalling two, three, four or more critical elements in a message:**

  In order to encourage the young listener it is advisable to begin with closed sets with known, limited options and build to open sets.

For example: "Put your blue pants in the bucket." Later these commands may become more complex.

For example: When cooking, the mother could instruct her child accordingly " Take the tomatoes out of the fridge and wash them".

- **Answering questions about a picture, a book, a set of pictures or objects:**

  The choice of picture can be coordinated with the topic of heart-to-heart conversation. Questions asked about the picture in the book may be simple to begin with, with large clear illustrations (e.g. Show me a ---- for a two year old or "show me the big/small ---- "or "show me a red flower" for a two and a half years old. Eventually these questions develop into open-ended questions for example "what is this picture about?" As the young listener's listening and comprehension skills improve, the question/ command must

become more and more complex. For example " show me ---- and----." and then later "Give me the ------ but not the------."

1.7.1.3 Listening Skills To Be Developed : Discourse Level

Dr. Sylvia Romanik recommends that discourse level listening skills be dovetailed appropriately with the sentence level skills, rather than be developed in isolation. Some of these skills as outlined by Dr. Romanik are given below :

Identifying nursery rhymes

The beginning listener should be given a closed set option eventually moving on to complete the rhyme, having heard the first line. Eventually, he should be able to correct "mistakes" made (deliberately) by the educator. Some early action rhymes that provoke an enthusiastic response are given below:

a) Round and round the garden like a teddy bear

One step, two steps, tickly over there.

b) Open, shut them; open shut them

Give a little clap

Open, shut them; open shut them

Lay, them in your lap

c) Roly-poly roly-poly

Up, up, up

Roly-poly roly-poly

Down, down, down

(Repeat with in, in, in / out, out, out)

- **Story re-telling:**

Early stories are best rooted in each individual child's first- hand experience. Short stories based on a topic of heart-to- heart conversation (e.g. Papa repairs Fatima's cycle as given below) or events of the child's every day routine (e.g. Waking up and getting ready) provide the core for several interesting stories.

Some examples are given below, related illustrations being given in the appendix :

1. Uh, oh ! What a big snake.

   Mummy, I'm scared.

   Come on (name of child), let's run. (Picture in the Appendix at end of the unit.)

2. Oh my God ! Fatima's cycle broke.

   Papa, please repair my cycle

   Thank you papa.

3. Pss ..... Pss !

   Chop, chop, The lady cut my hair. (Picture in the Appendix at end of the unit.)

   Wow ! That looks so cute!

(The teacher may draw illustrations to accompany her stories. As far as possible, she should show the child or person wearing a hearing aid with a wire if necessary.)

The listening programme grows with the child so that he eventually extends his vocabulary and linguistic fluency, auditorily, rather than having to be specifically taught each word or concept. Cognition must be incorporated into all listening games and activities (For example: Games such as Peek a boo and simple hide –n-seek help develop "object–permanence") so that hearing impaired children grow into alert, thinking adults.

1.7.2 Development of Speech and Speech Reading

Speech is the primary and most common mode/modality/channel/code of language expression. Any manifestation of language by means of speech is a result of a highly complicated series of events. In the first place, the formulation of the thought/concept will take place at the linguistic level i.e. in the brain; this first stage may therefore be said to be psychological. The nervous system then transmits this message to the speech center, again in the brain. The message then, from there, goes to the so-called organs of speech, which produce a particular appropriate pattern of sound. This second important stage may thus be said articulatory or physiological – which is the motor aspect of speech. Then it is transmitted to the listener who receives it and decodes it; thus communication has taken place.

The growth and development of speech requires –

- Firstly that there should be full functional activity of the peripheral and central processes by which the child hears and imitates sounds accurately, and
- Secondly that he should gradually learn to associate these sounds with objects and with meaning. This requires that his general intelligence and mental development should be such that he is able to recognize, associate, recollect and reproduce the sounds of speech with or without meaning.

1.8 UNIT SUMMARY

To summarize, it can be said that no single method, no one mode of communication and, no one strategy or use of amplifications devices solely can bring satisfactory development of language and speech in a deaf child. It is the optimum combination of these as per the needs of the child, in addition to the extra amount of time and intelligent efforts that one puts in to achieve complete and meaningful language input and abundance of linguistic interaction with the child, that would make a difference. It will be very unfair, to the child and the philosophies/approaches and the methods, to try to fit all hearing impaired children into one slot.

The main concern of the teacher of the Deaf is to help a deaf child to acquire the language of the society so that he can get educated and function in the society as independently as possible.

1.9 CHECK YOUR PROGRESS

- State the difference between verbal and non-verbal communication.
- What is Total Communication ?
- Define sound and describe how it is heard.
- How should one take proper care of a hearing aid ?
- Compare the development of language between hearing and hearing impaired children.
- State the importance of auditory training.

1.10 ASSIGNMENT

1. What kind of assistive devices you may need in your school to enable you to meet the specific needs of the children with Hearing Impairment while teaching in your school? Prepare an analytical and convincing report.

1.11 POINTS FOR DISCUSSION AND CLARIFICATION

After going through the Unit you may like to have further discussion on some points and clarification on other. Note down those points below:

1.11.1 Points for Discussion

1.11.2 Points for Clarification

1.12 REFERENCES/FURTHER READINGS

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UNIT 6: CURRICULUM DESIGN AND DEVELOPMENT: SUBJECT CENTRED, LEARNER CENTRED (CWLD), LEARNING CENTRED

STRUCTURE

1.1 INTRODUCTION

The teacher of visually impaired children is expected to acquire adequate skills for teaching visually impaired children. The skills must be in the areas of plus curricular activities such as braille reading and writing, use of special aids and appliances, orientation and mobility, daily living skills etc. Considerable amount of time should be provided to the teachers in these areas. During the training they are expected to work with visually impaired children and also have simulated experiences such as blindfold experiences for orientation and mobility, using abacus etc. This unit provides guidelines regarding the teaching of plus curricular skills to the visually impaired children.

1.2 OBJECTIVES

After going through this Unit the trainee will be able to:

- demonstrate the methods of teaching braille reading;

- describe the methods of teaching braille writing to visually impaired children;
- narrate the need for using special appliances;
- list orientation and mobility skills to be taught to visually impaired children;
- enumerate the daily living skills to be taught to visually impaired children.

2.3 BRAILLE READING

For a lay person, braille reading is a miracle but professionals agree that it is possible through systematic learning. Research indicates that fingertips possess special nerve endings which enable touch-reading. The area covered by light pressure of the fingertips on the paper gives the necessary information to the child to discriminate between the different configurations of braille letters. The area of braille cell is 6 mm x 3.6 m.m. Braille learning requires some prerequisite skills called 'braille mechanism'. By braille mechanism we mean the efficient movement of the hands and fingers over the braille line. Children who do not develop better braille mechanism tend to develop the habit of scrubbing which contributes to slow reading. For developing a proper braille mechanism graded tactual discrimination activities have to be performed by the child.

The braille dots configuration for English alphabets are as follows:

Dot	1	0	0	Dot	4
	2	0	0		5
	3	0	0		6

The configuration of dots for different alphabets are as follows :

A	B	C	D	E	F
0 .	0 .	0 0	0 0	0 .	0 0

. .	0 .	. .	. 0	. 0	0 .		
. .	. .	. .	. .	. .	. .		

G	H	I	J	K	L	M	N
0 0	0 .	. 0	. 0	0 .	0 .	0 0	0 0
0 0	0 0	0 .	0 0	. .	0 .	. .	. 0
. .	. .	. .	. .	0 .	0 .	0 .	0 .

O	P	Q	R	S	T
0 .	0 0	0 0	0 .	. 0	. 0
. 0	0 .	0 0	0 0	0 .	0 0
0 .	0 .	0 .	0 .	0 .	0 .

U	V	W	X	Y	Z
0 .	0 .	. 0	0 0	0 0	0 .
. .	0 .	0 0	. .	. 0	. 0
0 0	0 0	. 0	0 0	0 0	0 0

The *Bharathi Braille* or *Braille in Regional Language* are based on *English Braille.* The contracted letters in English braille are sometimes used as single letters in the regional language as most of the regional languages have more letters than the 26 letters of English. (The Regional language braille would be taught in the respective study centres).

2.3.1 Hand Position

Jayarose (1984) identified more than 65 positions followed by visually disabled children for braille reading. Though visually disabled children stick to their own techniques later, it is necessary that braille should be taught in a systematic manner. Using both the forefingers for braille reading is universally recommended for a beginner. Lightness of touch is stressed and the scrubbing of dots (up and downward movements of reading fingers) should be discouraged. While the right hand moves through the braille line, the left hand should follow from left to right. When the right hand reaches the end of the line, the left hand should retrace the line, which was just read and identify the beginning of the next line. Then the right hand which is at the right corner of the previous line will be brought to the position of the left hand in a diagonal manner and the process continues. When the visually disabled individual follows some unconventional methods of braille reading later in life, the adopted style need not be discouraged as long as it helps effective reading.

2.3.2 Teaching of Braille Reading

Learning a skill and teaching the same are two facets of efficiency. It is needless to say that a visually disabled child should be exposed to different textures and a certain level of tactual discrimination abilities should be developed before introducing braille reading. Exercises in the tactual discrimination skills develop the fine motor coordination of the fingers of the child. Akkamadevi (1984) states that tactile tolerance needs to be developed among visually disabled children for their effective braille reading. She indicates that the tactile skills develop only by practice.

2.3.3 Activities for Improving Braille Reading

a) In a school, whether it is integrated or residential, reading readiness activities may be provided to the child before the introduction of braille reading.

b) Finger manipulation and manual dexterity skills are of crucial importance for developing the braille mechanism of the child.

c) For a beginner, a lot of teacher-made braille text materials should be used rather than the actual braille text books. The first grader needs modification and editing in these materials.

d) In the primary level material, simple embossed diagrams should appear in the text, which could stimulate the child's interest to read the braille material.

Reading ability has been acknowledged to be the most critical factor in the educational progress of visually disabled children. Apart from the physical readiness of the child, the emotional and psychological readiness also contributes to success in reading. Due to the slow process of braille reading and the fatigue caused by it, some visually disabled children with poor motor abilities tend to overlook the tactile reading and rely upon audio instruction. While special cases may be allowed to do this, braille reading is deemed essential for every educated blind individual. Nigam (1983) found an average reading speed of 43 words (English) per minute in the case of visually disabled children whereas it was 113 words per minute in the case of sighted children.

2.4 READING PRACTICE IDEAS FOR A BEGINNER

When the child is through with the reading readiness activities, actual reading practice may be given in the following logical sequence.

2.4.1 Developing simple stories

The simple whole word story shows the principle of word arrangement in an easy-to-read activity. New word reminder, word differences and full phrases or sentences have to be stressed in reading. For example, the teacher may be planning to teach the words 'ball', 'smile' and 'roll' (new vocabulary). Assume that the child had been oriented to the words 'baby', 'see' and 'the' (old vocabulary) in the previous class.

By mixing the old and new vocabularies, give hint to the child about the first line of the story. Let him develop the story now. Whenever he has some difficulties, assistance may be given by the teacher.

baby	see	the	(old vocabulary)
ball	smile	roll	(new vocabulary)

1. See baby
2.
3.
4. See baby smile
5.

6.

7. Roll the ball

8.

9.

10. Baby roll the ball

11.

12.

13. See baby roll the ball and smile

2.4.2 Matching

Another helpful experience which uses past readiness is matching of whole words, presented in lists or columns:

Instructions : In each line, which word is not the same? Draw a circle around it :

baby	roll	baby
smile	ball	smile
see	the	see
roll	roll	ball

Another activity might be finding his name from other names in a list. Give only one other or, at the most, two other alternatives. Be certain that they are considerably different in beginning tactual form and/or length to help child chose correctly.

2.4.3 Ordering

Another activity of value combines reading, selecting a response and matching a given order or sequence. Use a few simple phrases or sentences in the beginning. The child is given a completed "story" to read, and next, matching "strips" with full sentences. The sentence strips can then be aligned, or matched in sequence with the original.

2.4.4 Multiple choice

(Choosing a correct form from among several alternatives)

This varies from earlier matching activities as there is no "correct" form against which the child can compare his chosen answer. It is his first "multiple choice" experience.

For a visually disabled child, it is a help to set forth the possible answers first. Then follow the choices with the question which is best answered, or best completed with one of the responses already read.

Examples: 1. Mother I also
I like.....

2. See Pencil the
Put down the.....

2.4.5 Relating

A most useful activity in which the child is asked to draw a line between one choice on the left column and a related person or idea or thing from the right column.

work	baby
keep house	mother
play	father

The important idea within all of these suggested activities is vocabulary reinforcement through use of interesting, varied materials and formats. Manipulation of materials, use of standard elementary level reading activities common to both seeing and visually disabled children, and independence in study are the essential ingredients.

2.4.6. Experience Stories

As a means of presenting short sentences of high interest with limited, teacher controlled vocabulary, some teachers like to develop "experience stories" together with an individual child.

The child tells briefly of an experience and the teacher modifies vocabulary (according to level of ability) and brailles the story. The child can then read

something he knows about and which he has "written". The child will have a very good feeling about what he is trying to read.

2.4.7 Flash Cards

A flash card is a device for increasing rapid recognition of recall of certain facts of ideas. It is most commonly found in arithmetic classes where classmates, with or without a teacher present, can theoretically give each other good learning, which is too often over-used. But there are some facts which can be learned through rote experiences which will still be helpful in the future because they evoke such automatic responses.

If tactual flash cards are to be used between seeing and visually disabled classmates, between two visually disabled children, or by a teacher with a child, they should be showed according to the following recommendations :

1. Present flash cards rapidly – leave stimulus exposed for no more than 4 or 5 seconds.
2. Prepare the cards in braille and ink print. Edit both right side up and up-side down so that the teacher or a seeing child can sit opposite or along side the blind child and they can work flash cards in comfort. Also put ink print form on reverse side of card for maximum variety of usage.
3. Clip corners

2.4.8 Modifying regular materials

Perhaps the most difficult task for teachers of blind children is to learn to think tactually, rather than visually, material that is attractively arranged for seeing children is often very confusing for the braille reader if duplicated exactly.

Example for seeing children:

Mark up "X" on all the animals on this page

Cow Sister

Plate Dog

Chicken Desk

Clock Mother

Rabbit

Horse House

Father Pillow

Chair Cat

Table Shoe

For blind children change the direction and arrangement as follows:

Draw a line under the animals on this page.

Dog	Desk	Mother	Horse	Rabbit
Sister				
Chair	Table	Children	Clock	Father
House				
Cow	Plate	Pillow	Cat	Shoe

There are equal spaces between the words in each line but no attempt is made to keep the words in columns. You can also make real columns to vary the braille patterns, as:

Rabbit	House	Table
Cow	Sister	Father
Desk	Dog	Pillow
Mother	Dish	Cat
Clock	Horse	Shoe

The following questions should be asked when preparing supplementary braille materials.

How much reading experience has the child had?

For readiness material, triple space; or even doubled space can be used at the beginning. Later the spacing can be reduced even further.

What is the object of the lesson?

Don't crowd the braille page on teacher-made study materials. Paper is less costly than confusion.

Is the material well arranged?

If the child is spending more time on following directions than he is on learning to read, adjustments in the material may be necessary.

2.5 BRAILLE WRITING

Special appliances are used by the child to write braille. A braille slate is commonly used by the children in developing countries. Those children who can afford a mechanical braille writer can use it but due to its cost, all children cannot be benefited by this equipment. While the impressions of braille dots will be downward in the slate and stylus, the impressions in the mechanical braille writer are upward. Braille writing through the slate and stylus is typical. While writing, the child has to punch the dots from the right to the left side of the slate. After this, the child should reverse the paper and read it from left to right. Even though this looks strange, visually disabled children using braille are tuned to this system.

2.5.1 Skills necessary for Writing with Slate and Stylus

Like every activity, prerequisite skills are of paramount importance for using slate and stylus effectively. The six dots 1,2,3,4,5 and 6 are punched in the respective cells of the braille slate. It is important to make sure that children understand what is meant by a cell or cells of the braille slate. In order to write braille effectively, the child should possess the following skills.

1. Flexibility of fingers
2. Fine mother coordination and control of muscles,
3. Competency to read familiar braille words

Readiness training should be given to strengthen the above skills.

2.5.2 When to start Braille Writing?

While dealing with this aspect, one should be clear about the type of device used for introducing braille reading. Writing with the mechanical braille writer is easier than with the slate and stylus. Writing in braille slate and stylus needs enormous muscle control. Since establishing the hand position in slate and stylus is very important and every child finds this process very difficult in the early days, the introduction of this skill may be at the second year of a child's schooling. In holding the stylus, the forefinger should be squarely placed over the top of the stylus resting of the area between the knuckle and first joint of the forefinger with the rest of the finger over the edge and pointed

down the stylus shaft. The slate should rest on a firm surface at a lower left to upper right angle. This whole mechanism would be difficult for the child during the first year. Moreover, the child must be able to know what he writes on the slate. Therefore, he should be familiar with the dots configuration of the words which are written. Unless the child has the ability to read braille words, he cannot check what he writes. Due to these important factors, braille writing is usually taught to the child after braille reading.

2.5.3 Techniques in Writing Braille

Before the starting of writing of braille words, the child must be asked by the teacher to punch the dots of the upper cell (1,2,4 and 5) and then those of the lower cell (2,3,5 and 6). This training could be continued with the punching of particular dots and the combination of two or more dots.

In teaching braille writing, the easiest formation should be taught first. For example, the letter 'a', which is represented by dot 1, can be started. Similarly, the letters b,c,g,k,l,m,p,u,v,x could be given for practice. For developing the speed in writing, the left hand should always identify the braille cell while the right hand punches the letter in the previous cell. The stylus and the left hand should be placed on the consecutive cells. By this the left hand is assisting the right hand to identify the correct dot in the braille cell. While writing, the stylus should be held vertically. Tilting the stylus may make holes in the braille paper which may be avoided to make the braille writing work neat.

2.6 ABACUS

TT **The Cranmer abacus used in India is an American adaptation of the Japanese Soroban Abacus. It is a pocket size calculating device which utilises the movements of beads to do basic operations plus more advanced processes of arithmetic calculations. The operational procedures, with example, for basic mathematical operations are as follows :**

In addition, the higher value digits are always added first. The units column digits will come at last.

A. Example : 37 + 36

a) Set the number 37 in the extreme right of the abacus. In setting and clearing beads, we must be very careful in moving hands. That is, set the number 3 of

the 37 in the tens column with the right hand and set the number 7 of the 37 in the units column with the same hand after setting number 3. Left hand rests on the 3 in the tens column while the right hand is on the unit column.

b) We are going to add 36 with 37. That is, we have to add 3 in the tens column and 6 in the units column.

c) Since three is no 3 to add in tens column in the lower abacus, we can add 5.

d) Instead of adding 3, we have added 5.

e) Subtract the excess 2 in the tens column.

f) Next, we have to add 6 in the units column. There is no 6 to add in the units column. Only two beads are remaining in the lower abacus.

g) Therefore, we shall go to the tens column. That is, set a bead in the tens column. It means you have added 10 instead of 6. Therefore, subtract the complement 4 from the units column.

h) Since there is no 4 to clear in the units column, clear 5 of the upper abacus and add 1 bead in the units column in the lower abacus.

i) Count the number of the abacus. The answer is 73.

B. Example : 378 – 179

a) Set the number 378 in the extreme right. That is, set number 3 of the 278 in the hundreds column, 7 in the tens column and 8 in the units column.

b) In the given example, we have to subtract 1 in the hundreds column, 7 in the tens column and 9 in the units column.

c) Clear one bead in the hundreds column. You have 2 beads left now.

d) Clear 7 in the tens column (left hand follows the right and rests on 2 in the hundreds column). You have no beads left now in the tens column.

e) Move both hands to the right to clear 9 in the units column. It is not possible because you have only 8 in the units column.

f) Move your hands to clear one bead in the tens column. Incidentally there is no bead left in the tens column. This is typical, Isn't it? Now move your heads to left. Clear one bead in the hundreds column. This means you have cleared 100 instead of clearing 9.

g) What is the complement number of 9 with respect to 100? It is 91. This number must be added to compensate the excess. That is, add 9 beads in the tens column and one bead in the units column. In the tens column, there is no bead. So your addition results as 0+9=9. In the units column, you have the

value 8 and to this value, 1 bead is added making it 9. Thus you get the answer 199.

C. Example : 38 x 29

a) Set the multiplier 38 in the extreme left.

b) Count the digits of the two numbers (multiplier and multiplicand) and add one for the abacus. Totally, we have 5 digits. Therefore, set the multiplicand 29 in the last but 5^{th} column in the right side of the abacus.

c) Keep the right hand on 9 of the 29, the left hand on 3 of the 38 and multiply. 3 x 9 = 27.

d) Set the number 27 in the immediate right of the multiplicand. Now multiply 9 of the multiplicand and 8 of the multiplier. The value is 9 x 8 = 72. Please note this number should be added with where you have left in the multiplication of the previous digit 3 of the multiplicand.

e) Set the number 7 of the 72 in the tens column. You have already number 7 in the tens column. Therefore, there is no 7 to add in that tens column. Therefore, set one more bead in the hundreds column, and clear 3 beads in the tens column. Set the number 2 of 72 in the units column. Since the first step is over, clear the number 9 of the 29.

f) Multiply the number 2 of the multiplicand with the multiplier 38, i.e., 2 x 3 is 6. Treat this as 06. Skip one column for zero and set the number 6 in the hundreds column.

g) Multiply 2 x 18 = 16. Set the number 1 in the hundreds column. But there is no bead to add in the hundreds column. So, set one bead in the thousands column and clear nine beads in the hundreds column. Now we have to add 6 in the tens column. We have no place there. So, add one bead in the hundreds column and clear 4 beads in the tens column.

h) Clear the multiplicand and the multiplier. Now you have 1 in the thousands column. 1 in the hundreds column, 0 in the tens column and 2 in the units column. The answer is 1102.

2.7 ORIENTATIONS AND MOBILITY: UNASSISTED TRAVEL

There are visually disabled individuals who are extremely capable of moving independently without any physical assistance in a known environment. Such individuals have a complete control over things in the environment and their judgement about the distance, direction, etc., of these objects and the relation to self is simply outstanding. Visually disabled children are trained by teachers and mobility instructors to have safe, secure, and graceful mobility skills. Persons with these three abilities are able to move unassisted in known environment. Though this is commendable, the visually disabled individual must be encouraged to use a mobility device as it provides independence

even in an unknown environment. The skills also differ between visually disabled person from birth and the one who has acquired blindness later in life.

2.8 USE OF LONG-CANE AND SIGHTED GUIDE TECHNIQUE

2.8.1 Sighted Guide Travel

We also come across visually disabled individuals who prefer to travel with the help of a sighted companion. Specific sighted guide techniques are necessary both for the guide and for the visually disabled individual. This technique has both merits and limitations. The visually disabled individual can feel safe and walk gracefully in the company of the sighted guide. On the other hand, if the sighted guide is the only helper in travel, the visually disabled individual will be developing dependence which is not conducive for his overall development. Some important sighted guide techniques are listed as follows :

1. *Hand grip of the visually disabled person is a basic sighted guide technique. The grip should be just above the elbow.*
2. *In guiding a visually disabled person, the right-left combination of the guide and the client is important. The visually disabled person should use his right hand for holding the left hand of the sighted guide or the left hand to hold right hand of the guide.*
3. *While walking, the visually disabled person should always be one step behind the sighted person for safety measures and graceful walking.*
4. *Switch side techniques are helpful for protecting the visually disabled person from obstacles in front.*
5. *In turning around techniques, the visually disabled person should turn from where he stands whereas the sighted person ought to make a round to guide the visually disabled person. This avoids unnecessary exposure of the visually disabled person and keeps himself at the back of the sighted or both of them making sideways steps.*
6. *Walking in narrow space is a technique with which the visually disabled person keeps himself at the back of the sighted or both of them making sideways steps.*
7. *In guiding visually disabled person on stairways, the sighted person should always be one step ahead of a visually disabled person. The visually disabled person can be asked to follow the rails (if any) of the stairways for safety.*

8. *Battering ram technique which means guiding the visually disabled person by making him place the hands on the shoulders of the sighted person and move in very crowded places.*

9. *Hines break : Accepting or refusing aid. This technique will enable the visually disabled person to gracefully accept or avoid assistance, depending on his needs or desire.*

10. *Guiding in doorways without getting bumps.*

2.8.2 Long Cane techniques

The long cane which is popularly known as the 'white cane' is widely used by visually disabled individuals. The cane can help in finding surfaces of different textures, stairs, etc. Visually disabled person should use certain clues and landmarks while using long cane for his independent travel. A list of long cane techniques is given as follows :

a) *using cane while walking with a sighted person*

b) *walking on a shore line*

c) *trailing with cane*

d) *diagonal technique*

e) *touch technique*

f) *touch and drag technique*

g) *touch and slide technique*

h) *three-point tap technique for walking*

i) *using cane on stairways*

j) *exploration of immediate environment with cane*

k) *side stepping using the cane*

l) *road crossing; safety crossing*

m) *getting into a bus, car, train, and bullock cart with the long cane*

n) *rural training: using kerbs while walking, drawing water from well, etc.*

o) *doorways – getting in and getting out.*

p) *Direction talking; squaring off.*

q) *Using landmarks and clues for mobility.*

Teaching of long cane techniques should be assisted by the efficient use of tactile maps. Following map reading techniques should also be developed in the visually disabled individual:

a) *palm reading of directions, mental mapping*

b) *clock concept for independent travel*

c) *using a tactile map of the environment*

d) *knowledge about tactile symbols*

2.9 DAILY LIVING SKILLS

2.9.1 What are daily living skills?

Daily living skills may be treated as basic survival skills. These are the abilities which enable the visually disabled child to carry on his daily routine without assistance or with minimum assistance. Development of these abilities instills confidence in the child for his mainstreaming with non-disabled children.

2.9.2 Does the loss of sight retard skills in daily living?

It is often misunderstood that loss of sight means darkness and incapacity in life. Research studies strongly indicate that it is not true. Daily living skills develop in an individual only by practice and therefore, adequate practice should be given to the child.

2.9.3 What is to be done for developing this area?

In daily life, the individual comes across a wide range of events. Combing the hair may be a minor activity compared to preparation of a complete meal but both are important in their own ways. How to teach such activities to the unseeing person is a vital and formidable task. Alternative strategies have to be worked out if the usual techniques fail. Besides the strategies and instructional procedures, criteria for performance assessment are also needed. Therefore, diagnosis of areas, development of strategies, and evaluation of performance of daily living skills are equally important.

The daily living skills are listed as follows :

1. *Eating*
   a. identification of food items in the container;
   b. holding food;

c. eating with fingers-the coordination of fingers;
d. eating with spoon-hand-mouth coordination;
e. proper posture;
f. manners and customs;
g. cleaning the plate.

2. *Using Toilets*
   a. appropriate locations;
   b. positioning;
   c. cleaning toilet before and after use;
   d. personal cleanliness;
   e. using a common toilet.

3. *Dressing*
   a. unbuttoning;
   b. unzipping;
   c. folding;
   d. putting away in designated places;
   c. buttoning;
   f. zipping;
   g. tying;
   h. locating and putting on;
   i. identifying dirty clothes;
   j. identifying the washed dresses;
   k. wearing shoes (if any).

4. *Body Hygiene: Cleanliness*
   a. drawing water;
   b. washing hands and face;
   c. cleaning teeth-use of hands and brush;
   d. nail cutting.

5. *Body Hygiene: Personal Grooming*
   a. combing hair;
   b. proper use of cosmetic (if any);
   c. personal hygiene.

6. *Taking Bath*
   a. drawing water;
   b. applying soap;
   c. appropriate use of soap, towel, etc.,
   d. proper washing;
   e. total bath;
   f. locating and identification of clothes;
   g. using toilet powder (if needed).

7. *Washing Clothes*
   a. procedures in washing (washing collar first, sleeves next, then the body, etc.);
   b. applying soap;
   c. washing and rinsing the clothes;
   d. drying the washed clothes.

8. *Handling Money*
   a. identification of coins;
   b. identification of rupee notes;
   c. counting ability;
   d. tendering correct change;
   e. using a purse (if any).

9. *Shopping*
   a. expressing the need for materials;
   b. giving money;
   c. checking the quality and quantity of the material bought;
   d. getting and checking the correct change.

10. *Proper Use of Electrical Appliances*
    a. switch on/off the electrical appliances;
    b. using an iron box;
    c. tuning the radio,
    d. using a cassette recorder;
    e. using a fan;
    f. familiarity with the television;
    g. using the kitchen appliances, if available (mixie, refrigerator, etc.)

11. *Shaving*
    a. fixing the blade in the razor;
    b. applying soap on the face;
    c. clean shaving;
    d. avoiding cuts on the face while shaving;
    e. using after-shave lotion, if any.

12. *Food Preparation*
    a. selection of items;
    b. cutting and proper mixing;
    c. using appropriate heat;
    d. handling cooking equipments and vessels;
    e. serving;
    f. clean-up.

13. *Cleaning a Place*
    a. using the broomstick;
    b. total and neat cleaning;
    c. using a dustbin.

14. *Using Medicines*
    a. identification of appropriate tablets;
    b. taking correct doses;
    c. placing the medicine container properly.

2.9.4 What may be the training strategies?

There are no special daily living skills for visually disabled students. Whatever skills are expected of a sighted person, the same are also expected of a visually disabled person. Therefore, keeping sighted children as reference helps in finding better strategies for teaching daily living skills to visually disabled children. The six-stage strategy in teaching daily living skills may be as follows:

a) *observation of the daily living skills exhibited by sighted children at various grade levels.*

b) *diagnosing the difficulties faced by visually disabled children in acquiring those skills in a natural manner;*

c) *designing pre-requisite skills after necessary diagnosis of difficulties encountered by visually disabled children;*

d) *teaching those readiness skills which lead to the learning of daily living skills;*

e) *preparing evaluation criteria to measure the level of acquisition of daily living skills; and*

f) *evaluating the performance of the child in daily living and suggesting appropriate remedial measures.*

2.10 SUGGESTIONS FOR IMPROVING DAILY LIVING SKILLS

Since a classroom is not the natural setting for teaching daily living skills, the teacher can use the environment to provide a wide range of daily living skills in addition to skills taught in classrooms. Some of the salient suggestions are as follows :

a) *The teaching of daily living skills may occur in the natural setting with situational approaches. Simulating conditions created for the teaching of the daily living skills may not be fruitful. A teacher teaching the concept of washing may take the child to the running tap and teach, instead of giving oral explanation about washing.*

b) *The area of daily living skills should not be treated as a special subject. It should form an integral part of all subject. The skills should be taught along with those subjects as and when opportunities arise.*

c) *Visually disabled children should be allowed to interact with sighted counterparts for acquiring skills in an informal way.*

d) *For girls, daily living skills should be taught together with household activities.*

e) *Orientation should be given to the parents of visually disabled children so that they can teach them the basic skills such as eating, dressing, use of toilet, etc., in the early age of the child when he is at home.*

Daily living skills in an individual are vital ingredients for his proper social development. The skills should be in accordance with the norms of any society. The absence of sight in the visually disabled person imposes a restriction on acquiring information of the world in a natural way. This area needs to be strengthened in the overall curriculum of visually disabled children in schools and in rehabilitation programmes. Teaching these skills to visually disabled children may be difficult but not impossible.

In short, braille, orientation and mobility and other plus curricular skills are vital for visually disabled children. Mastery in plus curricular skills help the child in the process of effective social integration and rehabilitation.

2.11 CHECK YOUR PROGRESS

1) The pre-requisite skills necessary for braille reading are called as

   a) Plus curricular activities

   b) Braille mechanism

   c) Readiness material

   d) Verbalism

2) At the primary level the following occurs often

   a) Braille material is presented without any change.

   b) Visually impaired child will be expected to read a lot of braille books.

   c) Modification and editing in the tactile materials take place.

   d) Child will be taught to use brailler.

3) Tilting the stylus while writing may cause the following:

   a) Excellent braille dots.

   b) May make holes in the braille paper.

   c) Increases the braille writing speed.

   d) None of the above.

4) In using abacus

   a) Higher value digits are always added first.

b) Multiplication is started first.

c) Numbers can be placed in any column.

d) None of the above.

5) The technique useful for protecting the visually impaired person from obstacles is called

a) Turning around technique

b) Hines break

c) Diagonal technique

d) Switch side technique

6) Teaching of daily living skill will be more effective when

a) Teaching is done in the natural setting

b) Through simulating conditions

c) Through verbal explanations

d) Through models

2.12 ASSIGNMENT/ACTIVITY

1) Prepare a set of reading readiness materials for teaching braille to visually impaired children.

2) Create five problems in abacus multiplications and develop self-instructional materials for solving the same.

3) Visit a school for the blind and record the writing speed of children studying in various grades.

4) Provide blindfold training to a fellow teacher trainee in using orientation and mobility technique and record the experiences.

5) Select five simple daily living skills and develop instructional procedures for teaching those skills.

2.13 POINTS FOR DISCUSSION / CLARIFICATION

After going through the Unit you may like to have further discussion on some points and clarification on other. Note down these points below :

2.13.1 Points for Discussion

2.13.2 Points for Clarification

2.14 REFERENCE

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BLOCK 2: CURRICULUM HIERARCHIES

UNIT 1: READING (ENGLISH AND ANY REGIONAL LANGUAGE)

STRUCTURE

3.1 INTRODUCTION

In this unit, you will study the special education process carried out in educational programmes for children with mental retardation. It involves assessment, selection of goals and objectives, methods and material required for teaching and evaluation of teaching plans. You as a community based rehabilitation worker will be following the

Same process while planning educational programme for children with mental retardation. In this unit procedures to train daily living skills are explained in the previous unit You can also evolve new methods of training to suit individual child learning needs apart from what have been explained in the Unit-1.

3.2 OBJECTIVES

After studying this unit, you should be able to

- understand the meaning of assessment and the purpose of assessment;
- develop individualized education programme plan;
- select appropriate evaluation methods and formats for evaluating and recording the performance of a student;
- provide training in daily living skill to MR child;
- develop in MR child functional academic skills - literacy and numeracy;
- appreciate the importance of multi-sensory material;
- develop competency in Classroom Management.

3.3 ASSESSMENT AND PROGRAMME PLANNING

3.3.1 Assessment

To say a child is retarded or not we need to do assessment. Assessment involves collecting information from parents/family members, directly testing the child and observing the child in various situations. After collecting the information, we analyze the information to make decisions. The analysis of information helps in making the following decisions.

- To know whether the child is retarded or not?
- If the child is retarded, what type of interventions are required?
- Where can they go for intervention?
- If the child is not retarded, where should they go for further guidance.

3.3.1.1 Definition

Assessment refers to the process of gathering and analyzing information in order to make instructional, administrative and or guidance decisions about or for an individual (Wallace, Larsen and Elksnin, 1992).

The definition emphasizes

- Gathering and analyzing information
- Making decisions using information

Case-1

Parents brought their 8 years old daughter to X organization with following complaints. The girl is not able to

- walk on her own
- doesn't speak, doesn't understand
- needs to be fed, to be taken care of during toileting and to be bathed and dressed.

Firstly assessment of the case is done collecting the relevant information. On assessment it was found that the girl has severe mental retardation and she needs training in walking, eating, toileting and dressing, and understanding simple instructions and communicating to others. She was referred to a special school for admission as she can get regular training apart from training at home by parents/family members.

Case-2

Parents brought a 10 years old boy studying in 4^{th} class to X organization with the following complaints.

- The boy has poor memory, failing in mathematics, English and science.
- Doesn't study on his own.

On assessment it was found that the boy is not retarded. However, to identify the specific problem, detailed psychological and educational assessments were done. The psychological assessment indicated that the boy has average intelligence and the educational assessment revealed that the boy has problems in spelling and lack of understanding of basic mathematical operations. Based on this information the boy was referred to a school providing supportive education.

3.3.1.2 What are the Purposes of Assessment?

Assessment always is conducted with a specific purpose. For example: We have planned to go to a specific place for excursion. Before we go we find out about the transportation, lodging and boarding facilities available, the time required and the expenditure involved. The purpose of collecting this information is to decide the no. of days, money required, the place of stay, etc. Let us take another example. We go to a restaurant for lunch. Suppose we had only Rs.200/- with us. Before ordering the items we look at the prices in the menu and assess our purse which items we can order. Another example, when we want to buy rice or pulses we asses the quality and rates by going to 3-4 shops to decide from which shop you would like to buy. These examples are discussed to tell you that we carryout assessment with a specific purpose. Similarly assessment of children / persons is done for various purposes - Screening and identification, Diagnosis and referral, Programme planning and evaluation.

(a) Screening and Identification

The children/adults are screened to identify whether they have any problems which require further assessment. For example screening of primary school children was conducted to find out the status of health. During screening, the doctor may identify some children who require further/detailed checkup for diagnosing the problem. Similarly there are screening schedules which are used to identify children whose development is delayed when compared to other children of the same age. Screening schedules are generally used in surveys to identify children who have problems. The following are some of the screening schedules.

Screening Schedule No. I (Below 3 years)

(Note: For details refer to Block-3)

Sl. NO.	ITEM	Normal age range	Milestone delay if not achieved by:
1	Responds to name/voice	1-3 months	4th month
2	Smiles at others	1-4 months	6th month
3	Holds head steady	2-6 months	6th month
4	Sits without support	5-10 months	12th month
5	Stands without support	9-14 months	18th month
6	Walks well	10-20 months	20th month
7	Talks in 2-3 word sentences	16-30 months	3rd year
8	Eats/drinks by self	2-3 years	4th year
9	Tells his name	2-3 years	4th year
10	Has toilet control	3-4 years	4th year
11	Avoids simple hazards Other Factors	3-4 years	4th year
12	Has fits	Yes	No
13	Has Physical disability	Yes	No

If the child is found to be delayed in any one of the items giver from 1-11 and if the child has fits or physical disability, suspect mental retardation.

Screening Schedule No. II (3 to 6 years)

Observe the following:

1. Compared with other children, did the child have any serious delay in sitting, standing, or walking? Yes No

2. Does the child appear to have difficulty in hearing? Yes No

3. Does the child have difficulty in seeing? Yes No

4. When you tell the child to do something, does he seem to have problems in understanding what you are saying? Yes No

5. Does the child have weakness and/or stiffness in the limbs and/or difficulty In walking or moving his arms? Yes No

5. Does the child sometimes have fits, become regid, or lose consciousness?

Yes No

7. Does the child have difficulty in learning to do things like other children of his age? Yes No

8. Is the child not able to speak at all? (cannot make himself understood in words/
Say any recognizable words) Yes No

9. Is the child's speech in any way different from normal (not clear enough to be Understood by people other than his immediate family?) Yes No

10. Compared to other children of his age, does the child appear in any way Backward, dull or slow? Yes No

If any of the above items is answered 'Yes', suspect mental retardation.

❖ Adapted from the International Pilot study of severe childhood disability - Final report - Screening for severe mental retardation in developing countries.

Screening Schedule No. III (7 years & Above)

1.	Compared with other children, did the child have any serious delay in sitting, standing or walking?	Yes No
2.	Can the child not do things for himself like eating, dressing, bathing and grooming?	Yes No
3.	Does the child have difficulty in understanding when you say "do this or that"?	Yes No
4.	Is the child's speech not unclear?	Yes No
5.	Does the child have difficulty in expressing without being asked what the child has seen/heard?	Yes No
6.	Does the child have weakness and/or stiffness in the limbs and/or difficulty in walking or moving his arms?	Yes No
7.	Does the child sometimes have fits, become rigid or loss consciousness?	Yes No
8.	Compared to other children of his age, does the child appear in any way backward, dull or slow?	Yes No

If any one of the above items is answered 'Yes' suspect mental retardation.

Note: In the screening schedules No.II and No.III, there are a number of questions which are over inclusive i.e. those with hearing handicap or physical handicap or epilepsy alone without mental retardation can be spotted. These two screening schedules ensure prompt identification of every single mentally retarded child. Do not worry if the questions sometimes identify persons with handicaps other than mental retardation. Such persons can be assessed later. Our chief concern is identification of mentally retarded children.

(b) Diagnosis and Referral

Through screening we have found some children have problems. The next step is to find out the reasons for those problems and to make a diagnosis. This requires a detailed assessment which includes case history taking, psychological assessment and educational assessment and medical examination.

Based on the information appropriate management plan is drawn and referrals are made if necessary.

3.3.2 Programme Planning

Once the child is diagnosed as having mental retardation, intervention programs are to be planned to meet individual child's needs, for which assessment of the current level performance of the child is required.

Example: The current level functioning of a 7 years old boy as follows.

The boy can walk and run. He eats by himself but spills a lot of food around the place. Needs assistance in wearing clothes and bathing. Manages by himself during toileting. Understands and follows simple instructions. Speaks a few words (Amma, Akka, Annam). Identifies common vegetables, fruits and furniture. Identifies major body parts. Identifies red and yellow colour. Counts and gives objects up to 2. Holds pencil and scribbles.

Intervention

Training in
- Eating, dressing and bathing
- Naming colours, common objects (vegetables, fruits, furniture, clothes)
- Counting objects up to 10
- Reading and writing numerals up to 10
- Reading and writing his name.
- Speaking in phrases
- Understanding and following two step instructions.

3.3.3 Individualized Education Programme (IEP)

You have already leant that children with mental retardation have less ability to understand, learn and retain learned skills when compared to non-retarded children. In addition, great variations in abilities are also found among them due to the severity of retardation. Due to this, children needs vary form one another. For example there are two children with mental retardation who are mildly retarded. Among them one child's right side limbs are affected. Because of this she is not able to use right hand as effectively as left hand in doing activities and right leg while walking. This child requires physical therapy apart from the educational programme. Therefore, there is a need to develop an educational programme for each child. This plan is called Individualized Education Programme (IEP). It is also called as Individualized Programme Planning (IPP) or Individualized Training Programme (ITP).

(a) What should we write in IEP?

IEP is a document written for each student, which includes annual goals, short term objectives and a detailed plan (methods, material, evaluation procedure) for each short term objective.

Annual goals

Before planning the programme what do you do? You do assessment. Why do you do assessment? To find out the current level performance of the child i.e. to know what the child is able to do. This information is essential for you to select the appropriate content (goals) for teaching. Now, looking at the assessment information you have to focus your attention on selecting the content (goals) on priority (most needed). These goals what you will be selecting are for an academic year (what you except him to learn over a period of one academic year). However, you need to keep in mind the level of retardation while selecting the goals and objectives.

Short term objectives

This is again the content (part of annual goal) which you select for a short period of time. The short period could vary from one month to three months or number of sessions.

Example-1:

Annual Goal:

- Wears pant and shirt by him self.

Short term objectives:

- Removes pants including unzipping.
- Wears pants including zipping.
- Removes shirt including unbuttoning.
- Wears shirt including buttoning.

Example-2:

Annual goal:

- Wears pants and shirt by himself.

Short term objective:

- Unzips pants.
- Unzips pants and removes.
- Wears pants.
- Zips pant.
- Unbuttons shirt.
- Unbuttons and removes shirt.
- Wears shirt.
- Buttons shirt.

In example-2, the short term objectives are further divided when compared to the first example. It has been explained earlier that you need to keep in mind the child's ability to learn and the associated conditions if any the child has along with mental retardation, while selecting the goals and objectives for teaching.

Incase you find buttoning is a complex activity for a child as the child has no fine finger co-ordination you may opt for adaptations (Velcro in place of buttons) so that the child can still dress himself without depending on somebody.

Example 3:

Annual goal

- Writing numerals from 1 to 20.

Short term objectives

- Writing numbers from 1 to5
- Writing numbers from 1 to 10
- Writing numbers from 1 to 15
- Writing numbers from 1 to 20

Translating the short term objectives into teaching plans

Now you have to write a detailed teaching plan for each short term objective. The contents of each plan as follows.

TASK: Specify the task which you want to teach (unzipping pants)

CURRENT LEVEL PERFORMANCE: State the performance of the student against the task selected for teaching. (Eg. Holds the zip but needs support in pulling the zip).

OBJECTIVE: Under this you need to state what the student learns (content) what the student does with the content (behaviour) how well the student does it (criteria) under what circumstances the student does it (condition) and after what period of teaching the student will achieve the task (duration).

- Rajan will be able to unzip his pants (content and behaviour) when required (condition) by himself (criteria) after 15 sessions of teaching.

- When required (condition), Rajan will be able to unzip his pants (content and behaviour) to 80% of accuracy (criteria) after 3 months of training (duration).
- After 3 months of training (duration) Rajan will be able to unzip his pants (content and behaviour) by himself without anybody's help (criteria) when required (condition).

You can write the objective in any of the way you want as mentioned above but you must see that all components are mentioned in the specific objective. You can also use the following statements to indicate condition and criteria depending on the task and the excellence you want the child to achieve.

TASK	CONDITION	CRITERIA
Name numerals from 1 to 10 when not asked sequentially	When asked Rajan to name numerals by pointing not sequentially on a worksheet from 1-10.	Names all numerals correctly or names 8 out of 10 numerals correctly or Names 4 out of 5 times all numerals correctly.
Runs 50 meters dash	When Sameera hear whistle /sees flag down/hears three	Takes 5 minutes to complete 50 meter dash.
Making sandwich	When asked or when required	5 sandwiches in 10minutes

The criteria can be mentioned in terms of number of correct responses, number of times the correct responses are expected, the time taken etc.

MATERIAL : State the learning material required for teaching the required task

PROCEDURE: Write in detail how you are going to teach the task using the selected material. Also state what type of reinforcer you are going to use and the settings (classroom, playground, home, etc) in which the training will take place.

EVALUATION: Lastly mention when and how you are going to evaluate (duration and the formats to be used).

Remember the following points while developing IEP.

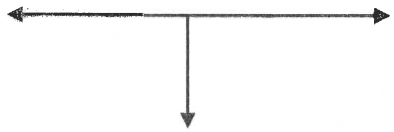
- Depending on the nature and needs of each child, involve all the professionals while selecting the goals and objectives for the child. It is very essential as there is need to integrate the intervention programme given by the other professionals (therapists, psychologists, social worker) in teaching tasks/skills to children with mental retardation.
- Invite and encourage parents/family member's to participate in IEP meeting. This would help them to understand their child's abilities and inabilities and would help them to understand and appreciate their child's efforts in learning. In addition, their participation will also facilitate professionals in selecting appropriate goals and objectives that will promote independent functioning of a child in different environments.

3.3.4 Evaluation

(a) What is evaluation?

- Evaluation is comparing the performance of a student to a set criteria. For example, a trainer sets an objective such as "Wears shirt by him self (without anybody's help)" for a student. She plans a programme to teach the student to wear shirt. She teaches, but how does she know that the student has learned? She tests him. How? She tells him to wear a shirt. If the student wears his shirt on his own with out trainers support she would say that he has learned the task. If she still requires her support she would say that he has not completely learned the task. How she was able to make such statements? What she did is that she compared the student's performance to the set criteria (by himself). Through this comparison she came to know whether student has learned the task completely or not. If not what is the discrepancy, that is how close or how for is the student from the set criteria. Another example to quote. "Writing 3 words without any spelling mistakes". The trainer tests the students after teaching. The performance of student (A) and student (B) is given below.
- A) wrote all three words with out mistakes - achieved the criteria.
- B) wrote two words correctly - not achieved the criteria, because he is yet to learn to write one more word. The discrepancy here is one word.

- Howell and Morehead (1987) states that evaluation is a thoughtful process involving the comparison of the way things are to the way they should be.



Standard
(The way things should be)

Behaviour
(The way thing are)

Discrepancy

Standard The way things should be	Behaviour The way things are	Discrepancy
(A) Writing three words correctly with out spelling mistakes	Wrote all three words with out any spelling mistakes	No discrepancy
(B) Writing three words correctly with out spelling mistakes	Wrote two words correctly with out spelling mistakes	One word yet to learn

(b) Is there any difference between assessment and evaluation?

Yes there is. The difference is that, we assess the child to find out how much or how far the child is able to perform the activities so that we can select the activities in which the child needs training. Evaluation is done after training to know how much the student has learned through your teaching. It helps you to decide whether to take next activity for teaching or the student still requires training. If the student still requires training, you need to check where could you have gone wrong? Is it in selecting the methods and material or content? Or is it because of child's health related or family related problems, that could have affected regular and consistent training.

(c) Types of evaluation

Two types of evaluation procedures are in use in educational evaluation formative and summative.

Formative evaluation

Formative evaluation is done during the intervention programme actually being conducted. For example a trainer is teaching a student to eat food. The trainer evaluates the performance of the student periodically (after every session/every week) to see how the student is progressing towards the target behaviour (eating food by himself). The feed back (performance) helps her in realizing the positive or negative aspects of her teaching. It helps her to decide whether to continue the planned programme or is there any need to bring changes in the planned programme.

Summative evaluation

Summative evaluation is a long term, final evaluation conducted after completion of a specific task/unit teaching. Refer to the example under formative evaluation. The student took 12 sessions to learn the task of eating food by him self. The performance recorded under 12^{th} session here will become the summative evaluation. Task analysis checklists, assessment checklists, IEP format are used in recording formative and summative evaluation data.

(d) Report writing and record keeping

Report writing and record keeping are integral part of educational programmes. Systematic documentation of information regarding, performance of a student and maintenance of individual records are essential when we are talking about children with mental retardation. As educational needs of each child is different from one another, documenting and maintenance of individual records are important to report the student's progress.

While writing the reports we need to report the performance of the student so objectively that it facilitates in selecting the clear cut goals and objectives and also a parent/family member/other professionals can understand clearly what the child was able to do before intervention and what the child has learned

as a result of intervention. Generally the words such as knows, good, nicely, welldone, do not specify the behaviour which is observable and measurable.

Example:

Student (A)	Student (B)
• Knows colours • Speaks well	• Identifies red, yellow and blue colours **Or** • Names red, yellow and blue colours . • Speaks in sentences. • Answers simple questions relating to himself and family. • Narrates incidents which involve 4-5 sentences with prompts.

Record keeping

Various types of recording formats are used to record/document the performance of a student. Case records, IEP formats, task analysis checklist, assessment checklist, graphs, anecdotal records, work sheets are all various formats used in special educational programs for children with mental retardation.

3.4 DAILY LIVING SKILLS

Training In Daily Living Skills

One of the objectives of special education is to train children to look after their personal needs (eating, drinking, toileting, brushing, bathing, dressing and grooming) when required in different environments (in the family, school, neighbourhood and

community). For example, we eat and drink at home, some times in hotels, marriages, parties, cafeterias, bus station, railway station etc. The skills required for individuals in each environment will vary and we need to teach all those skills to children with mental retardation. Many a times parents/family members may not take children with mental retardation to functions/hotels/outside places due to the lack of appropriate eating skills or other daily living skills. Therefore, the training programmes should focus on training of all skills required for children to participate along with the family members in various activities that prevents families from social isolation.

The children need to look after personal needs (daily living activities) everyday. Hence, training in thee activities can occur everyday. If children lack skills in performing a specific daily living activity, the training in that activity should occur at the appropriate time of its happening. For example, brushing of teeth. We brush our teeth every morning after getting up. So, the child can be trained brushing teeth during that time. In school programmes, the teacher can teach after lunch.

The following are some of the general points we should remember while planning and teaching daily living activities.

- Analyze each task. See that you keep in mind the severity of mental retardation while analyzing the task (Ref: Task analysis).
- Assess the student using task analysis checklist to find out the current level performance of the student against each sub-task.
- Provide appropriate assistance (prompts) and fading procedures (see prompting and fading).
- Use teaching material appropriate to the task.
- Follow reinforcement procedures. Remember to reinforce (see Reinforcement) the child even when he makes an attempt in the initial stage (acquisition) of learning.
- Remember to include in your planning the activities that helps in maintains and generalization of learned activities.
- Record the performance of the student periodically (See Evaluation task analysis).
- Make adaptations in the material if required for a child to do the activity by himself.
- Teaching of daily living activities should take place during the time it is usually done.

Eating and drinking

Points to remember

- Give opportunity to children to understand that we eat food when we feel hungry and we drink water when we feel thirsty.
- Provide opportunity to children to eat different types of breakfast and snacks items which are commonly prepared at home and available outside as eating of different items need different skills (using fingers, spoon, fork).
- Children should be taken to eating places to expose them to different types of eating environments. Also allow children to decide what they want to eat and order the items.
- Folding napkins, towels, aprons or table cloth can be taught to children at home and in the training centre.
- Arrangement for eating (on the floor, dining table) serving food, washing plates, glasses, spoons and other utensils after eating.

The following are some of the specific related points to remember while teaching

Drinking

- Use a cup/glass with handles on both sides if the child has difficulty in holding the glass.
- Take one fourth of water in the glass in the initial stages of teaching and later increase the water level.
- Use a variety of drinks (fruit juice, soup, buttermilk) in addition to water. Select the drinks of child's choice. It motivates him to drink.
- Give a small jug/bottle with less water in the beginning of teaching to pour water into the glass for drinking.

Eating

- Begin teaching independent eating with non-sticky food items like poori/ chapatti/dosa/bread.
- You can roll chapatti/poori/dosa (half a sandwich) and make child to hold and bite a bit at a time to eat.
- Make chapatti/poori/dosa into small pieces. Help child to pick up each piece and eat along with a side dish (curry/chutney/sambar).

- Sometimes it is noticed that children with mental retardation have difficulty in taking proper proportion of food (chapatti, poori, dosa) along with side dish. They need training in these too.
- In case the child has difficulty in mixing and taking proper amount of food to eat, mix the food, make small balls and place in the plate for eating.
- Some children have a habit of continuously placing the food in mouth without munching and swallowing the food first placed in mouth. Tell child to munch and swallow the first morsel of food.
- If a child has a habit of pushing/throwing the plate or the child impatient, keep only one ball at a time or a very little food in the plate.
- If the child has difficulty in eating using fingers, teach her to eat with a spoon. Thicken the handle of the spoon by rapping a cloth or with a wooden handle in case the child is not able to use fingers but uses palm to hold the spoon.
- Name the items when child is eating the food or when you are serving the food.
- Tell parents (a) to serve food a little, (b) to name items while serving, and to give opportunity to their son or daughter to ask for food when he/she is hungry or when he/she wants more food and also which item he/she wants.
- Eating activity also involves washing and wiping hands, washing plate, tiffin box, etc. These activities should also be taught to students as part of training in eating skills.

Toileting

Teaching of toileting skills should happen at appropriate time in training centers and at home.

Points to remember

- Generally parents/family members take their children at regular intervals or timings of the day to toilet for urination and passing of stools if children have no toilet control. When you are training the child for toilet control (urination), record how many time sand at what interval the child is passing urine for about a week. Calculate the average time. Take the child to the toilet at regular intervals to pass urine.
- Say "I am taking you to the toilet to pass urine or stools" or make it short "toilet to pass urine or stools". Also use gestures (showing the little finger,

pointing panty) along with the words so that the child can use them to indicate his toilet needs as many of them can not express verbally. See that you say and use gestures every time you take him to the toilet so that he understands the meaning of words and gestures.

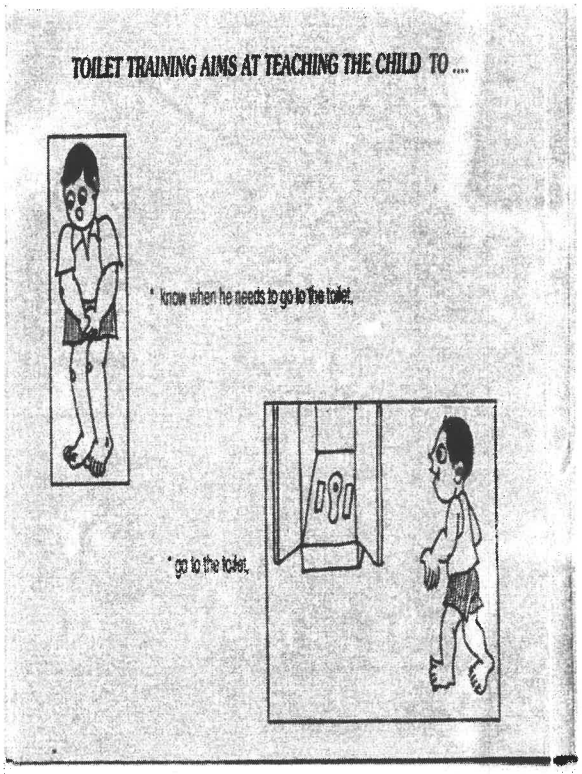
- Praise her when she passes urine/stools in the toilet and does not soil her clothes. In the beginning of the training the child may not pass urine/stool in the toilet when you take him but does after you bring him out of the toilet. Make him to clean the place completely by himself or assist him partly in cleaning the place and show unhappiness on your face and tell him how unhappy you are (not scolding).
- Teaching privacy is an important step in teaching toileting skills. Always remember to teach the student to close the toilet door while he uses the toilet. When you are teaching him to remove pants to use the toilet or wear pants after using toilet, see that you teach him with door closed.
- Make an effort to teach him to unfasten. In case, it is beyond the students capacity to learn, use adaptations such as elastic velcro in place of buttons/hooks.
- Some children refuse/hesitate to use the toilet with the fear of falling. You can fix the handles on either side of the walls in the toilet so that the child can hold the handles and sit without fear.
- Washing after defecation, pouring water/flushing toilet, washing hands after toileting are part of toileting skills and to be taught to the students.
- Train independent use of left hand for cleaning after toileting when adult pours water. When he perfects that train in pouring water by himself using right hand. It he can not do both together adapt by attaching hosepipe for use by right hand.

TOILET TRAINING

Helps the child to stay clean and dry

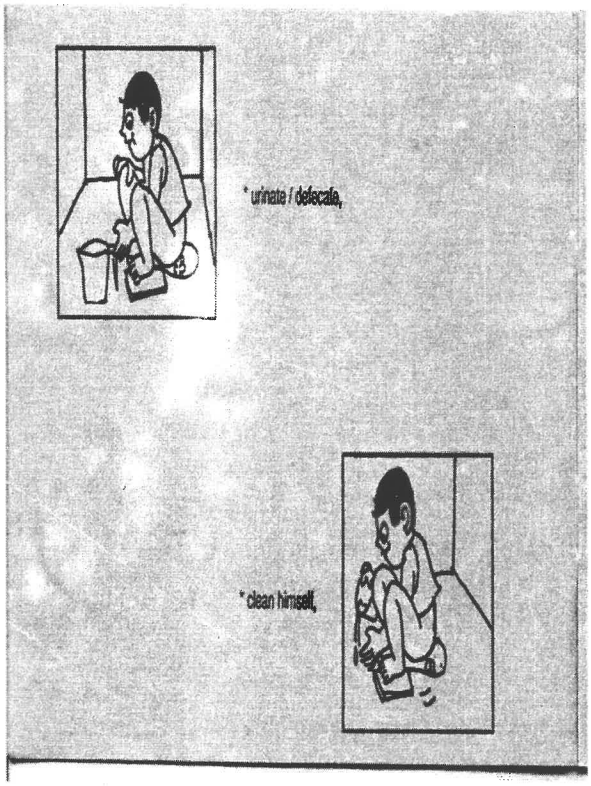
Leads him towards more independence in daily living

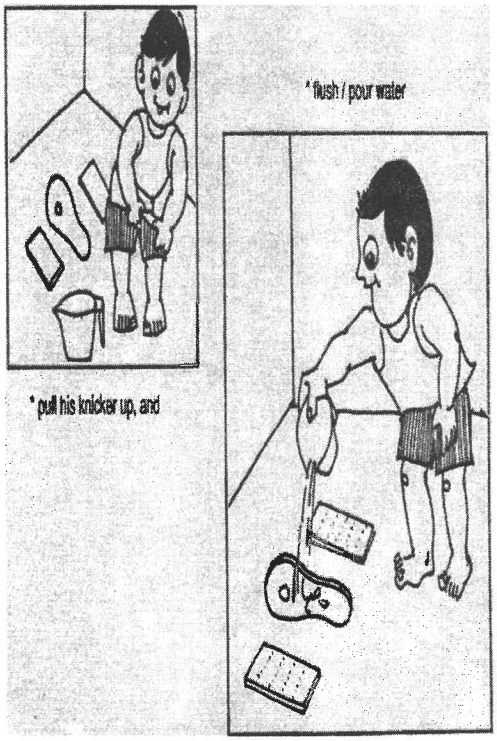
Provides better acceptance in the community


TOILET TRAINING AIMS AT TEACHING THE CHILD TO ....
* know when he needs to go to the toilet,
* go to the toilet,

* close the door,

* pull down the knicker,


* urinate / defecate,
* clean himself,



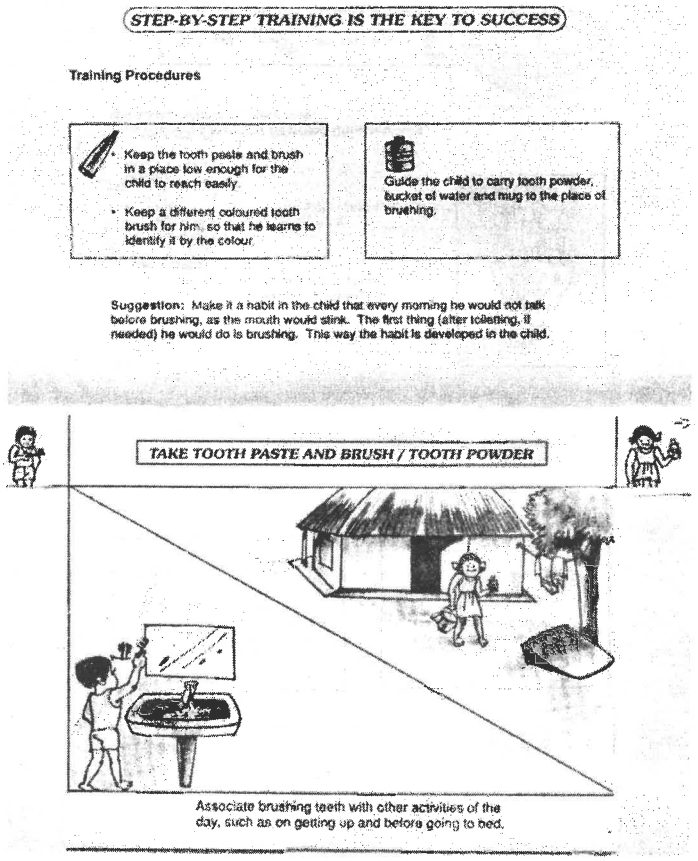
Source : Towards Independent Series (1990) - Toileting Skills

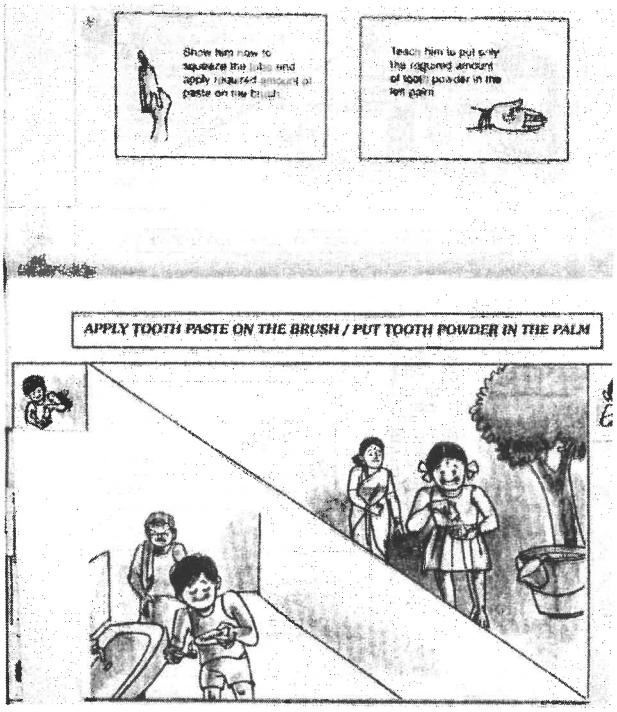
Brushing

This activity can be taught after lunch in training centers and in the morning and after dinner at home.

- Some families use tooth powder and use finger to brush teeth and some families use tooth brush and tooth powder/paste to brush teeth. In addition, some families may have sink and tap facility and some may have borewell/well in their homes. Before training, find out what they use at home for brushing teeth and the physical facilities available.
- Thicken the brush handle with cloth/plaster/fix a wood handle for holding in case there is a need for good gripping.
- Use mirror as far as possible (standing in front of the mirror) while training children in brushing.
- Stand behind the child while teaching.
- Initially children may eat the paste. A little paste swallowed does not harm children. Gradually train to spit.

- Give a small mug or glass of water for gargling after brushing teeth.
- Teach children to identify their brush, and paste. Teach squeezing the paste from the tube as the last step as it needs fine motor coordination. Waste of paste should be avoided.
- Children should also be taught to brush their teeth without reminder as it is expected of any non-retarded child above the age of 6 years.
- Give opportunity to children to select and buy the brush and paste form a shop.



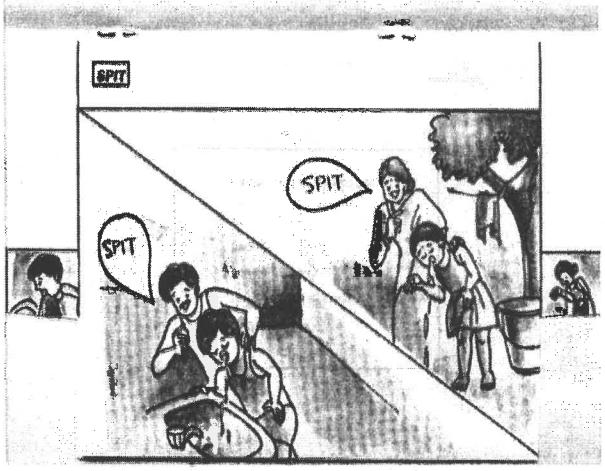

Show him how to squeeze the tube and apply required amount of paste on the brush
Teach him to put only the required amount of tooth powder in the left palm
APPLY TOOTH PASTE ON THE BRUSH / PUT TOOTH POWDER IN THE PALM

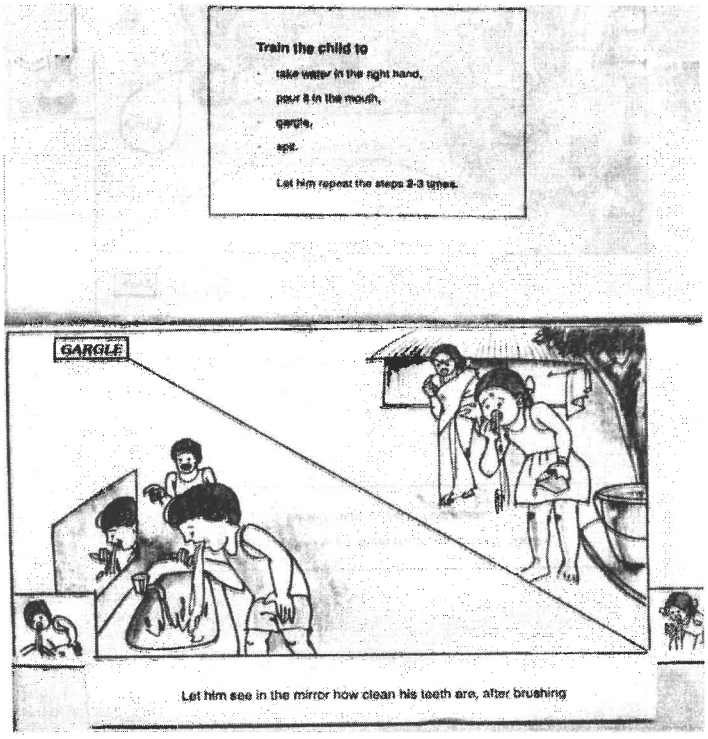
'Swallowing' the tooth paste is a common feature, because, the child, while eating, is taught to swallow whatever is in the mouth. Therefore . . .

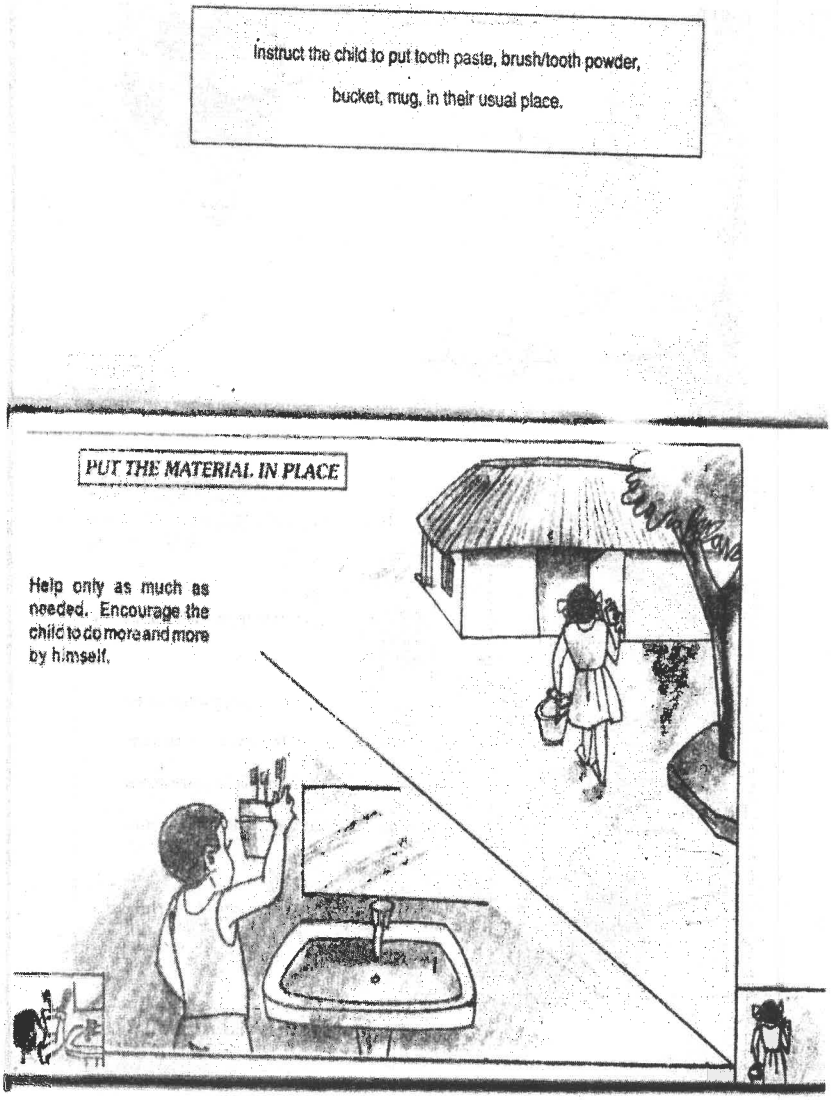
DEMONSTRATE SPITTING BY POURING WATER INTO YOUR MOUTH AND SPITTING IT

Next ask the child to spit the paste out.

Enhance spitting by holding the child at the back of the neck, in a bent position.




Train the child to
take water in the right hand,
pour it in the mouth,
gargle,
spit.
Let him repeat the steps 2-3 times.
GARGLE
Let him see in the mirror how clean his teeth are, after brushing



Source : Towards Independent Series (1990) - Brushing Skills

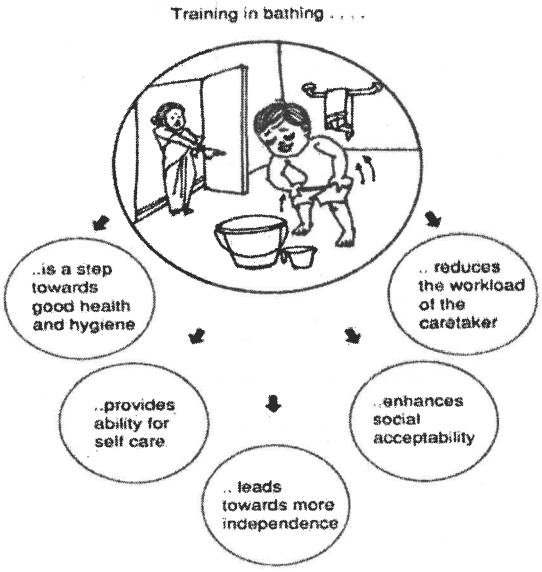
Bathing skills

Teaching of bathing skills is generally done at home by parents/family members as it may not be possible for teachers to teach bathing skills in day care centers. Inform parents/family members on the following points:

- It is always important to see that children select and take their clothes and towel to the bathroom before they take bath. This activity will help in identifying their own clothes and naming of the clothes.
- Children should be allowed to mix cold water and hot water to check the required temperature.
- Privacy needs to be maintained while training in taking bath and wearing clothes.

- Initially sponge can be used for applying soap on the body to avoid more usage of soap or slipping of soap from hands.
- Use a napkin or small towel fixed to rings at the two edges for cleaning the back for those children who have difficulty in reaching the back with hands.

'A BATH EACH DAY KEEPS THE DIRT AWAY'



GUIDELINES FOR TRAINING

- Divide bathing activity into small steps

- Draw the child's attention to each step when you bathe him

- Starting with what the child can do, help him to do more until he can bathe himself without help.

Try the ideas suggested in the following pages, to make training at each step easier.

MAKE SURE EVERYTHING REQUIRED IS WITHIN REACH

Train the child to check, if bucket of water, mug, soap, towel and clothes are within reach.

Have a string or a bar inside the bathroom, so that the child can hang his towel and clothes.

Bathing time is a good time to help the child learn many skills !

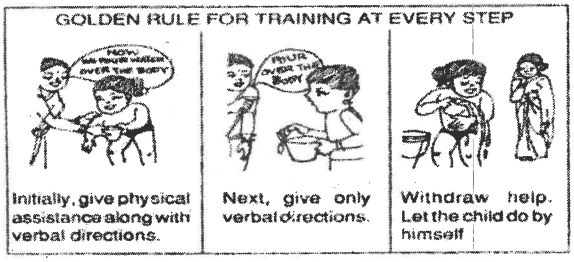
Guide him to feel the water and check if the temperature is agreeable to him.

POUR WATER OVER THE BODY

- Use mug that has a handle. It will be easier to hold and balance.

- Let him follow the posture (sit/stand) that is convenient to him.

Use play time as an opportunity to learn bathing skills by encouraging the child to bathe her doll.


GOLDEN RULE FOR TRAINING AT EVERY STEP
Initially, give physical assistance along with verbal directions.
Next, give only verbal directions.
Withdraw help. Let the child do by himself

APPLY SOAP

Train the child to rub soap between palms and back of hands to form lather and apply it over the body, in this order -

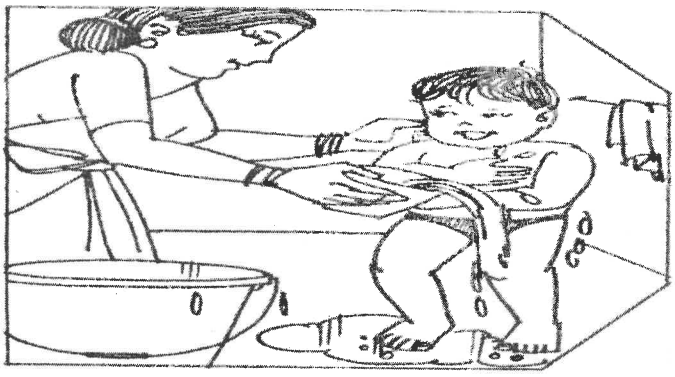
- trunk.
- arms, hands, fingers.
- legs, feet, toes.
- back portions of the body, rubbing with right hand on left upper side of the back and left hand on right upper side of the back.
- ears, neck, face.

Emphasize on keeping a mug of water touching the leg, before the child closes his eyes to apply soap on the face.

RINSE

- First, let him wash his face.
- Then, pour 2-3 mugs of water over the body and rub all over, without applying soap.
- Pour water again to rinse thoroughly.

Children enjoy playing with water. Don't worry if the child uses too much of water and soap initially. The important thing for him is to learn to enjoy the activities leading to personal cleanliness.



Prompt the child to hurry up if he takes long by saying "It is time for the TV serial .....", "Papa has to take bath....." etc.

- Use towel of a size the child can hold and rub with easily.

- Having his name or initial on the towel will encourage him to use it and will also give him a sense of pride, that it is HIS. It will also help him to identify his name and his belongings.

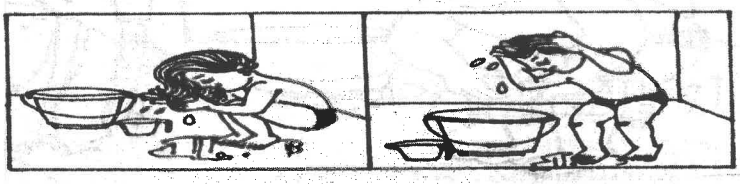
Appreciate the child for his attempts and successes at every step.

WASHING HAIR

Training procedure

1. Let the child sit/stand with the neck bent forward.

   If the child has long hair, help her to bring the hair to the front.



Bent position of the neck will make washing easier by preventing shampoo from getting into the eyes and over the rest of the body.

II Take a small quantity of shampoo in the hand.

Use extract of shikakai/reetanuts instead of shampoo, if it is customary.

III Apply it over the scalp and the rest of the hair.

IV Wash and rinse.

V Do a second wash and a very thorough rinse.

VI Help her to wind a towel round the hair if she has long hair.

Instruct the child to keep his/ her eyes closed throughout washing of the hair.

Remember to appreciate the child's successes.

Source : Towards Independent Series (1990) - Bathing Skills

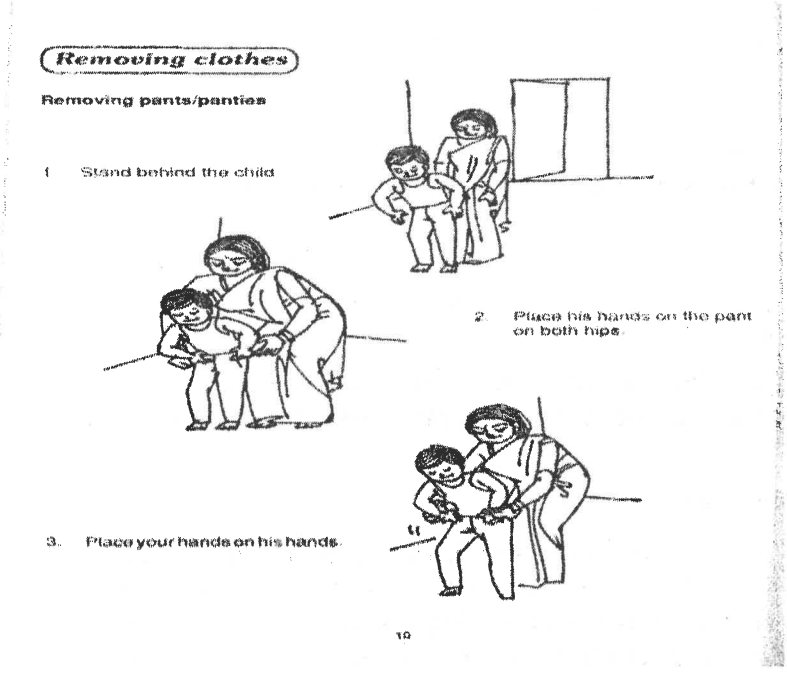
Dressing skills

Dressing activities include removing and wearing clothes including unzipping/zipping, unbuttoning, buttoning, unhooking and hooking and tying lace/ribbon.

Points to remember:

- Use stool/chair/box (size depending on the height of children) to sit while teaching children to remove or wear pants. For example the child removes pants upto knee level and sits on the stool, or box. He can remove the pants easily without having to balance on one foot. Often children with mental retardation have problems in balancing on one foot and may fall. In case of children with cerebral palsy with mental retardation, this method of teaching is very useful.

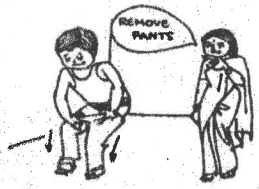
- First teach removing of clothes after unfastening (by trainer) and then wearing of clothes.
- Use large buttons on shirts while teaching unbuttoning and buttoning of clothes.
- Teach fastening of buttons, zips, hooks directly on self after wearing clothes rather than teaching using frames. If needed, give physical prompt by standing behind the child and extending hands.
- Use stickers/labels already on shirts, banians or pants for teaching identification of correct and wrong side of clothes.
- Use adaptations such as Velcro/elastic bands if children have difficulty in buttoning, zipping/tying.
- Inform parents to allow their children to select their clothes for themselves to wear during various occasions and when they take them for shopping to buy clothes.



4. Pull down the pant with his hands on pant and your hands on the top of his, saying simultaneously "remove pants".

5. When it reaches the ankle help him to take out the legs one by one.

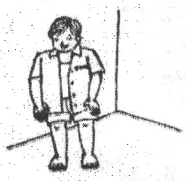
6. Gradually reduce physical help. Say only "remove pants".



Many children learn to undress before they learn to dress. Be sure they do so at the appropriate times so that they can be encouraged.

Removing unbuttoned shirt

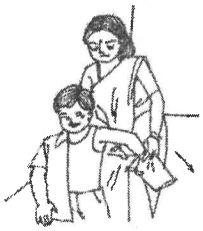
1. Unbutton the shirt



2. Stand behind the child

3. Place your hand on his hand.

4. Take out the left sleeve



5. Take out the right sleeve

6. Gradually remove your hand, and tell him to pull out. Reward appropriately.

Whenever the child needs to remove his shirt, take him to dressing area, unbutton his clothes and tell him to remove by himself. Wait for him to do. Provide assistance only if needed.

Steps to remove banian/T-shirt

1. Holds the edge of the bottom of the T-shirt with both hands crossing each other.

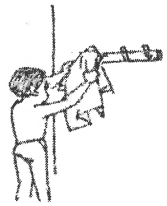
2. Pulls the T-shirt upto the chest using both hands.

3. Takes out the T-shirt over the head.

4. Takes out the T-shirt from one hand.

5. Takes out the other hand from the sleeve.

6. Keeps T-shirt in the proper place after removing.



Use these steps explained, to remove frocks also. Initially, physically help him. Gradually reduce the physical help and verbally tell her what to do next.

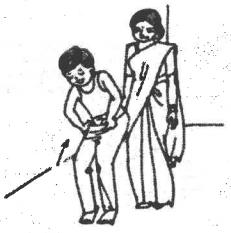
Appreciate him at every step in his attempts and success. If possible, make him stand in front of a mirror while teaching. The need for privacy also should be insisted especially during removing dress.

Always talk about the steps in short, meaningful phrases. 'pull the T-shirt', 'Take out over the head', 'Take out the hand', 'Look you have taken out', 'That's right' and so on.

Wearing clothes

Wears panties/underpant/pants

1. When teaching the child to put on his pant, start with small steps and begin at the end of the task. That is, when the pants are almost pulled up, let him complete the task. It will probably be easier for him to perform this part first, as he will feel 'successful' by completing the task.



2. As he progresses, gradually let him attempt more complex parts of the task - to pull the pants up over the hips, and then from his knees up. The last step would be to hold the pants and wear them independently.

Many parents say, 'My child can wear by himself'. But he is slow and so usually I help him'. Don't be in a hurry. Let him have the chance to do by himself. Be patient.

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Wears shirt/blouse

1. Show the edges of stitching. Let him see and feel it and know the right side of the shirt.

2. Teaching the child to wear a shirt is much easier if you begin at the end of the task. Help him until he gets the arm half way in. Then encourage him to take over. He will straighten his arms into the sleeve. Then pat him and appreciate.

3. After he inserts one hand, bring the shirt through the back and assist him to insert his other hand through the arm hole. Help him to bring both the flaps of the shirt properly in front.

Initially he may be slow and clumsy. He may fail to identify the right side and front of the shirt. Do not discourage him. Let him touch, feel and see by himself so that he can understand that he has to remove it and wear it properly.

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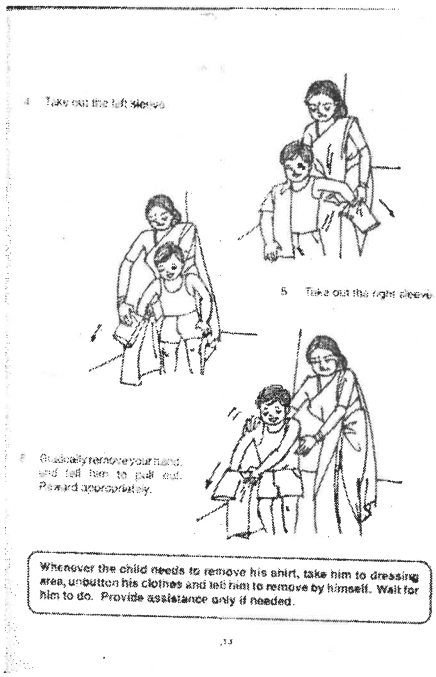
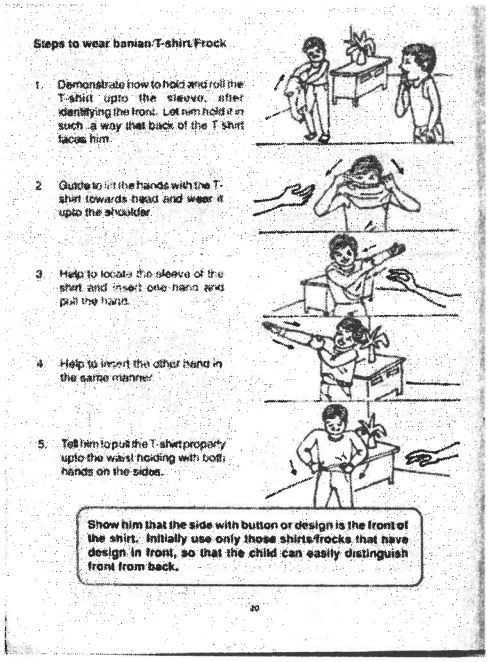




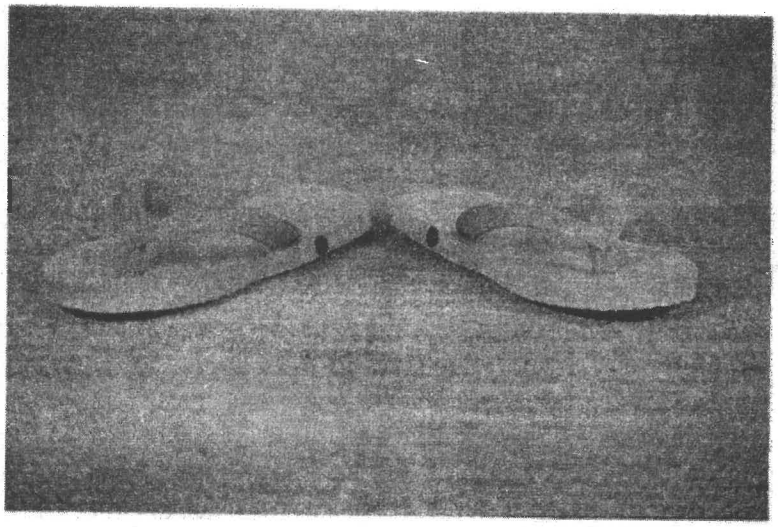
Source: Towards Independent Series (1990) - Dressing Skills

Grooming skills:

Applying oil, combing hair, applying powder, fixing bindi (in case of girls) wearing chappal/shoes are all activities to be taught under grooming. Generally, by the time children are 8-9 years, they learn all the above mentioned activities by themselves through observational learning. However, children with mental retardation need to be taught all the activities using special methods.

Points to remember:

- For children, who do not know to identify left and right, fix stickers/marking on the inside of heel of the footwear to help in identifying left and right chappal or shoes.



- Tying shoe lace is a very complex activity. There are variety of shoes available in the market without shoe lace, which can be bought for use. Our aim of education is to train students to take care of their personal needs by themselves.
- Use cloth puff to teach applying powder evenly on face. Encourage children (girls) to use bindi stickers which are easy to fix.
- Select comb with a thick handle convenient to hold convenient to hold for teaching combing hair.
- In case of children with low ability, plaiting hair which is a complex activity may be avoided keeping the hair short where one can use rubber band to fix the hair.

To teach plaiting hair, follow the sequence:

1. Ribbons of 3 colours fixed on undo grill.
2. Wool of three colours.
3. Wool of same colour.
4. False hair.
5. Plaiting other's hair.
6. Plaiting lower half themselves combing and plaiting hair by herself.

With patient efforts on our part, it is possible to train mentally retarded children in 'grooming'.

Training in grooming.....

- gives the child a sense of satisfaction and pride.
- enables him to appear the way he wants.
- leads him towards more independence.
- enhances social acceptability.
- reduces the workload of the caretaker.

Let us see how best we can help a mentally retarded child in 'grooming'

WASHING FACE

Make it a routine to have the child wash his/her face in the morning and evening, everyday.

* Train the child to check if soap, towel, bucket of water and mug, are within reach.

* Wash your face as the child watches you.

* Ask her to take handful of water and splash it on the face.

* Let her take soap, rub it between palms and back of hands to form lather and apply it on the face.

Make it a point to train the child to keep a mug full of water within reach, before she closes her eyes to apply lather on the face.

* Ask her to take handful of water and splash on the face till the lather is completely washed off.

* Guide her to dry her face.

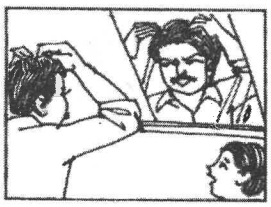
PRAISE HER BY SAYING HOW CLEAN AND FRESH SHE LOOKS.

Impart training in a step-by-step manner. Don't try to teach all the steps at a single stretch.

COMBING HAIR

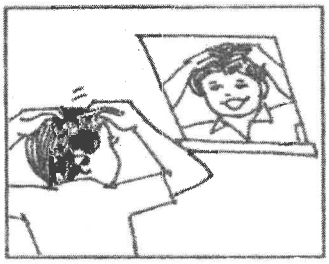
- Train the child to comb his hair, both in the morning and evening.

- Let him watch when you comb your hair.



- Hold the child's hand and guide him to comb a small portion of the hair. Let him look into the mirror, as he combs.

- Gradually increase the portion he is to comb.



* Withdraw help gradually.

PRAISE HIM BY SAYING
HOW NEAT HE LOOKS.

HINTS TO HELP 'COMBING' .....

* ***Help the child to unsnarl tangles, before he begins to comb hair.***
* ***Give the child his own comb.***
* ***Use a big comb, so that it is easy to hold.***

Source : Towards Independent Series (1990) - Grooming Skills

Menstrual hygiene

Menstrual hygiene is another important skill to be taught to adolescent girls with mental retardation. Training the girls to be independent (as far as possible) in managing menstruation lessens the burden on the family members and avoid embarrassing situation. Remember the following points.

- Pads, available in the market can be used (If the parent cannot afford, make pad using cloth/cotton).
- Well fitting panties are to be used.

- Two strips of cloth like pockets or elastic strip can be stitched at the lower base of panties (which are to be used during menstruation) to hold the pads in place.
- Dates in the calendar can be marked and the child sensitized to it.
- Too much of exhaustion can be avoided during the periods.

While training in menstrual hygiene, instruct the student to -

- Report when there is stain in the panty.
- Change the panty immediately after noticing the stain.
- Insert the pads into the strips stitched in the panty.
- Change the pads when it is adequately stained.
- Roll the paid, put in nontransparent (paper/plastic) bags and throw it in proper place.
- Clean the panty and dry in separate place.
- All the way through, ensure privacy.

Shaving

Proper fine motor skill and eye-hand coordination are important pre-requisite skills for teaching shaving. Following points are to be considered while training.

- Task analysis should be done carefully watching an adult (father/elder brother) performing and then taught with appropriate prompts.
- Use a mirror. Provide assistance from behind.
- If the student has motor difficulties or uncontrolled epileptic fits, it is better not to train in shaving. In such cases, train them to recognize when it is time to shave and ask for help from adult at home/go to the shop and get done. Teaching him the competency to get the shaving done.

3.5 FUNCTIONAL ACADEMIC SKILLS - LITERACY AND NUMERACY

Reading, writing and arithmetic are basic functional Academics refer to the literacy and numeracy skills that are required for independent living. We have already learned earlier that children with mental retardation have less ability to understand and learn, need more time to learn skills and are unable to transfer skills to situations when required unless they are taught. Therefore, the selection of content under academic skills should be such that it has functional utility, that is, what we select for teaching should be useful for the boy/girl to function independently at home and in the community at large. For example, a ten year old boy has not yet learned alphabets. It should not stop us from teaching him to read and write his name, which is a basic requirement to write his name in the book, worksheet, on display of his hand work, name list on the notice board, etc. and it should not also stop us from teaching him write the list of items (common items brought by the family) to buy form a grocery shop or read the labels on the items while buying. This is possible by using different approaches in teaching reading and writing other than conventional method of starting teaching from alphabets.

Another example is that, suppose we want to teach a 14 year old boy to take a bus from his house to come to school by himself. The bus number he needs to take is 65. But he can only read and write numerals from 1-5. Do we wait until he learns numerals upto 65 to teach him to identify bus No. 65 to travel by himself to reach the school. No, we can not wait that long and also we do not know whether he can learn the numerals upto 65. Therefore, as identifying the number 65 is important (functional) for travelling by bus to reach the school, we teach him to identify the number 65. Here, teaching him to identify the number `65' is functional. What we are trying to explain is that, the curriculum content which we select under functional academics should be of use to student to function independently in various situations at home, neighbourhood and community.

Functional academics refers to literacy and numeracy skills and include reading, writing and arithmetic (number, addition, subtraction, time, money, length and distance, weight and volume).

3.5.1 Functional Reading

Before we discuss about functional reading, let us know what is reading? Reading is the process of deriving meaning from print. It is a meaningful interaction between an individual and print. When you read the printed words you should be able to understand what you have read. For example, you may be able to read French as the script is in English, but you don't understand what you have read. In that circumstance, we can not say that you can read French.

Let us see, what is functional reading is:

Functional reading is a form of reading that arises from real world needs. This form of reading is called functional reading. Singing, reading signages/boards, filling forms, etc. Most of the children with mental retardation need training in functional reading.

Teaching functional reading

Different approaches have been employed in teaching functional reading to children with mental retardation. The most commonly used method is whole word approach.

- Whole word approach

Through this approach students learn to recognize and read words and later the spelling. For example, the child learns to recognize and read the word "banana" and learns spelling "b – a – n – a – n – a". In the beginning, we need to select words which have high imagery level (eg. Mango, ball, fan, brinjal). Imagery level refers to the ease with which a word evokes a concrete picture. Low imagery words include abstract terms such as beautiful, good and have. In some instances we can provide high imagery to low imagery words by using them in context. For example, the word "sour". "I ate grapes, they are sour" becomes more concrete and students can remember better. Pairing of words with concrete objects or concrete experiences or pictures will facilitate development of high imagery level in the students.

Follow these steps while using whole word approach.

- Before teaching child to read the words see that the child has learned to name the pictures (identify in case of children who are non verbal).

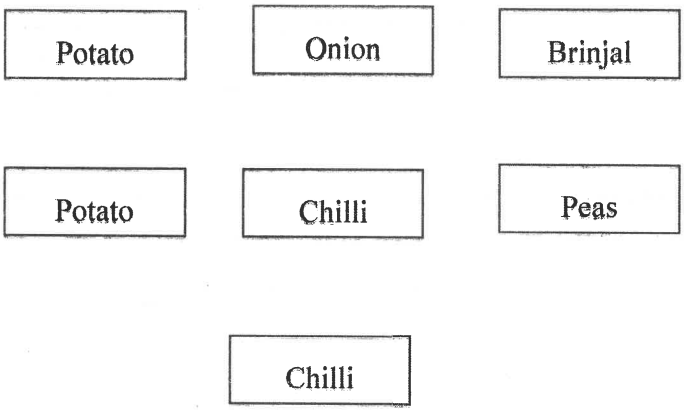
Select the words which are commonly used in the immediate environment.

(b) Three words

Potato	Chilli	Brinjal

Potato	Chilli

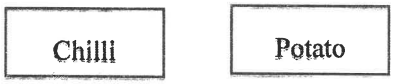
(c) More words



Remember to say the word at every step of teaching pairing skill to students.

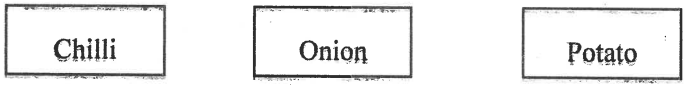
- Once the student learns to pair the words, teach him to identify the words.
- Follow the principle of simple to complex.

(a)



Ask child to point to chilli. She looks at two word cards and points to chilli. When the child points to chilli, the one left is potato. So the child automatically points to potato when you ask her to identify.

(b)



When you add one more word card, the chld has to see three word cards to identify chilli. When he identifies chilli, still he is left with two words between which he needs to identify potato.

(c)

Brinjal	Potato	Onion	Chilli

Adding more number of words for identification of chilli and potato increases the complexity of the activity as mentioned in teaching matching.

- Once the student learn to identify words, ask him to read the words.
- Follow the same procedure explained above to teach other words.

▪ Suggested activities

- Distribute flash cards, one each to students. Make sure each one has different flash cards.

❖ Place one card on the flannel board and read.

❖ Tell students, whoever has a similar one, to place on the flannel board.

❖ Show the flash card and ask them to give you the similar one if they have.

❖ Show the flash card which none of the students have. Ask them whether anyone has a similar one.

- Divide the students into two groups (1&2) having two to three students in each group. Distribute two sets of cards, one each to the groups. The student in group 1 places flash card on the table. The students in group 2 look at the flash cards, and locate the similar one with them and earn a point.
- Reverse all the flash cards and place them on the table. Ask each student to turn one card over and find the similar one by turning the other cards. Make sure each flash card has a pair. Give points depending on number of chances the student takes to find the pair.

(See Myreddi, V. and Narayan, J. (1998) Functional Academics – for more details)

3.5.2 Functional Writing

Writing involves four stages namely,

a) Tracing.

b) Joining dots if needed.

c) Copying.

d) Writing from memory (including learning spelling).

Tracing

- Use word cards with sand paper letters for tracing.

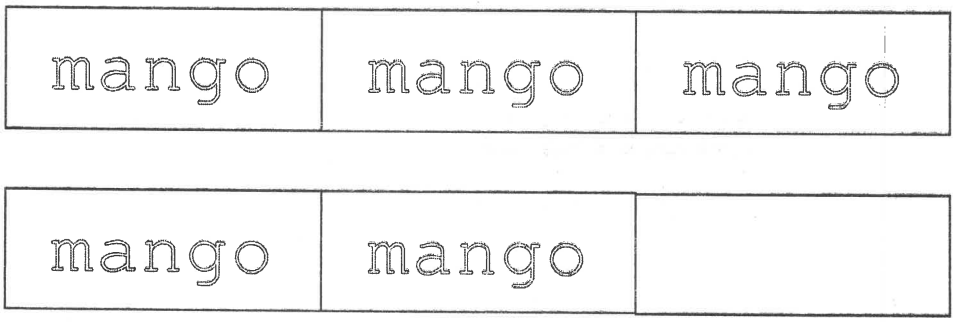
- Make child to trace with two fingers over the letters.
- Remember to say the sound of each letter after completing tracing of each letter in the word.
- You can also use sand to trace. Spread sand evenly on the floor and write the word. Ask the child to trace over the written word.
- Later you can write the words on the black board or slate followed by – writing the words in the notebook for tracing.

Always remember to say the sound of the letter after completing tracing of each letter in the word.

- Using sand paper word cards gives multi-sensory input to the child. When the child is tracing each letter, with fingers, the child is seeing the shape of the letter "m" (visual) hearing the sound of the letter "Em" (auditory) and feeling (moving the finger on the shape) the shape of the letter `m' (tactile). In the process the child associates the sound "Em" to the shape of the letter "m" and learns that this is called "m". Similarly the child learns the other letters in the word. This will help them to identify and name individual letters in the word "m – a – n – g – o".

Copying

- Plan exercises to join the dots if there is a need otherwise you can go straight to the step – copying the words. Exercises involving copying words in notebook from the black board can be given to children.



Remember to tell the child to say the sound of the letter after copying each letter. If he cannot you say the sound of the letter. It further helps in identifying and naming letters.

Writing words from memory

The last step in teaching writing is, writing the words without mistakes To write the words without mistakes, the child needs to learn spelling. It requires sequential memory ie., the child should remember the sequence of letters in a word. For example, the child has to write "mango", she has to remember that she should write first "m" then "a" later "n" and "g" followed by "o". Then it is correct. If she misses any of this sequence, then she makes a spelling mistake. The following are some of the activities you can plan to teach spelling.

- Take word card and individual alphabets. Keep the word card in front of the child and match with the individual alphabets.

For Example

m

[m] Point to 'm' on the word card say 'Em'. Pick up and place under and say 'Em'. Then point to 'a' and say 'E' and pick up [a] and place under 'a'.

mango

n

m a

o

g

Complete the filling of the letters in the similar fashion and say now "mango".

mango

m a n g o

- Tell the child to do the same.

- Tell the child to make word mango with the letters without seeing a model.

m a n g o

- Tell him to check the spelling seeing the model.

m a n g o

mango

- In case the spelling is wrong, the child can correct his mistake by himself.

For example:

(a) mango

m a o n g

Self correction helps him to know where he had made mistake.

(b) mango

m a n g o

- You can also give following exercise to fill in missing letters in the word.

(a) m a n g ___ (b) m a n __ __

(c) m a __ __ __ (d) m __ __ __ __

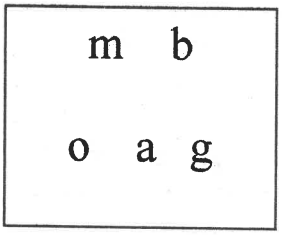
In this fashion, one can teach children to learn spellings.

- The most important thing we should remember is that reading and writing activities should go together. That is a reading activity should be followed by writing activity. The activities involved in matching of words can be followed by tracing of words. For example, matching activities to teach the word `mango' and banana can be followed by tracing of the words mango and banana.
- The activities involved to teach identification of words can be followed by joining dots and or copying words.

For example, identification of words "mango" and "banana" followed by copying of words "mango" and "banana".

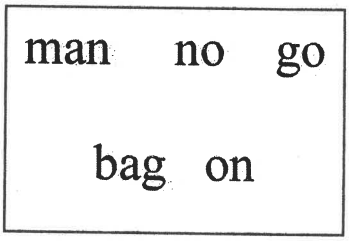
- Lastly the teaching of reading words can be followed by the activities to teaching spelling. For example, reading of words "mango" and "banana" followed by activities that helps in learning spelling.

Say the child has learned the words "mango" and "banana" to read and write on his own. How many letters he has learned to identify and or read in the process?



Six letters.

Can we make new words out of this? Yes, we can.



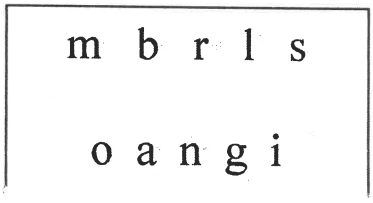
These are the new words which you can teach the child to read.

Make sure that the child understands the meaning of words. This can be done by having appropriate pictures for words. Make a word file for children to read.

- Now, you take another two words to read and write. For example, brinjal and onion.

For example, "brinjal" and "onion". To write these two words the child has to learn the alphabets b, r, i, j, a, l, n, o. But the child has already learned the letter m, b, o, a, n, g and the letters required to learn to write the words are r, i, j, l.

When he learns to read these two words (brinjal and onion), you see how many letters he has learned now to read and write.



Nine letters.

See how many new words we can make.

girl, bin, man, on, go, ran, log

jam, ball, bag, no, or, bill, sir

- You can teach a number of words following the same procedure.
- Next, you can make phrases and sentences using the learned words.

A girl; This is a girl.
A ball; That is a ball.
A bag; That is a bag.
A man; This is a man.

In this fashion, you can increase the reading and writing ability of children.

3.5.3 Functional Arithmetic

We use number skills in our daily life. Right from waking up, you plan how many cups of tea or coffee to make, how many chapattis/idli/dosa to be make, how much quantity of rice/dall to cook, how long to cook and so on. When you buy groceries, vegetables, ingredients, we talk in terms of how many kilos, grams, litres, meters and paying money in terms of tens/hundreds/thousands. When we talk about travel, we use words such as how many hours it will take to reach that place, how far it is and so on. Another example is, one orange costs Rs.2 and you bought 5 oranges. To pay, you multiply 5x2=10 and give ten rupees. If you give Rs.20/- to the shopkeeper, you expect change (Rs.10/-) back from the vender. Here, you applied multiplication and subtraction skills. Hence, learning of arithmetic is essential for independent living.

Points to remember while planning and teaching arithmetic skills:

(a) The content should be arranged in a sequential order for which the task analytic approach is applied.

(b) Concrete material should be used while teaching to provide meaning to the concepts.

(c) Instruction must be practical and functional.

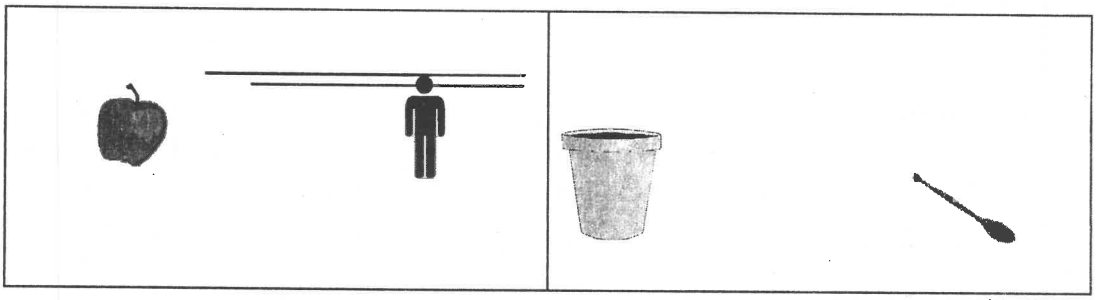
(d) Sufficient practice should be provided to deal with the concepts in variety of ways to ensure understanding.

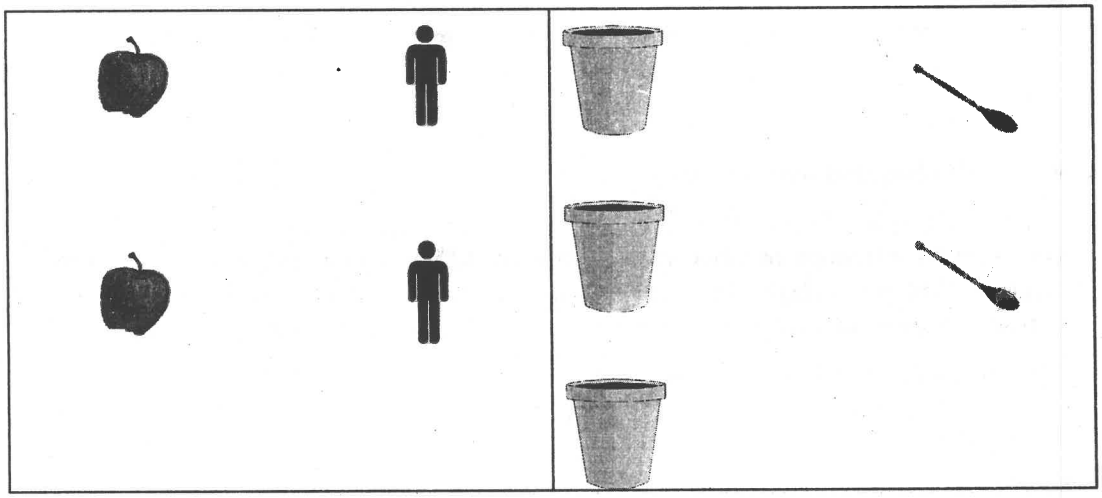
(e) Activities should be planned to provide opportunity to generalize the learned skills.

Teaching numerals

Before teaching children to read and write numerals, teach counting.

- Counting
  - Use concrete material (shells, pebbles, bottle tops, beads, used pens, spoons, glasses, etc) to teach counting.
  - While counting, it has been observed that some children count objects without corresponding to the number whereby they count either more or less. To overcome this, make child to place the object and say the number. For example, you are using spoons for counting.
- Take a spoon and place it on the floor and say one.
- Let the child also do the same.
- Pick up another spoon, place it next to the first spoon and say two.
- Ask the child to do the same.
- Follow this to make child to learn to count objects corresponding the number.
- Use work sheets where child has to pair up pictures by drawing a line.

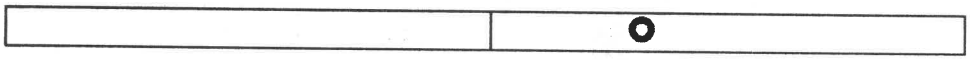




Remember to select only a few objects (two) for counting and add more slowly (see the principles of teaching).

- You can make children to count the objects in the environment. Eg. Fans, tables, chairs, windows, doors, body parts.
- Use situations at home while eating and serving snack or food, to teach numbers (eg. Two chapatti/idlis/poories, one spoon of rice, dall, sugar, place three plates, three glass, etc.)
- Use workbooks or work sheets to teach counting.
- Introduce horizontal counting first and later cluster counting.

Horizontal counting	Cluster counting
(a) ◆ ◆ ◆ ◆	(a) ◆ ◆ ◆ ◆
(b) ✱ ✱ ✱	(b) ✱ ✱ ✱
(c) O O O O	(c) O O O



- Reading and writing numerals

Use the principle – known to unknown. The child has learned to count objects. Now you want to introduce number symbol to read. Reading numeral as one seeing the symbol `1' is not enough. He should know the meaning of one. Therefore, we need to teach the meaning/value of number symbols. Follow the procedure given below.

Tell the child to pick up one object. Ask him how many objects did he pick up. In case of a child who is non-verbal, you say one.

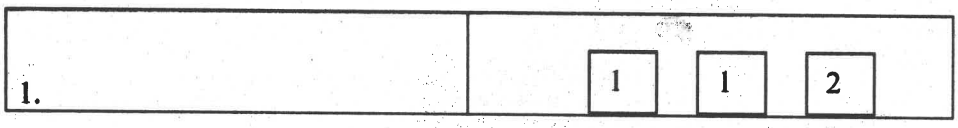
- Tell him to place on the table.

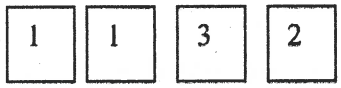
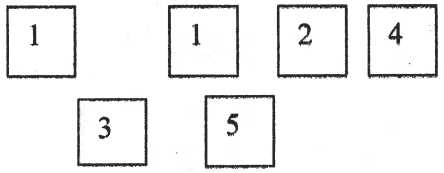
- You place the number card below the object and say one.

- Ask him to repeat the activity.

- Follow the same procedure to teach number 2.

- Plan activities that involve matching of numerals. Remember the procedure explained under whole word approach.



2.	
3.	

- Once he learns to read numerals 1 and 2 add one more number for reading.
- Give exercises which involve counting and writing numeral or writing the value.

Count and write numeral		Write the value	
OO		2	
O		3	
OOO		1	

- Writing numerals

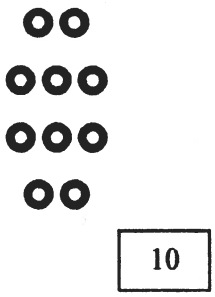
It has already been emphasized that reading and writing should go together. While teaching children to read numerals, teach writing numerals also. Follow the procedure explained under writing words (tracing, copying and writing from memory).

- Teaching numerals above 10

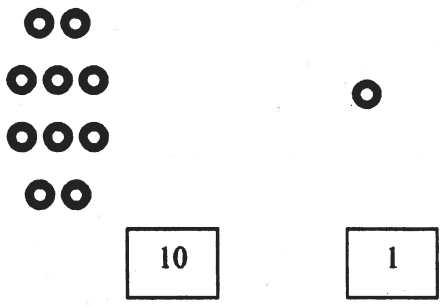
The numerals upto 9 are single digit and are called ones or units. Numeral 10 is two digit. Zero is in once place and 1 is in tens place. Make sure that children notice this difference.

It has been observed that children say one and one is eleven rather than ten and one is eleven. It is important that we teach children to understand that ten and one is eleven. Follow the procedure given below.

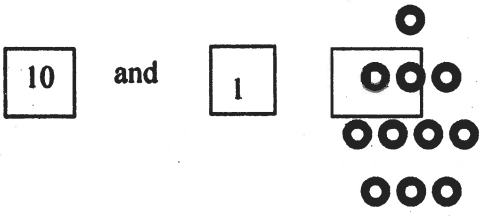
- Take concrete objects and numerals upto 10. Ask the child to give ten objects and place a flash card ten.



- Next tell the child to pick up one object and the numeral one and place next to ten.



- Let us see ten and one PUT TOGETHER becomes how much. Push ten objects and one object to the side and tell the boy to count. You also count along with him to add the new word eleven after ten. Then pick up number '11' flash card and place under the objects.



Similarly teach the other numerals.

- Use work sheets once the boy had enough experience of learning with concrete objects.
- In the beginning use the words ten AND one – eleven. Later introduce, ten PLUS one – eleven.
- After nineteen is twenty. Teach two tens together becomes twenty and twenty and one twenty one and so on.
- Introduce rupees, kgs, litres parallely while teaching numbers. For example, teach identification and naming of Rs.1, Rs.2, Rs.5, Rs.10 while teaching numerals from 1-10.

Teaching addition

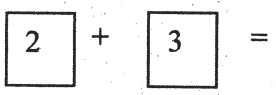
Children need to understand that when we add, two are more things, the quantity increases. Addition means "putting together". Use concrete objects so that children see the increase in the quantity.

- Give three bottle tops to a child.
- Ask her how many she has?
- Give two more bottle tops to her.
- Ask now how many she has?
- Give similar exercises to make children to understand the concept addition.

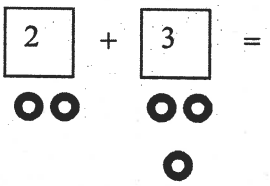
Next, introduce number symbols to explain.

For example 2 + 3 = 5

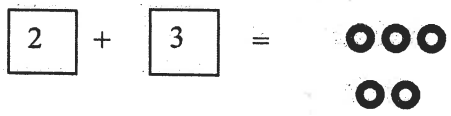
- Place flash cards on the table or floor and read two plus three is equal to



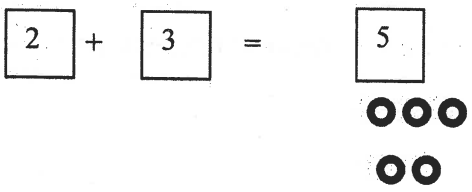
- Ask child to read the sum and tell him to place the value under the numerals.



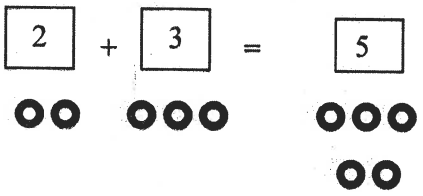
- Tell the child that we have to add 2 and 3. So you put two and three objects together.



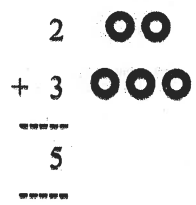
- Ask him to count and place the numeral five.



- To discuss the point that the quantity increases when we add place the quantity under numeral 2 and 3.



- Tell the child to observe the quantity under 2, 3 and 5 and ask him which is more. As the child sees visually the quantity he would say the quantity under five is more. You can also discuss which number is greater and which is less in comparison. For eg. 3 is greater than 2, and 5 is greater than 2 and 3. 3 is lesser than 5, and 2 is lesser than 3 and 5. Discussing these concepts at this juncture helps children to understand the value of numerals.
- Write sums vertically to do addition.



- Once children learn to add using concrete objects and pictures on worksheets, teach them finger counting.
- Teach single digit three line, four line addition.

2	4	5
3	2	2
+ 2	+ 3	2
		+ 1

- Introduce two digit addition without carry over and with carry over.

32	34	42
+ 42	32	24
	+ 12	+ 11

46	38
+ 37	41
	+ 74

Introduce adding of money. Use receipts of small purchases.

Rs. Ps.	Rs. Ps.	Rs. Ps.
3-00	1-00	32-00
4-00	5-00	+ 42-00
+ 2-00	3-00	
	+ 2-00	

Teaching Subtraction

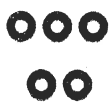
Firstly we need to make children to understand the meaning of subtraction. Subtraction means `taking away' things from the group. When you take away, the quantity become less. Show them using concrete objects.

- Give five pencils to a child. Ask him to count and tell you how many she has.
- Tell her to give away two pencils to her friend.
- Ask her how many pencils does she have. Also ask whether she has more or less pencils.
- Give similar experiences to make children understand the meaning of subtraction.
- Next, introduce number symbols to explain.

5	-	3	=

- Read the sum five minus three is equal to.
- Tell the child to keep five objects under five.

5	-	3	=



- Ask her how many to remove and tell her to remove.

5	-	3	=

- Ask her how many are left and tell her to place the numeral '2'.

5	-	3	=	2

- Ask the child whether the quantity has increased or decreased when you do subtraction.
- Give sums vertically.

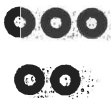
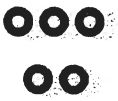
4	3
- 2	- 1
____	____

- Use worksheets once the child learn to do with concrete objects.
- Introduce finger counting as children learn to do with pictures.
- Explain zero concept. When you give away everything you have nothing.

  3 - 3 = 0

- Bring child's attention to that when add the quantity becomes more, and when you subtract the quantity becomes less.

For example:

Addition	Subtraction
5 + 3 = 8	5 - 3 = 2
	
5 + 3 = 8	5 - 3 = 2
	

- Introduce two digit subtraction without carry over and later with carry over.

24	42
+ 32	- 20
———	———
52	60
- 37	- 32
———	———

Time

Teaching time includes learning of vocabulary related to time, week days, months and reading time.

- Use the words such as now, later, after some time, stop, start in your daily activities (Eg. Let us play now, we play after some time).

- Discuss the daily activities of children right from waking upto going to bed associating with the time. For example, we get up in the morning, go to school at 9.00 a.m., play in the evening, etc.

- Use calendar to discuss the days of the week, month and date. Ask children to write the day, date and month on the black-board in their notebooks.

- You can also discuss yesterday, today and tomorrow using the calendar, how many days in a week, month and how many weeks in a month.

- Use real clock to teach time to children. Use winding clock so that children can see the movement of long hand and short hand, and also when long hand makes one round the short hand moves from one number to other. Teach first telling time in hours, later half-an-hour, quarter hour and minutes.

Money

Firstly, children should understand that we need money to buy things from the market. Take children along with you when you go to the market and give them money to pay for things which they buy (sweets/biscuits, etc). As suggested earlier, introduce the relevant money skills parallely while teaching numbers, additon and subtraction skills to children. For example, you can introduce one rupee coins for counting while teaching counting objects. Here, the child has to say two or three rupees instead of two or three pencils or stones, etc. Similarly, introduce Rs.1, Rs.2, Rs.5, Rs.10 while you are teaching number symbols 1-10. Here, the child learn to say one rupee, two rupees, etc. instead of saying one, two, five, etc. Practical experience of using money by the students in buying and paying small amounts to bigger amounts as per children's ability is important.

Travel skills

We use different modes of transport for travel – bus, train, car, auto, cycle riksha, bullock cart. Skills required to travel are waiting in a queue, buying ticket, paying money, getting in and getting down, crossing road, etc.

- Plan outings such as going to the shop, park, or any other place where you use the transport. Take the children along with you to train them in traveling independently.

  For travelling by bus.

- Getting dressed.

- Reaching the bus stop from the training centre or home which may involve crossing road.
- Waiting in the bus stop till the arrival of required bus.
- Moving in a queue and getting into the bus.
- Finding a seat. If seat is not available, holding the rod and standing.
- Buying the ticket from the conductor.
- Getting down when destination comes.

The boy need to be trained in all the above skills if he had to travel independently by himself.

Use the strategies explained in Unit-45 and follow the procedure explained in Unit-47 to teach children to identify the bus number.

- Teach children to identify/read the words in bus station, railway station and other places of visit in the community (ticket counter, cloak room, toilet-gents, ladies, waiting room, drinking water, platform, vegetarian, canteen, station master, public assistance).
- We need to teach children to read the meter and pay money when they use auto or taxi.

The best method of teaching is by giving direct experience in natural environments. Suggest parents to take their children along with them when they go out. Not only taking their children out with them but they have to train in the skills by giving them opportunity to do by themselves and giving assistance when required. For example, the boy stands in a queue to buy a ticket to travel by train. Parent/family members stands along with him to assist him in paying money.

Teaching shopping skills

Going for shopping involves right from getting ready to making list of items to buy, reaching the shop, buying things, paying and carrying things back home. Teaching generalization of learned skills when required is an essential part of educational programming. When children are taught numerals, the relevant topics in money, time, measurement are to be introduced. For example, If you are teaching numerals 1 to 5 to name, introduce rupee coins 1, 2, 5 to say one rupee, two rupees, ... What we need to remember here is that to add rupee after one when they are saying. You can give them experience of buying things form a shop using the coins or notes. These experiences help them to understand that you need to pay money if you have

to take anything from the shop. Similarly, you can introduce litres, kgs. That would help them in doing shopping.

- Provide experience of weighing vegetables, rice, pulses with the balance in the classroom to understand the concept of weighing using weights.
- A kitchen garden can be planned in the school/centers. Children can place the vegetables and sell them to the staff/families using the balance and weights, which provides a practical experience to them.
- Introduce the concept of litres. That is liquids are measured in litres. Show the sachets (milk, oil) bottles (shampoo, oil, cool drinks) in shops. You can collect the empty sachets or bottles to show children in classrooms.
- Similarly you can discuss about kilometers and metres appropriately using the situations and planning activities in school. For example, measuring the distance in walking/running race, measuring the cloth required for a door curtain, etc.
- Teaching cooking is a part of home management skills. You can have an activity in which children estimate the vegetables, grocery required to cook for their group and the money required. They collect money and go for shopping. After coming back, discuss what they have bought, how much they have bought, how much money they have collected and how much money they have spent.
- Inform parents and family members to take their children along with them when they go for buying vegetables, grocery, milk, toiletries, clothes, etc. They can use the receipts to teach children to total the amount, paying money and the balance to get back. All children with mental retardation may not be able to buy things which involve big amounts. In such cases, we need to limit money transaction to the level the child is able to manage.
- Involve children in selecting and picking up vegetables, groceries, tolieteries in self accessing shops or, asking for items form the list from general store, paying bills, and carrying bags home.
- Often parents/family members select every thing for a boy or a girl with mental retardation not giving any opportunity to them to decide what they want. Let children decide what type, or colour clothes they want, toliteries they want, fruits, sweets they want. It helps them to develop decision making capacity.

Teaching home management skills

Persons with mental retardation need to be taught to manage their homes which is a step towards achieving independent living. Home management skills include dusting, mopping, cleaning, washing, and cooking. Use teaching strategies and principles of teaching, discussed in earlier units. Analyze the tasks and teach students by selecting appropriate material and methods.

Points to remember

Dusting

- Start with dusting plain surfaces with a duster.
- Later teach them to dust furniture, cleaning cub boards, shelves, when things are removed which may be followed by removing things and replacing them back after dusting.

Mopping

- Mopping with a wet cloth after the adult mops to give a practice.
- Mopping part of the room along with the adult.
- Mopping the smaller rooms followed by big rooms.

Cleaning utensils

- Washing with water small kitchen articles such as spoons, glasses, small plates.
- Cleaning small utensils with cleaning powder and washing with water.
- Staking washed utensils.
- Removing the plates and utensils from the dining table and wiping the table.
- Removing the left over food from the utensils and washing them.

Cooking

- Measuring rice and washing with water.
- Storing the groceries in tins.
- Sorting vegetables and storing.
- Pealing vegetables.
- Cutting vegetables which does not involve finer cutting.

- Cutting vegetables which involves finer cutting.
- Making tea and coffee.
- Making juice.
- Making simple snacks such as sand witch.
- Making rotis, dall and simple vegetable dishes.
- Use utensils with non-heat conducting handles. Fill the grocery, ingredients in transparent plastic containers for easy recognition. You can also label the items.
- Use cutting boards if child has difficulty in cutting with knife.
- Avoid using sharp knives in the beginning of teaching to avoid accidents.
- Introduce a timer if necessary in using cooker for cooking.
- Remember to reinforce the boy for near approximation of a target task in the initial stages of learning.
- Use demonstration and modeling strategies extensively as all of these activities need to be demonstrated and modeled.

Washing

- Washing napkins, towels, undergarments.
- Washing clothes.
- Ironing clothes.

3.6 MULTISENSORY MATERIAL

We have seen that there are not many specific teaching learning materials exclusively for mentally retarded children. In the case of a blind child, Braille and abacus become a necessity. As retarded children learn to use what we generally use in our day-to-day life can be used by a mentally retarded child also. In fact, it is better to use materials as they are in natural setting rather than specialize them. One major difficulty with persons with mental retardation is their ability to generalize, that is, use a skill learnt in one environment in another situation. Hence, if we specialize their materials to use, they may not be able to adapt to environment without that materials. However, there are certain simple changes and adaptation that can be made so

that they function independently. This needs some thinking on suitable selection of materials as well as making minor modification based on individual needs.

Importance

If independent living by the retarded child is the ultimate aim, any step towards actualizing it is worth the time and effort. One of them is suitable selection and adaptation of TLMs. While talking about learning by mentally retarded children, we have been constantly referring to concrete examples, as they cannot understand abstractions. This necessitates materials that can be experienced by the five senses, leading to understanding and concept formation. In the classroom or outside, use of actual objects along with verbal explanation is necessary. Allowing the child to experience the new input through appropriate method and materials is the crux of educating the retarded child. Therefore, importance or TLM cannot be under-estimated.

Learning and Functional aids

While teaching children, we use certain material. Some are used for a short duration, while some are used permanently. We know that mentally retarded persons need concrete experiences and examples for their learning. Once they have learnt, we do not need the material any more. For example, stones, beads, seeds, spoons and such other small objects can be used for teaching counting. After the child has learnt to count and has understood what is 1, 2, 3, 4....9...10 and so on, by looking at the number symbol, the objects are not needed any more for counting. Similarly in reading and writing, initially you may use pictures and help the child to name them, read and write. After accomplishing independent reading of the name, the picture or the object is not needed. Such objects and materials are called **learning aids**. They will not be needed by the child for learning purposes once the concept is understood.

On the other hand, **functional aids** are required for a person with disability to be used all through his life, and it compensates for his disability – hearing aids for persons with hearing impairment, crutches/calipers/wheel chair for locomotor disabled person, cane/Braille materials for a blind person, written name and address for identity for a mentally retarded person are a few examples of functional aids. One has to be very careful in selection or development of teaching learning materials.

Consideration and Selection/Development of TLM

If well selected, some can be used **as they are** – beads and blocks, garden tools and so on. **Some need modification** for use by retarded person – shirts with Velcro instead of buttons, skirts and pyjamas with elastic instead of tape and **a few need to be exclusively developed** – name cards, sequence of hair braiding to make it easy to difficult steps (for girls). Whether learning or function aids, first check if it can be used by the retarded person as it is. As there is variation in the ability of the retarded persons utility of readymade material as it is, will depend, to a large extent on the user. If after trial you find that it needs modification, then only adapt it. Do not be in a hurry to adapt. The more the object used resembles the regular one, the more chances of generalization by your trainee.

Examples of functional aids for mentally retarded children include adapted/simple calculator, digital watch, address card, modified brush/towel to scrub/wipe difficult to reach areas while bathing such as centre of the back, pictorial shopping list (if they cannot read), pictorial recipe book and so on.

While developing or selecting TLMs make sure that the material is

- durable.
- has multipe utility.
- age appropriate.
- affordable.
- accessible by school and family.
- maintenance is easy.
- breakable/non-toxic.
- serves the purpose it is meant for.
- minimizes transfer of training (easy to generalize).
- novelty is maintained.
- updated.
- easily available.
- leads the learner towards independent living skills.

3.7 CLASSROOM MANAGEMENT

For many years, educators considered classroom management as disciplining student in the classroom. In recent years, the concept has been expanded beyond discipline to an effective handling of students behaviour that become problematic to the teacher and others in the classroom. In other words, effective classroom management includes careful planning and structuring of the physical environment and the behaviour management of students in the classroom. If the teacher lacks classroom management skills, little learning take place in the class in spite of the tremendous array of teaching skills that they possess. Therefore, teachers should acquire both teaching skills and techniques of management of students in the classroom.

What Does Classroom Management Refer To?

Effective classroom management is the ability to establish, maintain and (when necessary) restore the classroom as an effective environment for teaching and learning (Brophy, 1986).

Classroom management refers to the steps and procedures necessary to establish and maintain an environment in which instruction and learning occurs (Doyle, 1979).

Who is an Effective Teacher?

An effective teacher is one who displays the ability to spread her attention, is well prepared and has momentum, possesses signal continuity, uses group tackling techniques, and who challenges and motivates students with a variety of teaching techniques (Lufting, 1987, P.418). It is stated that an effective teacher plans a programme for the coming year before the academic year begins. Some of the activities are listed below.

1. Planning the physical environment in the classroom.
2. Constructing seating arrangements.
3. Instituting class rules and a system of discipline.
4. Preparing a daily lesson schedule.
5. Selection of student helpers and / or monitors.
6. Instituting on rules for routine procedures such as those to be followed in toilets, refreshment areas and so on.
7. Instituting playground and recess regulations.
8. Establishing the role of para professionals such as teacher aids.
9. Preparing a schedule and establishing a procedure for the substitute teacher (Charles, 1980).

Scheduling the activities

One o the things a teacher needs to do is to schedule the daily activities for her class. Though scheduling the activities looks simple, yet it is harder in practice because the teacher has to consider outside factors such as curricular activities taught by other professionals in the school, school mandated lunch, recess and other activities.

Curricular areas taught by other non academic teachers / professionals

A majority of special schools have professionals other than the class teachers to tech physical education, music, art and craft, and speech therapy. Either the professionals go to the respective classes to teach children or children might go to a particular place for the lesson. In either case, the person teaching will inform the teacher about the timings and teacher should accommodate all these requirements into her daily routine. Also reaching, children to an appropriate classroom site and picking them up is the teacher's responsibility and she should include the travel time in her schedule.

Lunch and Recess

Recess and lunch times are generally scheduled by school administrators. Often recess time is schedule for two times, once during mid morning and the other after lunch. The teacher need to take these recess and lunch time into account while planning the daily schedule.

Daily schedule of activities

The following points need to be considered while planning a daily schedule of activities.

1. The maximum duration of each session may be for about 30 to 40 minutes. However, with young children with, severe and profound retardation and at the re-primary level, the duration of each session may be 15 - 20 minutes.
2. About 5 to 10 minutes time is to be spent on opening activities before starting the regular teaching sessions. The opening activities may include quizzing on the day and date, birth days, festivals, previous day's television programmes, news of the day, and son on. Before these opening activities, the pre-primary and primary groups of children should be trained in removing shoes / chapels and arranging them in a corner of the classroom. This activity will provide and opportunity for the children to practice and / or learn the skill in self discipline.
3. While organizing the classes it must be seen that the desk and non-desk activities are alternatively arranged. For example, after an arithmetic class, an art and craft activity or games class must be organized. Also, if one has planned reading on Monday from 09.15 - 09.45 a.m., the same subject need

not taught on Tuesday from 09.15 - 09.45 a.m.. One must introduce other subjects in that time slot.

4. Including outing at least once a week must be part of schedule. The outings may be to a park, market place or to a place where community services are provided.

5. Providing some time for preparing before and closing, after an art and craft, music ore games session is necessary.

6. About 10-15 minutes time be allotted at the end of the day for reviewing the entire day's activities and preparation to go home at the end of the school day.

7. Two breaks, one in mid morning for snacks / drinks and another at noon for lunch is necessary. The morning break should be shorter than the noon-break. Extra time may have to be allotted to young children and also those with severe and profound retardation at snacks and lunch breaks, as they require more time for preparation, eating and cleaning up.

Managing the physical environment

Luftig (1978) points out that the physical organization of the classroom has a strong influence on the quality of learning that goes on in the classroom. It also has a strong effect on the motivation of the learners, the quantity and quality of communication used by the learners in the class and in their classroom behaviour.

The following are some of the considerations the teachers need to take into account while designing and arranging the classroom.

Classroom furniture and equipment

The furniture, desk and other equipment should be of the right size for students so that they feed comfortable while using them during the learning activity. The teacher and students may have their own lockers and desks for their individual use.

Spatial Variation

The classroom should have different dimensions so that different groupings can be organized comfortably. Also, it must allow for seating arrangements to be made when necessary for different activities.

Flexibility

Furniture should be versatile and usable for a number of activities (for example, writing as well as for painting). It must be easily movable and manipulatable.

Wear and renewal

Furniture should be durable and easily maintainable. Also, it should be economical when furniture is to be replaced.

Seating arrangement in the classroom

The traditional classroom arrangement is that of making students sit in rows one behind the other. The researchers have observed that the traditional classroom arrangement does not involve an easy two-way communication. Small group arrangements in the classroom are suggested because they facilitate two way communication, between the teacher and the taught.

Apart from the seating arrangement Charles (1980) states that the space on the floor, walls, cabinet tops, shelves, closets and cupboards have to be taken into consideration while designing the classroom, so that optimum use of it is possible.

Floor space

Floor space is mainly concerned with seating arrangement, work and activity space and movement in the classroom for students and teacher. Different types of seating arrangements can be adapted depending on the nature of the lessons, or activities.

Work and Activity space

Work and activity space refers to the usable and functional work space available in the classroom. The requirement of space depends on the classroom activity. For example, the space required for writing is less than that needed for art and craft project. During the project activities, the furniture could be pushed to a corner to make a larger central space for work. If the classroom activities are predominantly seat work and the teacher wants to closely monitor individual student's performance, the seating arrangement could be done liberally leaving less of central space. In addition, the space at the rear end in the classroom should be made functional b arranging activity centers for students to work by themselves. The seating and floor arrangement should also consider the traffic pattern of the classroom. The arrangement should be such that the children move around the classroom when needed, without disturbing others.

Wall Space

The wall space is used for the black board, bulleting boards, display area for student work, notices on class rules, slogans, and so on. The black board is an important teaching aid which is often used by teachers in the classroom. Teachers do not have

much say in the fixing of the blackboard as they are usually positioned even when the classroom is in construction.

Bulletin boards are used for displaying material of interest for the children. Often it has been noticed that teachers do not change the material on the bulletin boards frequently due to the other priorities of workload in the school. Teachers may involve students in arranging the bulletin boards with just supervision and not the teacher's total involvement. The material to be displayed must be related to the classroom work and the projects.

It is highly reinforcing for children when they see their work displayed on walls. Displays facilitate parents to realize that their children have positive experiences in the school. In addition children enjoy showing their work to parents and siblings in open house or similar school events. Further it is important that all the students work should be displayed periodically which in turn encourage children to try their best.

Cabinet and closet space

Cabinet and closet space should be utilized for keeping materials and equipment so that the classroom looks net. As far as possible the material must be kept inside the cabinet or closet when they are not in use. Material must be arranged in such a way that the children easily retrieve it on their own without assistance.

Time out Area

A time out area should be, quite an isolated and a non-stimulating separate area in classroom to keep away all other distractions of classroom activities. All children do not time out areas in the classrooms. Therefore, it is not necessary to provide a time out area in every special education classroom. The classroom teacher decide whether a time out area is essential for her class or not and accordingly arrange for one.

Management of behaviour in classroom

Discipline for classroom control is necessary in imparting education. No matter how hard the teacher tries there will still be some students who are unresponsive to all efforts, are disruptive and who do not confirm to classroom rules. In order to overcome such problems, behaviour modification techniques and social learning theory models are applied in the classrooms situations.

The behaviour modification model asserts that student's behaviours occur because such behaviours are reward by the environment in which the student is in. So using behaviour modification techniques, the teacher tries to increase desirable behaviour and decrease undesirable behaviours. Some of the behaviour modification techniques are reinforcement, shaping and chaining, prompting and fading, modeling and initiation, time out & over correction.

(See Block-III, Unit-4 for more information on Behaviour modification techniques)

Some tips for effective classroom management

Get Them In

The first and foremost strategy is to plan the start of a lesson. The important points to keep in mind are:

- Know before hand what you will be teaching in that class.
- Materials, displays and instructions should be ready before the start of class so that no lesson time is wasted in preparation and distribution of materials.
- Start the lesson on time without delay in unnecessary matters.
- Plan the seating arrangement according to the activity and in such a way that movement in the classroom is under the teacher's control.
- Start every lesson with a four or five minutes activity that keeps each child occupied in his own place.

This activity can be a reinforcement like a skill taught earlier which will serve as a lead on to the actual content of the lesson.

Remember: A lesson well begun is a lesson well done.

Get On With It

It refers to the content, manner and organization of the lesson itself. The important points to be kept in mind at this stag are:

- Adding variety of spice to the lesson. For example, two short lessons are likely to be more effective than one long one. But, a double lesson does not mean repeating the same content in the same manner twice. It simply means presenting one content area in different ways. For example, counting objects could include exchange of objects amongst the children as well as sticking a particular number of pictures as per the functional level of the child.
- Alternating a slightly boring activity with a preferred one, mixing familiar work with new learning and balancing quire individual work with more active group task.
- Activities being clearly specified and the teacher's expectations clarified so that each child knows what he should be doing and when he could be doing it. Giving short, precise instructions is the simplest way to alter misbehavior.

- Minimizing the interference with the lesson at hand by dealing with the situation early and firmly. The more the punishment is dealt out more the nagging and more negative remarks being made and this will only lead to increase in tension.
- Using ample praise in teaching - praise, which should be natural and sincere and not dull and routine to enhance desirable behaviour.
- Remembering that facial expressions, eyes, posture, gestures are all potential means of communication equally important along as speech and tone of voice.
- Use of questions to be made as a source of feedback rather than as a source of negative interaction.

Remember: The way the teacher talks to the class reflects his attitude to them not only in WHAT is said, but HOW it is said.

Get On With Them

The temptation to misbehave is lessened when teachers and children get on well together. The following are some important points to be kept in mind.

- The teacher needs to show an awareness of each child as an individual.
- Remember the names of all children and address them by their names - whether in praise or in rebuke. "Good girl, Radha" helps make the praise more personal, than a plain "Good girl".
- A personal positive comment can be mad each time a child finishes a task.
- A daily chat, however brief, about something not connected with lessons can be a source of insight as well as a way of establishing rapport.
- Paying attention to the entire class rather than focusing on only one bright child would enable the teacher to spot the first signs of trouble and intervene early.

Get Them Out

The final strategy to be mastered is how to conclude the lesson and dismiss the class. The following are important points to be kept in mind at this stage.

- Hard won control of the class is lost and learning is wasted with a bad end to a lesson.
- Finish with the content of the lesson a few minutes before the end of the period.

- After organized collection of materials or putting away of books, plan some time for revision of the lesson.
- If there is still time to spare, utilize it for playing an appropriate game related to your lesson. If made a routine practice, this game can serve as a reward for effort put in during the class and for prompt and orderly collection of material at the end of it.
- Ending a class only means moving into the next activity. Children need to be cued in to their next activity. Giving the children a brief idea about what they will be doing next, helps to prepare them for a smooth change from one activity to another.

Remember: Learning that has taken place during a lesson can often be wasted if any opportunity is not taken to reinforce what has been taught by a summary and a brief question - answer session.

Attention to these four area may not solve all the problem of disturbed and disruptive pupils, but it will definitely avoid problems caused by disorganized teaching. Therefore, to organize and plan every lesson well, a lesson plan has to be made before getting into any sort of classroom teaching

3.8 UNIT SUMMARY

- In this Unit, you have been introduced to the whole process of special education for children with mental retardation. It involves assessment, programme planning and evaluation.
- Assessment is a process of collecting information and analyzing the information to make various decisions.
- Assessment is done for various purposes – screening and identification, diagnosis and referral, programme planning and evaluation.
- Data is collected by interviewing parents/family members, directly testing the child, observing the child in various settings and situations and form previous records.
- Norm referenced tests, criterion referenced tests and functional assessment tools are used in assessing the performance of children with mental retardation. Selection of tools depends on the purpose for which assessment is to be carried out. However, criterion and functional assessment tools are extensively used in educational programming of children with mental retardation.
- Individualized educational programme has to be developed for each child as the educational needs of children differ from one another. It is a written

document in which the child's needs are clearly stated in terms of goals and objectives to be achieved over a period of time.

- Evaluation is comparing the performance of a student to a set criteria.
- Two types of evaluations are carried out in special educational programmes – formative and summative.
- Formative evaluation is done during the intervention programme actually done, where as summative evaluation is a long term or final evaluation done after completing a specific task teaching.
- Systematic recording of performance of children and maintenance of individual records are essential to know the effectiveness of intervention/teaching programmes.
- One of the aims of special education is to train children to look after personal needs ie., training children to eat, drink, attend to toilet needs ,brush, bathe, dress and comb hair, apply powder, fix bindi (in case of girls).
- We need to follow certain points while planning and teaching daily living skills. They are (a) analyzing the task into simple steps, (b) assessing the current level performance of the student, (c) providing appropriate assistance (prompts) and fading procedures, (d) selecting suitable material and reinforcement, (e) including activities that would facilitate transfer or generalization of learned skills and (f) systematic maintaining of records.

In case of children who lack fine motor coordination, use adaptations that reduces dependency on others.

- Functional academics refer to the literacy and numeracy skills that are required for independent living.
- Functional academics include reading, writing and arithmetic (number, addition, subtraction, time, money, length and distance, weight and volume).
- Whole word approach is the popularly used method of teaching functional words to children with mental retardation.
- Tracing, copying and writing from money are the three stages to be followed while teaching writing words.
- Related application mathematics (money, weight and volume, length and distance) skills to be introduced while teaching number skills to children with mental retardation.
- Concepts of addition and subtraction needs to be explained concretely so that children understand that when we add the quantity becomes more and when

we subtract the quantity becomes less. It is also important to explain the concept of zero.

- Opportunities should be provided to children to apply the learned skills in natural settings such as shopping, travelling, cooking, etc.
- Classroom management includes both disciplining students and effective management of behaviours that become problematic to the teacher and others in the classroom.
- An effective teacher is one who displays the ability to spread her attention, is well prepared, and motivates students and manages problematic behaviours.
- Teacher need to prepare schedule of activities, plan, organize and prepare the physical facility to create an interactive learning environment.
- Behaviour modification techniques such as reinforcement, shaping, chaining, prompting, time out etc. are used for effective learning among children with mental retardation.

3.9 CHECK YOUR PROGRESS

Exercise-I

1. What is assessment?
2. What are the different decisions one may have to make after collecting and analyzing the information?

Exercise-II

3. What is Individualized Education Programme (IEP)
4. Explain the following:
5. Annual goals
6. Short term objectives
7. Write the contents of a teaching plan.
8. What are the components of objective. Explain with an example.

Exercise-III

9. What is evaluation?
10. Explain types of evaluation.

11. State the difference between assessment and evaluation.

Exercise-IV

1. Enlist the general points you need to keep in mind while planning and teaching daily living skills.
2. Explain the procedure to train a child in eating food.
3. How will you help a child to hold the brush, spoon, comb who has difficulty in holding?
4. Explain the steps involved in training in (a) bating, (b) toileting, (c) removing and wearing shirt, (c) Removing and wearing pants.
5. Explain the steps involved in plaiting hair.
6. What kind of adaptations you can make to train a child to wear dress who has difficulty in unbuttoning and buttoning?
7. How do you train a boy and a girl in wearing shoes/chappal, to identify wrong and right side of a shoe/chappal?

Exercise-V

1. What is functional reading?
2. Explain the method of teaching functional words.
3. Explain the steps involved in teaching writing words.
4. Plan two activities for the following:
   a) Matching words b) Identification of words

Exercise-VI

1. What does functional arithmetic include?
2. Explain the procedure to teach the following.
   a. Reading and writing numerals from 1-10
   b. Addition
   c. Subtraction

Exercise-VII

1. What is classroom management
2. Explain the following
   a) Points to remember while planning and teaching lesson.

b) Classroom arrangement.

3.9 ASSIGNMENTS/ACTIVITIES

1. A 15 year old boy with mental retardation is able to walk, run and climb. He can read and write numerals upto 15. For him you need to teach to travel by bus by himself to reach school. The bus No.25 comes to school from his house. Explain how you will teach him to travel by bus 25 to reach the school and go back home.

2. You are teaching numerals 1-10 to a group of young children with mental retardation. You also need to teach parallely the related money skills. Explain the activities which you will plan to teach related money skills.

3. Explain the type of cooking skills (in an order of simple to complex), you will teach to a girl of 19 years who is mildly retarded.

3.10 POINTS FOR DISCUSSION AND CLARIFICATION

After going through the Unit you may like to have further discussion on some points and clarification on other. Note down those points below:

3.10.1 Points for Discussion

3.10.2 Points for Clarification

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UNIT 2 : WRITING

STRUCTURE

- **Introduction**
- **Objective**
- **Adaptive Skills & Devices**
- **Unit Summary**
- **Check Your Progress**
- **Assignment**
- **Points for Discussion and Clarification**
- **References**

4.1 INTRODUCTION

Development of adaptive skills assistive devices and special therapy for children with locomotor impariments, Cerebral Palsy and Spinal Injury is very essential for their medical rehabilitation. The need of Orthotics and Prosthotics devices, assistive physiotherapy, occupational therapy and speech therapy are very essential for their medical rehabilitation.

A brief account of the basic principles of management of locomotor disabilities is given below:

Rehabilitation is the restoration of the disabled individual to his optimum potential for physical, mental, vocational, educational and economic capacity.

The aims of rehabilitation management are :

1. Prevention of disability, if possible.
2. Maximum reduction or elimination of the disability.
3. Training the person with residual abilities to achieve to achieve independent living.

The person with disability of moving may be classified into the following groups:

1. Patients for whom full recovery is expected e.g. recovering nerve injury.
2. Patients with permanent, but stable disabilities e.g. Post polio residual paralysis, cerebral palsy..
3. Patient with unstable disabilities e.g. muscular problems :

The persons with disability of moving often suffer from the following problems:

1. Motor weakness, paralysis/paresis
2. Deformities.
3. Loss of limb or its parts (Amputation)
4. Sensory Loss
5. Pressure Ulcers
6. Spasticity
7. Urinary and Faecal Incontinence, Urinary Retention
8. Pain etc.

There may be associated hearing, speech, visual problems, mental retardation or problems of higher mental functions.

The resultant problems arising out of disability of moving subsequently limit the function of the patient in his various activities of daily living (ADL). For example

1. Mobility, ambulation, transportation
2. Transfers
3. Self care activities like toileting, bathing, grooming.
4. Social and leisure activities
5. Work place activities.

4.2 OBJECTIVES

After going through this Unit you will be able to know and understand :

- the importance of adaptive skills, assistive devices and special therapy for LI & CP children; for their rehabilitation;
- Barrier Free Environment, adapted toilets, and seating arrangement in Classroom.

4.3 ADAPTIVE SKILLS & DEVICES

4.3.1 Management of Problems faced due to Disability of Moving

The management disability of moving are described under the follows problems :

1 Motor weakness, paralysis/paresis
2 Deformities.
3 Loss of limb or its parts (Amputation)
4 Sensory Loss
5 Pressure Ulcers
6 Spasticity
7 Urinary and Faecal Incontinence, Urinary Retention
8 Pain.

4.3.1.1 Motor Weakness

Weakness may be complete (paralysis) i.e. negligible power or incomplete (paresis) i.e.e partial weakness. It severely affects all areas of daily living. Either one limb may be affected (monoplegia), both lower limbs (paraplegia), upper and lower limb of one side (hemiplegia), or all the 4 limbs (quadriplegia). Weakness of hand causes complex disabilities like impaired dexterity, hand writing, grasp, hold pinch and proprioception. Weakness of lower limbs causes varying degree of difficulty or inability to walk.

Rehabilitation interventions are called for

1. Maintaining the range of movement of joints of the affected limb.
2. Regaining or improving the muscle power in the weak muscles.
3. Strengthening of normal muscles
4. Restoring the function of the extremity by appropriate training.
5. Provision of external appliance, splint or caliper if required.

For planning treatment, total functional assessment of the affected limb(s) is done including :

- Detailed muscle charting of all affected and unaffected groups.
- Extent of contractures and deformities.

- Functional status of the affected limb e.g. hand function, type of grip, grasp manipulative ability, pattern of walking in lower limb involvement, presence of shortening etc.
- Presence of sensory deficit.

After proper assessment and planning, management is based on the following principles:

- Remedial therapeutic interventions in the form of passive movements wherein full range of movements is given to each joint to overcome contractures and joint stiffness. (See diagram 7.1 and 7.2)
- Gentle massage is given as a preliminary to starting exercises, to improve venous and lymphatic drainage to help relaxation of muscles.
- Remedial exercises are advised to suit the muscle power of various groups.

Appliances like calipers, standing frames and splints etc., may be required to prevent deformity due to muscle imbalance, stabilize unstable joints affected by the motor weakness, provide relief from weight bearing, facilitate walking and maintain a stable posture and gait (see diagram 7.3, 7.3 (a) & 7.4)

The aim of surgical management is to attempt to make the best use of the available muscle power and make the limb functionally as useful as possible. The principles are correction of established deformities by surgical soft tissue release, improvement of muscle balance and local function by appropriate tendon transfer and stablisation of un-stable joints by fusion. Therapeutic interventions are continued in the post operative period to prevent contractures are re-educate the transferred muscle in their altered role.

4.3.1.2 Deformities

Commonly accompany motor disability and further contribute to the disabilities. A deformity is defined as an abnormal position, which is not passively correctable, assumed

By a part of the body as a result of some disease or injury. Factors contributing to development of deformity are habitually faulty posture, muscular weakness, muscle imbalance, gravity, faulty posture, limb length discrepancy (shortening). Poliomyelitis, cerebral palsy, spinal injuries, trauma to extremities (fractures), stroke are common conditions associated with various deformities.

Correction of deformity is necessary to improve local function, appearance, posture, balance, stability, walking, fitting of appliances and relief of pain.

Appliances used to prevent or correct deformities are called orthoses. They are named according to the joints they stabilize. E.g. for ankle, ankle foot orthosis (AFO) (see diagram 7.5)

Other measures include passive mobilization, manipulation under anaesthesia, traction (skin or skeletal), cast, gradual controlled distraction and surgical (soft tissue and bony correction of deformity)

4.3.1.3 Amputation

Loss of limb in part or whole many be due to trauma or disease. Common causes are crush injuries of limb, leprosy, gangrene (dry or moist), malignant tumours, diabetes, etc. Missing limb may be congenital. Smoking is a contributory factory in many lower limb amputations of young adults.

Lower limb amputations are more common than upper limb amputations. Below knee amputations are the most common.

The psychological trauma of loss of one's limb is obvious. Lower limb amputations entail severe disability of moving especially above knee amputations. Upper limb amputations severely limit activities of daily living and occupational ability. Other problems are infections of stump, pressure sores, neuroma, Phantom limb, pain and contractures. Ideally artificial limb (prosthesis) (see diagram 7.6 & 6.7) should be fitted to the stump at the earliest. This hastens rehabilitation and minimizes the Phantom sensations. Tremendous advances have taken place in the fabrication and fitting of prostheses. Computer aided design and manufacture has simplified the procedure.

4.3.1.4 Loss of Sensation

Very often accompanies motor weakness. It may be completely intensate or partial (numbness). All or some of the modalities of sensation are affected e.g. pain, temperature and position sense, vibration pressure.

Besides the obvious limitations of not having the proper sensatioin, execution of motor activity is severely affected by sensory loss. Thus co-ordination, initiation of voluntary movements and muscle tone are impaired. Loss of pain and temperature sense predisposes the affected area to recurring injuries, pressure ulcers, and non healing wounds. The result is often amputation of the affected limb. Common causes of sensory loss or impairment are spinal injuries, peripheral nerve injuries, Hansen's disease, spinabifida, diabetic neuropathy and spondylitis of the spine.

PRINCIPLE OF MANAGEMENT

1. Full explanation and education so as to avoid any further injury to the affected area by meticulous care (keep away from the hot/cold/sharp objects).

2. Regular medical follow up and training for self observation to detect early appearance of any new would or injury (the patient should inspect all the affected areas daily in front of a large mirror).

3. Provision of padding the pressure bearing areas of shoe e.g. heel, first metatarsal head.

4. Frequent change of posture, water beds, spilt mattresses, pillows to position the affected areas freely suspended and accessible to ventilation.

5. Massage with emollients is believed to improve vitality of skin.

6. Surgical repair of severed nerves may restore sensations.

4.3.1.5 Pressure Ulcers

Pressure ulcers also called bed sores are areas of skin damage as a result of prolonged and excessive pressure on the soft tissues. Contributing factors are immobility, motor weakness, loss of sensation, excessive perspiration, urinary and faecal soiling, rough and crinkly bed-sheet and lack of care.

Conditions notoriously associated with pressure ulcers are spinal injuries with paraplegia, tuberculosis of the spine with paraplegia, spina bifida, diabetic neuropathy. Hansen's disease and patients bedridden for prolonged period due to any cause.

The key strategy of management is prevention. The sacral, trochanteric and heel areas are regularly inspected (see diagram 7.7.). General care of skin, cleanliness, 2 hourly turning, use of water/air beds mattresses are other important measures (see diagram 7.8 & 7.9). Treatment is by daily dressing, removal of dead tissue and control infection. When clean tissue appear, skin grafting may be required.

Other problems like spasticity, neurogenic bowel and bladder, pain etc are also appropriately managed in order to make the person as physically independent as possible.

4.3.1.6 Spasticity

Muscles tone is a state of contraction of tension found in a normal muscle. Spasticity is defined as a state of increased muscle tone proportional to the velocity of stretch

applied. Common spastic conditions are cerebral palsy, cerebro-vascular accident with hemiplegia, spinal injuries and tuberculosis of the spine.

Spastic muscles usually have varying degrees of weakness and incoordination. Repetitive activities requiring rhythmic contraction and relaxation are impaired. Sustained spasticity and muscle imbalance leads to extremely disabling contractures and deformities. For example, in cerebral palsy adduction contracture of things causes 'scissoring', locking the legs and feet together which renders walking almost impossible. Other examples are equines deformity at the ankles, flexion deformity at the knee, pronation deformity of the forearm with flexion at wrist and fingers, the whole upper limb being internally rotaed.

Control of spasticity is necessary to improve muscles balance, strength, coordination, range of movement of joints so that appropriate training for ADL, walking and vocational rehabilitation may be started.

4.3.1.7 Urinary and Faecal Incontinence, Urinary Retention

Bladder and bowel problems often accompany paraplegia and quadriplegia. Thus spinal injuries, tuberculosis of spine patients face these problems. They include- retention of urine, loss of voluntary control and overflow (incontinence), dependence on catheter, recurrent urinary tract infections, constipation, dependence on purgatives, enemas, manual evacuation and faecal incontinence. Some dreaded long term complications of bladder and bowel dysfunction and repeated catheterization are chronic prostatitis, stricture urethra, hydro nephrosis and chronic renal failure. Bladder and bowel dysfunction due to impaired neural control are commonly called 'neurogenic' bladder and bowel.

Aim of bladder management are :

(a) avoidance of over distension

(b) prevention of infection

(c) Restoration of continence by bladder training.

Relief of bladder overdistension by prompt catheterization/ drainage is a must to prevent irreversible damage to bladder muscle. When drainage is established, the following, the other measures are taken to prevent ascending infection and stone formation.

1. Liberal fluid intake (2-3 liters) day
2. Prophylactic antibiotics
3. Daily bladder wash

Retaining of bladder is done over several weeks when reflex emptying is established. This is done by catheter clamping intermittently or abdominal compression. Self clean intermittent cathererisation is a new procedure in the management of neurogenic bladder. (see diagram 7.10)

Bowel care includes faecal softening by laxatives, digital evacuation, use of suppositories and enemas. High roughage diet and plenty of fluids should also be encouraged.

4.3.1.8 Pain

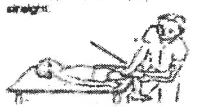
It is a subjective feeling and not quantifiable or measurable. It is nature's warning that there is imminent damage to the system. The relief in pain can be either achieved by pain killer medicines or by use of physical modalities like cold, heat etc. in various forms. Either of these should be taken under medical supervision.

EXERCISE THERAPY - I

GUIDELINES FOR DOING STRETCHING AND RANGE OF MOTION EXERCISES

1. When doing these exercises, consider the position of the whole child, not just the joint you are moving. For example:

The knee will often straighten more (and you will be stretching different muscles) when the hip is straight.



than when the hip is bent. This is because some

muscles go from the hip bone to below the knee. To prove this, try to

touch your toes with your knees straight. You will feel the muscles stretched the cords tighten here.

2. If the joints are stiff or painful, or cords and muscles are tight, often it helps to apply heat to the joint and muscles before beginning to move or stretch them. Heat reduces pain and relaxes tight muscles. Heat can be applied with hot water soaks, a warm bath, or hot wax.

for a stiff painful

joint, apply heat for 10 or 15 minutes

before doing the exercises

3. Move the joint SLOWLY through its complete range of motion.
If the range is not complete, try to stretch it slowly and gently just a little more each time. Do not use force, and stop stretching when it starts to hurt.

Hold the limb in a stretched position while you count to 25.

Then slowly stretch the joint a little more and hold it again for a while.

Continue this way until you have stretched it as far as you can without forcing it or causing much pain.

The more often you repeat this, the faster the limb will get straighter.

4. Have the child herself do as much of the exercise as she can. Help her only with what she cannot do herself. For example:

Instead of doing the child a range of motion exercise for her,

have her do the exercise using her own muscles as much as she can

Then have her help with the other hand (or you help her if necessary).

Whenever possible, exercises that help to maintain or increase joint motion should also help to maintain or increase strength. In other words, range-of-motion, stretching and strengthening exercises can often be done together.

EXERCISE THERAPY II

5. Exercises to improve position

This child is 5 years old and has early signs of muscular dystrophy. Among other problems, he is developing a sway back.

Ask him to stand against a wall and to pull in his stomach so that his lower back comes as close to the wall as possible. Ask him to try to always stand that way, and praise him when he does. Because sway back is often partly caused by weak stomach muscles, strengthening the stomach muscles by doing 'sit-ups' may also help. See if he can still do sit-ups at least part way, and have him do them twice a day.

It is best to do sit-ups with the knees bent, (with legs straight, the hip-bending muscles may do more work than the stomach muscles.)

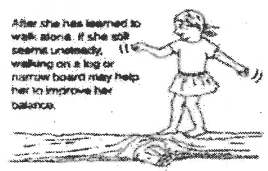
6. Exercises to improve balance and control

This child is 3 and still cannot walk without being held up. She has poor balance. Many exercises and activities might help her improve her balance and control of her body. Here are 2 ideas for different stages in her development.

Play games with her to see if she can lift one leg, and then the other.

This will help her shift her weight from side to side and keep her balance.

After she has learned to walk alone. If she still seems unsteady, walking on a log or narrow board may help her to improve her balance.

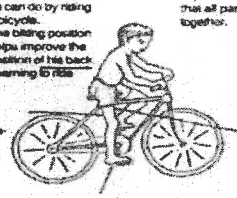


COMBINED EXERCISES

Often several kinds of exercises, involving different parts of the body, can be done through one activity-often an ordinary activity that children enjoy.

For example, this child, who is 8 years old, has polio. His right leg is weak, his knee does not quite straighten, and the heel cord of his right foot is getting tight. He is also developing a sway back.

Many of the exercises he needs he can do by riding a bicycle. The biking position helps improve the position of his back. Learning to ride



improves his balance and his control, so that all parts of his body work smoothly together.

The movement of pedaling gives range-of-motion and stretching exercises to his knee.

Pushing the pedal down strengthens the thigh muscle.

Pushing down on the pedal stretches the tight heel cord.

Note: Ordinary activities that exercise the whole body, like riding a bicycle or swimming, can provide many of the exercises that a child needs. But sometimes specific exercises using special methods are needed.

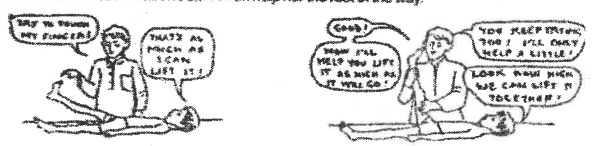
Figure 7.1

EXERCISE THERAPY - III

1. Passive exercise. If the child cannot move the limb at all, either you can do it for him.

or he can move the limb through its full range with another part of his body

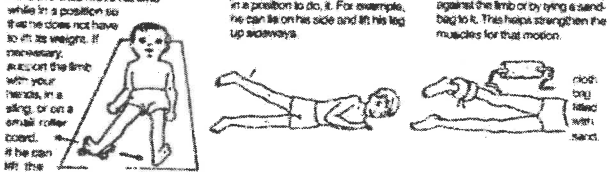
2. Assisted exercise. If the child has enough strength to move the affected part of her body a little, have her move it as far as she can. Then help her the rest of the way.



3. Active exercise. If the child has enough strength to move the body part by itself through its full, normal range of motion, then he can do the exercises without assistance, or actively. When the child can do it, active exercise is usually best, because it also helps maintain or increase strength.

If muscles strength is poor, have the child move his limb while in a position so that he does not have to lift its weight. If necessary, support the limb with your hands, in a sling, or on a small roller board. If he can lift the weight of his limb through its full range of motion, let him exercise in a position to do it. For example, he can lie on his side and lift his leg up sideways.

If he can lift the limb's weight easily add resistance by pushing against the limb or by tying a sandbag to it. This helps strengthen the muscles for that motion.



As the child gains strength, gradually increase resistance (add more weight).

For many exercises, resistance can be added with stretch bands. Cut rubber bands from an old inner tube. The wider the band, the more resistance it will give.

This child is doing range-of-motion and strengthening exercises at the same time.

EXERCISE THERAPY IV

DIFFERENT KINDS OF EXERCISES AND WHEN TO USE THEM

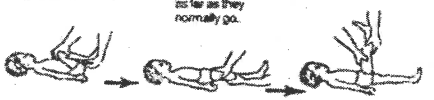
1. Range-of-motion exercises (ROM)

This child is 2 years old. Two weeks ago he became sick with polio and both legs became paralyzed.

He needs range-of-motion exercise to keep the full motion of his joints, so they will not develop contractures.

At least 2 times a day, his mother slowly bends, straightens, and moves all the joints as far as they normally go.

All these are exercises for his knee.



2. Stretching exercises

This child who is now 4, had polio at 2. She did not have any exercises to keep the range of motion in her joints, and now she has severe contractures especially of the knees.

Her mother does stretching exercises several times a day to straighten the joints a little more each day. Stretching exercises are like ROM exercises.

but the joint is held with firm, steady pressure in a position that slowly stretches it.

3. Strengthening exercises with motion

This child was 6 years old when he got his clothes and body wet with a poison his father used to kill weeds. A week later his legs became so weak he could not stand. Now, 2 months have passed, and he is a little stronger. But he still falls when he tries to stand.

To help strengthen the weak muscles in his thighs, he can raise and lower his leg like this at first without added weight and later with a sandbag on his ankle. As his leg gets stronger the weight can be increased.

4. Strengthening exercises without motion

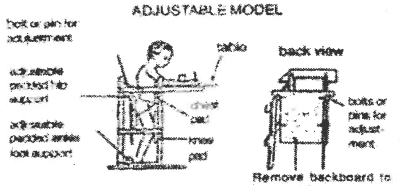
This girl who is 9 years old, has a very painful knee. It hurts her to move it, and her thigh muscles have become so weak she cannot stand on the leg. She cannot do exercise like the child shown in (3) because it hurts her knee too much.

But she can do exercises to strengthen her leg without moving her knee. She holds it straight and tightens the muscles in her thigh.

STANDING AND WALKING FRAMES

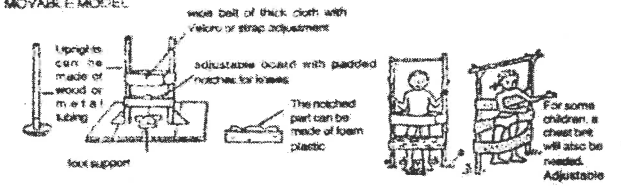
STANDING FRAMES
These are mainly for a child with contractures or painful joints who has difficulty standing straight. This child can gradually be straightened up.

ADJUSTABLE MODEL



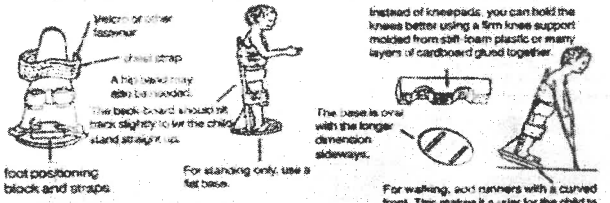
Remove backboard to stand child in frame.

MOVABLE MODEL



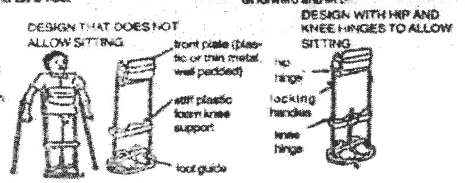
STANDING-AND-WALKING FRAME

This is a useful aid to begin standing and walking, for children paralyzed or severely affected below the waist (paraplegia, spina bifida, diplegic cerebral palsy).

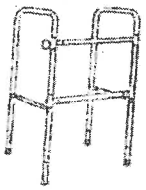


STANDING-WALKING BRACE

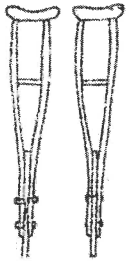
This has the same use as the standing-walking frame above, but is especially useful for children who need to learn how to walk before they are fitted for braces with a hip band or body brace.



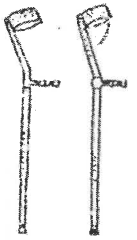
AMBULATORY AIDS



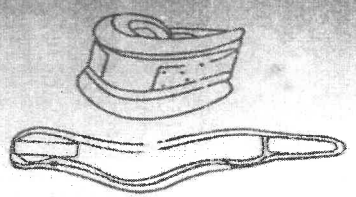
Walker



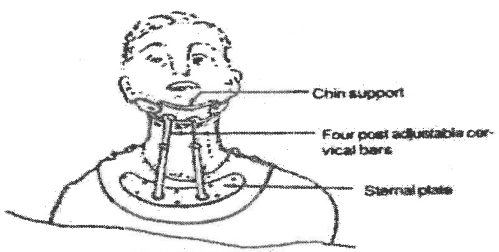
Auxiliary Crutches



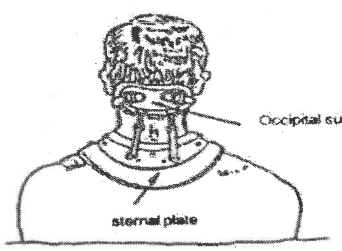
Elbow Crutches



SOFT CERVICAL COLLAR



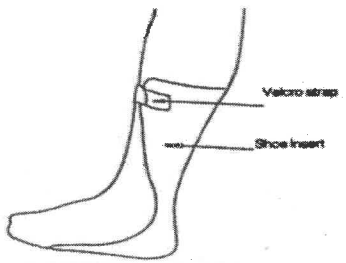
FOUR POST COLLAR
(Anterior side)



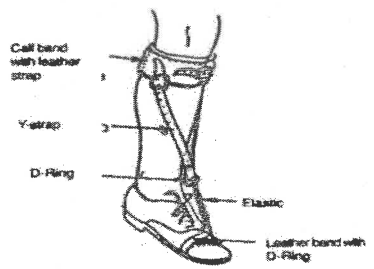
FOUR POST COLLER
(Posterior side)

Figure 7.4

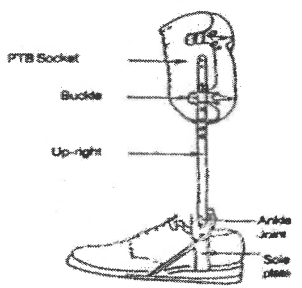
BELOW KNEE ORTHOSES



POLYPROPYLENE AFO SHOE INSERT

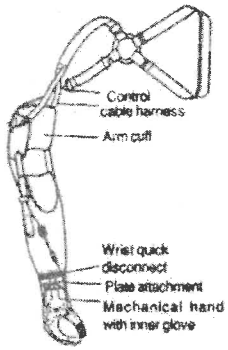


TOE PICK-UP

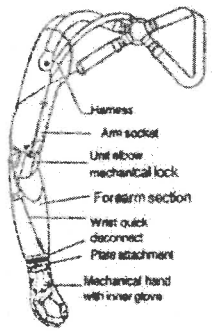


PTB ORTHOSIS

Figure 7.5



BELOW ELBOW PROSTHESIS



ABOVE ELBOW PROSTHESIS

SELF INSPECTION OF SKIN TO PREVENT PRESSURE SORES

Watch for the first signs of a pressure sore by examining the pressure prone sites after each turn, initially and later the whole body every day. teach the child to do this using a mirror.

If early signs of a sore appear (redness, darkness, swelling, or open skin), change body position and use padding to protect that area from pressure.

For large areas (like the bones near the base of the spine, get the child to lie on her face.

Early signs of a sore are local increase in temperature and redness that does not blanch with pressure. If care to avoid pressure is not taken immediately, the skin will break down and a sore will form.

Do not try using small (motor scooter) inner tube to keep weight off the sore area. (Sweaty skin against the rubber can also cause sores). These just cause larger sores to develop.

Warning: for small areas such as heels, never use a ring or donut of cloth to keep weight off the sore. This can cut off blood supply to the skin inside the ring and make the sore worse.

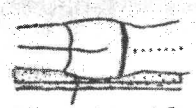
No

TYPE OF MATTRESS

To prevent pressure sores, it is essential that the person who has lost feeling lie and sit on a soft surface that reduces pressure on bony areas.

- It is best to lie on a flat surface with a thick, spongy mattress.

A thick foam rubber mattress often works well. However, some foam is so spongy that it sinks completely down under weight. Then the bony area is not protected from the hard board. A firm sponge with very small air bubbles (microcell rubber) works well, but is expensive.



This sponge is too soft. The hip bone is pressed against the board below.

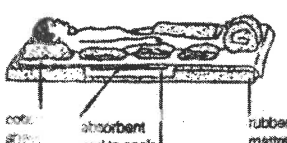
This sponge is better. It is firm enough to keep the hip bone of the board below.

A 'waterbed' (bag-like mattress filled with water) or air mattress also works well.

POSITIONING IN BED

Careful placement of pillows, pad, or soft, folded blankets can also help prevent pressure sores. These are especially important in the first weeks or months after a spinal cord injury when the person must lie flat and be moved as little as possible. Pillows should be placed to avoid pressure on bony places, and to keep the person in a position that is healthy and that helps prevent contractures.

BACK-LYING



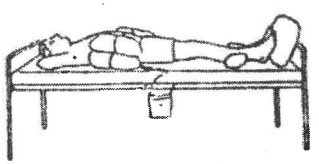
SIDE-LYING

BELLY-LYING

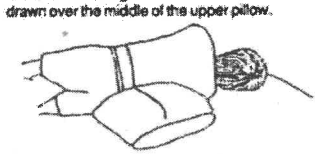
LOG ROLLING IN BED TO PREVENT PRESSURE SORES

Madras Method of Log Rolling is a simple, effective and low budget method of management. It needs only one person for turning the patient and prevents complications. Any family member can do it. This method can also be used for patients with other chronic illness who are liable to get bed sores.

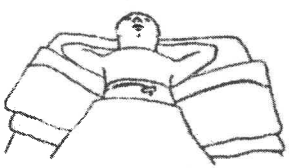
Two foam rubber or rubberised coir or ordinary flat pillows as wide as the bed are laid on the bed. A gentian violet mark is drawn over the middle of the upper pillow.



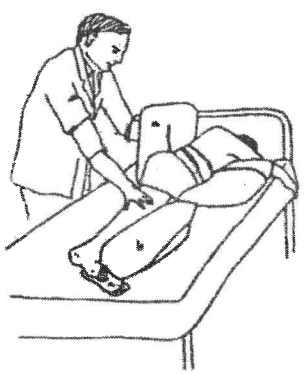
The side view showing the pillows correcting the deformity. For support a foot board is placed and also ankle pads.



A mark is made on the patient at the level of the deformity



The patient lies on the pillows with the marks on his body exactly on the mark made on the pillow.



A third pillow is placed between the legs. The upper pillow is used to log roll the patient from his back to his side, first to the left and then to his right side. The turning is done every two hours.

From: The Challenge and the response Dr. K. Shanmugasundaram, Madras Paraplegia Project.

MAINTAINING HEALTHY POSITIONS TO PREVENT CONTRACTURE AND PRESSURE SORES

The position that the body is in during the day and night is also important to prevent contractures.

Contractures that cause 'tiptoeing' of the feet can develop easily, especially when there is spasticity. Keep the feet in a supported position as much of the time as possible.

When lying down, and when sitting

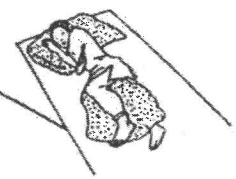
Teach the child to make sure his feet are in a good posspon

CAUTION: A support like this works well with floppy feet, but may trigger spasticity or jerking of the feet. Position them slowly.

Even for the child who may never walk, maintaining the feet in a flat position makes moving from chair to bed, toilet or bath easier.

Another common problem for children with spasticity is that the knees pull together and in time contractures prevent the legs from separating. To prevent this, when the child lies on her side she should learn to

Place a pillow between the legs, and to keep it there most of the time.



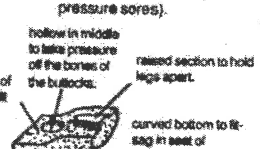
A common problem with wheelchair users is that they slump forward. In time this can deform the spine.

In a wheelchair with a straight-up back a person with spinal cord injury slumps like this in order to balance.

A chair can be designed (or adapted) so that it tilts back. This provides balance for a better position.

A special cushion also helps keep the buttocks from sliding forward (and helps prevent pressure sores).

dip at back of cushion to fit buttock.



hollow in middle to take pressure off the bones of the buttocks.

raised section to hold legs apart.

curved bottom to fit-sag in seat of wheelchair.

If possible, make cushion out of 'micropore' foam rubber (foam with very tiny bubbles). Rubber-coated coconut fiber (coir foam) also works well.

LESS APPROPRIATE

MORE APPROPRIATE

SELF CLEAN INTERMITTENT CATHETERISATION

1. Wash hands with soap and water.

2. Wash penis/vaginal lips and surrounding area with soap and water. Pull back the foreskin or open the vaginal lips and wash.

3. Wash catheter (both inside and outside) with running water.

4. Apply a lubricant (2% lignocaine gel) over the tip of the catheter

5. Holding the lips open the foreskin back, gently put the catheter into the urine hole. Twist if necessary DO NOT FORCE IT. This can be done in the lying or sitting position.

6. When the urine start to flow, wait until all flow stops before withdrawing the catheter. Withdraw the catheter slowly so that all the urine drains out. Gentle pressure over the lower belly also ensures complete emptying of the bladder.

7. Wash the catheter and store it vertically in a cloth bag so that it drips dry! This will minimise infection.

8. wash hands again.

4.3.2 Barrier Free Environment, Adapted Toilets, Seating Arrangements in Classroom

Existence of different kinds of physical barriers is a matter of great concern in the education of the disabled children. Therefore, it would be necessary to remove all architectural barriers or to modify existing architectural facilities, so as to provide access to locomotor disabled children to the school premises.

4.4 UNIT SUMMARY

- Development of adaptive skills and application of appropriate assistive devices as well as special services are essential for the medical rehabilitation of LI & CP child.
- The child with disability of moving may face the following problems ; Motor weakness, Deformities, Loss of limb, Sensory loss, Pressure Ulcer, Spasticity, Urinary and Faecal in continence, , pain etc.
- Barrier Free Environment is necessary for Disabled children.

4.5 CHECK YOUR PROGRESS

1. What is barrier free movement ?
2. Name the problems a child with disability of moving will face.
3. Write brief notes on : A0 Deformities, b) Sensory loss, c) Spasticitry.

4.6 ASSIGNMENT

Prepare a report on what measures can be taken in your school to create Barrier Free Environment for children with disability of moving.

4.7 POINTS FOR DISCUSSION AND CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification on other. Note down those points below:

4.7.1 Points for Discussion

4.7.2 Points for Clarification

4.8 REFERENCES/FURTHER READINGS

1. Lyons, J. (1970). 'New Horizons in Linguistics'. Penguin.

UNIT 3: MATHEMATICS

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**
- References / Further Readings

- **Introduction**

This experimental study reports findings on the effects from a year-long reading intervention providing daily 50-min sessions to middle school students with identified learning disabilities (n = 65) compared with similar students who did not receive the reading intervention (n = 55). All students continued to receive their special education services as provided by the school. Statistically significant results favored the treatment group for sight word reading fluency following intervention. Small effects were found for phonemic decoding fluency and passage comprehension. No other statistically significant differences were noted between groups. The findings suggest that although gains on word reading fluency resulted from the additional reading treatment, accelerating the reading performance of students identified with learning disabilities may be unlikely to result from a 1-year daily intervention provided in groups of 10 to 15 students.

Over the past 2 decades, considerable attention has focused on beginning reading instruction, including an emphasis on designing and implementing effective

interventions to prevent reading problems in young children (Fletcher, Lyon, Fuchs, & Barnes, 2007; Torgesen, Rose, Lindamood, Conway, & Garvan, 1999; Vellutino, Scanlon, Small, & Fanuele, 2006; Wanzek & Vaughn, 2011). Findings from these studies have provided a foundation for designing appropriate instruction for students with reading difficulties and disabilities with an aim toward preventing reading problems. Despite their documented effectiveness, these interventions have either been inadequately implemented or are insufficient to prevent reading difficulties in older students. To illustrate, although recent *National Assessment of Educational Progress* (National Center for Education Statistics, 2007) data showed a slight gain in fourth- and eighth-grade reading comprehension scores since 1992, 26% of students still read below basic—which means that they cannot understand grade-level text.

- **Objectives**

Remediation of reading difficulties in older students may require considerable intensity and differentiation of instruction. A significant problem is that intensive, small-group instruction provided by highly skilled teachers is an expensive and infrequently applied instructional practice within most educational settings (Vaughn, Levy, Coleman, & Bos, 2002; Vaughn, Moody, & Schumm, 1998). Therefore, it is perhaps not surprising that the few available studies of students who receive special education services show flat levels of growth and little evidence that interventions through special education actually close the achievement gap (Bentum & Aaron, 2003; Foorman et al., 1997; Hanushek, Kain, & Rivkin, 1998; Torgesen et al., 2001).

Beyond inclusion, resource rooms, and other standard special education practices, there is relatively little research on reading interventions for middle school students with reading disabilities. In 2007, Scammacca and colleagues conducted a meta-analysis of reading intervention studies with older students with reading disabilities. There were 17 studies examining interventions for students with learning disabilities (LD) that met criteria for the meta-analysis. The interventions in these studies were brief (all but one was conducted for less than 15 hr of intervention) and 15 of the studies used researcher-developed measures that were associated with higher effects than the standardized measures. The majority of the interventions addressed the reading components of vocabulary and comprehension. Overall, the authors identified several key findings from their analyses about reading interventions for older students with LD:

- Students demonstrated gains from the interventions with large effect sizes reported for reading comprehension on researcher-developed outcome measures; however, it was not possible to determine the extent to which these gains actually resulted in overall advancement—meaning that students were closing the gap with typical readers—or merely making gains relative to comparison but not actual normative progress.
- Students benefited from a range of intervention types including word- and text-level interventions as well as vocabulary and comprehension interventions.
- There were an inadequate number of experimental studies, conducted over extensive time (> 10 hr of intervention) and utilizing standardized measures as outcomes.

- **Definitions**

Recently, a practice guide (Kamil et al., 2008) provided a summary of effective practices for adolescent literacy broadly, not specifically for students with LD or reading difficulties. They identified three practices that had strong research evidence: (a) providing explicit vocabulary instruction, (b) providing direct and explicit comprehension instruction, and (c) providing intensive and individualized interventions by trained specialists. The recommendation for providing intensive interventions was derived from approximately 12 small-scale studies, many of which were not focused specifically on students with LD. The practice guide indicated a strong need for a more comprehensive investigation into the efficacy of interventions for older students with reading difficulties.

THE PRESENT STUDY

Conceptual Framework

The conceptual framework that guided the development and implementation of this study is a response-to-intervention (RTI) approach to preventing and remediating learning and behavior problems. The RTI framework is broadly defined as providing universal screening, ongoing progress monitoring, and/or curriculum-based measurements with research-based classroom instruction (Tier 1), and increasingly layering more intensive interventions to meet students' instructional or behavioral needs (Fletcher & Vaughn, 2009; Vaughn & Fuchs, 2003). After students with

persistent learning or behavior problems are identified, research-based interventions are implemented to address the problem, and students' responses are monitored. RTI frameworks provide a schoolwide model for addressing students' problems, evaluating the efficacy of interventions at the child level, and then determining whether additional interventions or alternative approaches are needed. These models have been influenced by public health models of disease prevention that consider primary health needs through a prevention model (e.g., regular check-ups, exercise, appropriate monitoring of blood pressure) and then secondary and tertiary levels of health support that increase in cost and intensity depending upon the initial needs or response to treatment (Vaughn, Wanzek, & Fletcher, 2007). There are many iterations on these models and although a few have been implemented at the secondary level, the vast majority are elementary-focused (Fuchs & Deshler, 2007; Mastropieri & Scruggs, 2005). Although RTI has achieved recognition as a recommended practice for elementary students, considerably less is known about the efficacy of RTI-type frameworks for secondary students, particularly students with learning disabilities. This study was designed to further enhance the knowledge about the use of an RTI-type framework for middle school students with learning disabilities.

- **Summary**

Focus

We are particularly concerned about determining effective reading interventions for students with LD with reading problems in the middle grades. There are few experimental studies examining the efficacy of comprehensive multicomponent reading interventions for older students with identified LD who demonstrate reading problems. The purpose of this experimental study was to determine whether students who are identified with LD and exhibiting reading problems benefit from a supplemental, remedial intervention in addition to their typical instruction for general and special education when compared with students with LD who do not receive the remedial intervention.

We recognize that education leaders are promoting interventions for adolescents with reading problems and that the differential performance of students with LD has been inadequately studied (Biancarosa & Snow, 2004). One of the reasons there are few large-scale experimental studies examining the efficacy of interventions with older students with LD is the complexity of randomizing students with LD to treatment and comparison conditions, particularly in target areas such as reading where the

vast majority of students with LD demonstrate learning difficulties and it is not allowable to discontinue special education services. To accommodate this challenge, all students in this study continued in their typical general and special education classes. We provided students assigned to the treatment condition a supplemental, remedial reading intervention class for one period a day, 5 days a week for the entire school year. Students assigned to the comparison condition were provided with an elective such as art or band. This design allowed us to determine the relative effects of additional reading intervention support for students with identified LD and reading problems. We hypothesized that students who were randomized to a supplemental reading intervention would outperform students who participated in nonreading elective classes, on both word reading and comprehension outcomes.

METHOD

Participants

This study included sixth- to eighth-grade students identified with LD who participated in a larger study of middle school reading intervention for students struggling with reading (Vaughn, Cirino, et al., 2010; Vaughn, Wanzek, et al., 2010). The study was conducted in seven middle schools (Grades 6–8) in three school districts in two large urban cities in Texas. Three schools from a large urban district in one city and four schools from two medium-size districts participated.

We used the state accountability test results, Texas Assessment of Knowledge and Skills (TAKS; Texas Education Agency, 2004), administered in the spring of the year prior to intervention, to identify struggling readers in the LD population. Students were included in the study if they were identified by the school district with LD and either (a) failed the TAKS reading achievement test, (b) obtained a score on the TAKS reading test that fell within one half of a standard error of measurement above the passing score (a 95% confidence interval of their observed score suggesting that their true score would fall substantially below the passing standard), or (c) took the School Determined Alternative Assessment in lieu of TAKS.

A total of 135 students with LD were included in the sample for the present study. As part of the larger study, 76 of these students were randomly assigned to receive a supplemental reading intervention in addition to their general and special education classes and 59 students with LD were randomly assigned to the school comparison group (i.e., did not receive the supplemental intervention but continued to receive the same special education and general education classes). In the larger study, treatment students were assigned randomly two for every one comparison to adequately power the study. A total of 120 (65 treatment and 55 comparison) completed the

intervention and had posttest data. A total of 46 students (35 treatment and 11 comparison) were available at follow-up 4 months later.

Fifty-eight percent of the treatment students were African American, 12% were Caucasian, and 26% were Hispanic. In the comparison group the distribution was 51%, 20%, and 27%, respectively. Sixty-four percent of the students in the study qualified for free or reduced-price lunch programs during the intervention year (68% in treatment and 58% in comparison).

Description of Instruction

Typical Classroom Instruction

All students in the study continued to receive their usual content-area instruction and special education instruction. General education classes, including English language arts, math, science, and social studies, were typically held daily from 45 to 50 min each (one class period) with class sizes of about 20 to 25 students. To enhance the overall reading instruction for all students in the middle schools, all content area teachers (i.e., general education, remedial, and special education) were provided professional development on evidence-based practices for teaching vocabulary and comprehension by the research team (Denton, Bryan, Wexler, Reed, & Vaughn, 2007). Teachers attended a 6-hr professional development session at the beginning of the school year, then met in study groups at their respective schools approximately once a month throughout the school year. In six of the schools, study groups consisted of interdisciplinary teams, whereas one school framed study groups by department area. In-classroom coaching was also provided by request.

We coached teachers in vocabulary and comprehension strategies using an instructional routine consisting of explicit modeling, demonstration, or description, followed by guided and independent practice. We provided guidance for selecting appropriate academic and content-specific vocabulary words, assisting students in decoding the words with word parts, and introducing new word meanings with student-friendly definitions and the use of examples and nonexamples to help students understand word meaning. We also taught teachers to use graphic organizers to provide a framework for vocabulary instruction. In addition, this professional development included guidance in implementing comprehension strategies such as teaching students to generate different types of questions, using main idea and summarizing strategies to complete note-taking guides and identify text structures, and use of graphic organizers to understand connections in text. During the monthly study group sessions teachers worked with a facilitator to apply these strategies while planning lessons in their own content areas.

- **Revision**

Special Education and Remedial Instruction

We collected data on the reading instruction students received as part of their special education program. Just under half of the students with LD in the study (47%; $n = 64$ students) participated in all general education classes with special education support as designated by their individualized education programs (IEPs). These students did not receive any reading instruction outside of general education. The other 71 students (53%) participated in remedial or special education reading classes in place of one or more general education classes in their class schedule. Of these 71 students, 33 students were in the treatment group (43% of the treatment group) and 38 students were in the comparison group (64% of the comparison group). Schools may have considered the supplemental reading intervention provided by the research team as an existing remedial class and, therefore, provided fewer typical remedial classes for the students in the treatment group while allocating more resources to students in the comparison group. However, we do not have any systematic evidence to confirm this possibility and schools continued to implement all services as designated by student IEPs. Thus, the designated special education for students was not affected by the study, although it appears students in the comparison group may have received more of the remedial classes offered to struggling readers in the schools. Eleven students (four in treatment; seven in comparison) participated in two remedial reading classes during the school day and two treatment students participated in three remedial reading classes in place of general education classes during the school day.

Remedial reading classes provided to students by the school were generally held daily (89% of students in remedial classes participated daily) for 45 to 50 min (one class period). About 10% of the students participated in a remedial reading class scheduled for 90 min daily. Group sizes for the remedial classes were generally smaller than typical general education classes. About 56% of the students participated in classes with 10 to 15 students. Another 21% of students in remedial classes were in class sizes of five to 10 students. Fifteen percent had smaller classes (2–5 students) and 9% were in classes larger than 15 students.

Supplemental Intervention (Treatment)

The students with LD who were randomly assigned to the treatment condition were provided an additional reading intervention for one class period per day (45–50 min per day). The supplemental intervention took the place of an elective class in the student's schedule and did not replace any of the typical instruction in content areas or special education. Students in the comparison group continued to receive the

elective class (e.g., art, band) they had in their schedule. The intervention combined vocabulary and comprehension techniques with opportunities for guided discussion to address student needs in understanding the words and text (Baumann, Edwards, Bolnad, Olejnik, & Kame'enui, 2003; Beck, McKeown, & Kucan, 2002; Gersten, Fuchs, Williams, & Baker, 2001; Mastropieri, Scruggs, & Graetz, 2003). Given that many older students with reading problems continue to struggle with decoding words (Paulesu et al., 2001) and reading less phonetically regular words with automaticity (Goswami, 1993), we also included explicit instruction in English phonology, recognizing high-frequency words accurately and quickly, and a strategy for applying phonics elements to reading multisyllable words.

The students were placed in small class sizes of 10 to 15 students for the supplemental intervention with other students with reading difficulties that were participating in the larger study. The intervention groups were formed based on student class schedules and their TAKS (Texas Education Agency, 2004) score from the previous year. Groups were homogeneous to the extent possible based on class schedule.

The intervention included three phases of instruction. Students needed to be able to respond to each aspect of the lesson automatically without prompts prior to the teacher moving to the next skill or lesson. If only one or two students in the class did not demonstrate mastery, the teacher moved onto the next skill or lesson to meet the needs of the other students in the class and then provided review activities to the students who needed additional opportunities for practice.

Phase 1 of the intervention emphasized word recognition and fluency, with additional instruction in vocabulary and comprehension. Phase 1 consisted of approximately 25 lessons taught over 7 to 8 weeks. Word recognition was promoted using the lessons in REWARDS Intermediate (Archer, Gleason, & Vachon, 2005a) to teach phonological elements and advanced strategies for decoding multisyllabic words. Progression through lessons was dependent on students' mastery of sounds and word reading. Students received daily instruction and practice with individual letter sounds, letter combinations, and affixes as well as application of a strategy to use word parts to decode and spell multisyllabic words. Fluency was promoted by using oral reading fluency data and pairing higher and lower readers for partner reading. Students engaged in repeated reading daily with their partner with the goal of increasing accuracy and rate (approximately 10 min daily). Vocabulary was addressed by teaching the meaning of words through basic definitions and providing examples and nonexamples (pictures, sentences, demonstrations, etc., as appropriate) of how to use the words. Newly introduced vocabulary words were then reviewed daily, with students matching words to appropriate definitions or examples of word usage. During Phase 1, students read connected text consisting of narrative and expository passages for application of the word recognition and vocabulary

instruction (approximately 20 min daily). Intervention teachers provided instruction in locating information in text and rereading text to monitor comprehension. Students used these strategies to answer comprehension questions following each reading.

Phase 2 of the intervention emphasized vocabulary and comprehension, with additional instruction and practice provided for applying the word recognition and fluency elements learned in Phase 1. Phase 2 lessons occurred over a period of 17 to 18 weeks, depending on students' progress. The word recognition skills and strategies taught in Phase 1 were reviewed daily in Phase 2 with explicit application of the phonic elements and decoding strategies to reading and spelling of new vocabulary words. After reading words, vocabulary instruction continued with students being provided basic definitions for each word (orally and in writing), followed by engagement in activities to practice word meaning, including identifying the appropriate word to match various scenarios, examples, or descriptions. In addition, students were introduced to word relatives and parts of speech (e.g., *politics, politician, politically*). Vocabulary words for instruction were chosen from the text read in the fluency and comprehension component. Three days a week, teachers used REWARDS Plus Social Studies lessons and materials (Archer, Gleason, & Vachon, 2005b). Two days a week, teachers used novels with lessons developed by the research team. Students were taught strategies for understanding each type of text (i.e., expository and narrative) including identifying the structural features of the text and identifying questions to be answered in various sections of the text. Each day, students read the text at least twice for fluency. Connected text reading occurred between 20 and 40 min each day depending on the designated lesson. Students worked with partners to increase their accuracy and rate of reading. Intervention teachers provided feedback. Students also received explicit instruction in comprehension and understanding text. Comprehension elements covered generating questions of varying levels of complexity and abstraction while reading (e.g., literal questions, questions requiring students to synthesize information from text, and questions requiring students to apply background knowledge to information in text); identifying main idea; summarizing text; and using strategies to answer multiple-choice, short-answer, and essay questions. These skills were practiced both orally and through writing with explicit instruction on forming written responses.

Phase 3 continued the instructional emphasis on vocabulary and comprehension, with more time spent on independent student application of the skills and strategies introduced in Phase 2. Phase 3 occurred over approximately 8 to 10 weeks. Fluency and comprehension were taught through application of strategies for reading and understanding text to both expository science and social studies content and narrative text (novels), with a focus on applying the strategies to independent reading. Students read passages twice for fluency, generated questions while reading, and

addressed comprehension questions related to all the skills and strategies learned (e.g., multiple choice, main idea, summarizing, literal information, synthesizing questions, background knowledge) independently before discussing. Review of word recognition strategies and introduction of new vocabulary was provided daily with words selected from the text.

Supplemental Intervention Implementation

Intervention Teachers

The research team hired 14 intervention teachers (11 female) to provide the supplemental intervention as part of the larger study. All teachers had at least an undergraduate degree, and 10 teachers had a master's degree. Eight of the 14 teachers had teaching certification in a reading or a reading-related area such as English/Language Arts. Two of the teachers were certified in special education.

The intervention teachers participated in 60 hr of professional development prior to the intervention implementation. The research team provided the training including sessions related to the components of the standardized intervention, features of effective instructional delivery (e.g., modeling, teaching in manageable steps), behavior management, and principles of promoting active engagement during lessons. The teachers received an additional 9 hr of professional development related to the intervention throughout the year to review information prior to each phase of instruction. In addition, all the teachers participated in biweekly staff development meetings to discuss student needs and instruction along with ongoing on-site feedback and coaching provided once every 2 to 3 weeks.

Intervention Fidelity

Project coordinators for the research team observed each intervention teacher two to three times each month and provided feedback on implementation. In addition, frequent team meetings were held within sites, and the team held conference calls across sites, to promote consistent implementation. We collected fidelity data throughout the year for each intervention teacher on up to 5 different instructional days (median = 3.5).

Two observers from the research team monitored fidelity and consistency of intervention implementation, rotating each month so that both observers saw every teacher. Prior to formal data collection, we trained the two observers on the fidelity measure and calculated interrater reliability as the number of agreements divided by the sum of the number of agreements and number of disagreements. Interrater

reliability was 100% on the first observation, 93% on the second observation, and 94% at mid-year.

We coded fidelity by rating each of the instructional components on a 3-point Likert-type rating scale ranging from 1 (low implementation) to 3 (high implementation). Quality of implementation (e.g., active engagement, frequent opportunity for students' responses, appropriate use of feedback and pacing) was rated on the same 3-point Likert-type scale for each of the instructional components. A score of 3 (excellent) meant the teacher completed all or nearly all of the required elements and procedures. A score of 2 (adequate) indicated that most of the required elements and procedures were completed. A score of 1 meant that less than half of the required elements and procedures were completed for a given component of the lesson. If a teacher did not include a required component a score of zero was given when calculating the mean scores. The mean implementation score for the intervention across components and observations ranged from 2.22 to 3.00. The mean quality score for the intervention across components and observations ranged from 2.10 to 2.93. The mean total fidelity ranking (implementation of components and quality of instruction) ranged from 2.13 to 2.96.

Measures

We assessed all participants on measures of word decoding, word reading, and comprehension at the beginning of the school year prior to intervention (pretest), at the end of the school year immediately following intervention (posttest), and again in the fall of the next school year approximately 4 months after completion of intervention (follow-up).

Woodcock-Johnson III Tests of Achievement (WJ-III; Woodcock, McGrew, & Mather, 2001)

The WJ-III is an individually administered, untimed battery of cognitive and achievement tests. We administered the Letter Word Identification, Word Attack, and Passage Comprehension subtests at pretest, posttest, and follow-up to assess word reading accuracy as well as reading comprehension. Letter Word Identification assesses the ability to read real words. Word Attack measures the ability to decode nonsense words. The Passage Comprehension subtest is a cloze-based assessment in which students read a passage and fill in a missing word. Coefficient alphas in the Grade 6 sample of 327 struggling readers and 249 typical who contributed data to the larger study for Letter Word Identification, Word Attack, and Passage Comprehension subtests at pretest were .97, .93, and .94, respectively, and at posttest .92, .99, and .85, respectively. Coefficient alphas in the Grade 7 to 8 sample of 436 struggling readers and 440 typical who contributed data in the larger sample for Letter Word Identification, Word Attack, and Passage Comprehension subtests at

pretest were .98, .94, and .96, respectively, and at posttest .97, .99, and .83, respectively. The criterion related validity of Letter Word Identification with TAKS Reading (Texas Education Agency, 2004) was 0.52, WJ-III Word Attack with TAKS Reading was 0.34, and WJ-III Passage Comprehension with TAKS was 0.61 in a sample of 1,421 middle school students in Grades 6 to 8.

Test of Word Reading Efficiency (TOWRE; Torgesen, Wagner, & Rashotte, 1999)

The TOWRE is an individually administered, timed test of single-word reading fluency. The participant is given 45 sec to read a list of words as fast as possible. The number of words read correctly within the time is recorded. We administered the Sight Word Efficiency and Phonemic Decoding Efficiency subtests at pretest, posttest, and follow-up to assess word list fluency for real words and pseudowords. Internal consistency for different forms of this standardized test exceeds .90. The test/retest coefficients range from .83 to .96.

Texas Assessment of Knowledge and Skills (TAKS; Texas Education Agency, 2004)

TAKS is a group-administered, untimed test measuring the students' mastery of the Texas state curriculum in Grades 3 through 9. The TAKS reading score from spring of the year prior to intervention was used to select students having reading difficulties. The TAKS reading test consists of multiple-choice questions related to various passages read independently by the student. Passages include narrative, expository, and mixed (both narrative and expository) text. The internal consistency (coefficient alpha) of the Grade 7 test is .89 (Texas Education Agency, 2004). In preliminary latent-variable analyses of the students in Grades 6 through 8 who composed the parent sample of the students reported here, the TAKS measure loaded strongly on a comprehension factor with other measures of reading comprehension, including the WJ-III (Woodcock et al., 2001) Passage Comprehension subtest.

Plan for Analysis

Analysis of covariance evaluated treatment effects from fall (pretest) to spring (posttest). The nested structure of the data was considered in cases of statistically significant treatment effects. We used latent variable growth modeling (LGM) to estimate group-level parameters and to identify statistically significant differences from pretest through follow-up (i.e., across 3 data points). LGM has several advantages over more traditional analysis strategies (e.g., ANCOVA). First, because LGM belongs to the class of structural equation models, it provides more precise score estimates (Bollen, 1989) by explicitly estimating and adjusting for error due to measurement. LGM generates indices of overall model fit and offers greater

flexibility for comparing groups, whether across time or at given points in time. It handles missing data using a direct maximum likelihood estimator to compute a likelihood function for each case using all available data, more efficient than traditional approaches such as list-wise deletion of cases with missing data or imputation of values. Also, because LGM analyzes covariance structures representing different levels of aggregation (e.g., individual and group), it is more appropriate than traditional approaches when data are clustered, whether by design (e.g., stratified sampling strategy) or circumstance (e.g., students in schools). Finally, LGM provides a flexible framework for analyzing the effects of covariates, and the possibility that they differ by group or by level of aggregation.

Multigroup modeling with nested comparisons enabled us to evaluate the statistical significance of group differences at follow-up using the LGM analyses (Bovaird, 2007; Mehta & Neale, 2005). Estimates were adjusted for school-level clustering effects. Difference testing involved constraining the groups as equal on parameters of interest (Time 3 intercept, in this case) and comparing the fit of the constrained and the fully specified models. If groups were comparable on Time 3 performance, the fit for the constrained and full models would not significantly differ. Constraints resulting in less adequate fit suggested significant group differences. Main effects of treatment were estimated as differences between the treatment group and the comparison.

- **Assignment/Activity**

Immediate Effects

Table 1 presents means and standard deviations for observed scores at pretest and posttest. On the TOWRE Sight Word subtest (Torgesen et al., 2001), the adjusted posttest mean difference was a little over 5 standard score points, $F = 6.68$ (1,117), $p = .011$, which was statistically significant and moderately sized ($\eta^2 = .054$). The difference on TOWRE Phonemic Decoding was about 4.5 scale score points, $F = 2.17$ (1,117), $p = .143$, which represented a small-sized effect ($\eta^2 = .018$). There were no statistically significant results on the WJ-III subtests (Woodcock et al., 2001), though the difference on the Passage Comprehension subtest (about 1.7 standard score points) favored the treatment group, but was small in size ($\eta^2 = .017$). Group differences on WJ-III Word Attack and Letter Word Identification were negligible.

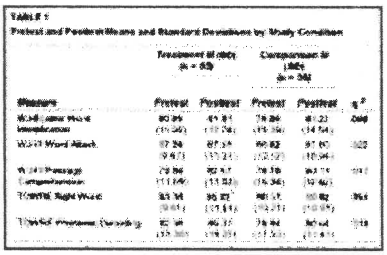


TABLE 1

Pretest and Posttest Means and Standard Deviations by Study Condition

Delayed Effects

On the latent variable analysis, we modeled intercept as the end point of the trend (i.e., Time 3) to examine differences 4 months after the intervention ended. Over 90% of the coverage estimates (amount of data present in each cell of the measure by occasion matrix) were at or above .75. There was limited slope variance within the two groups; as such, we modeled slope as a fixed effect. Note that expected growth in the model using standard scores has slope of zero. Note also that nonzero slopes in Table 2 are in a counterintuitive direction, because the slope estimate represents movement from right to left (i.e., from Time 3 to Time 1).

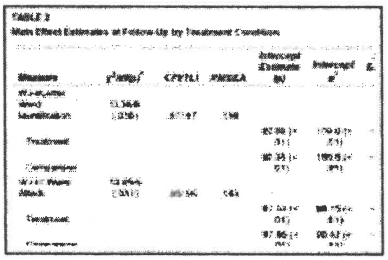


TABLE 2

Main Effect Estimates at Follow-Up by Treatment Condition

Results in Table 2 reflect fit for the multigroup unconditional model as described previously. Fit was excellent for WJ-III Passage Comprehension (Woodcock et al., 2001); $\chi^2 = 6.53$ (6), $p = .366$; CFI = .99, TLI = .99; RMSEA = .037. For the other measures, fit was acceptable based on χ^2 values and comparative fit index/Tucker-Lewis index indices, though root-meansquare error of approximation values were somewhat outside of the acceptable range. Table 2 also includes estimates for intercept and slope and for variance around intercept; recall that intercept is the model-derived score for performance in fall of 2007. Also, variance is not indicated for slope because it was modeled as a fixed effect. There were no treatment group differences on WJ-III Word Identification or Word Attack. There was a small

difference (Δ_I = .13) on WJ-III Passage Comprehension favoring the treatment group, though it was not statistically significant. The difference on TOWRE Sight Word Efficiency (Torgesen et al., 2001; Δ_I = .49) was larger and statistically significant, $\Delta\chi^2 = 5.28(1)$, $p < .05$, whereas the smaller effect on TOWRE Phonemic Decoding Efficiency (Δ_I = .26) was not statistically significant.

DISCUSSION

We examined the effects of a supplemental reading intervention for middle school students with LD. This intervention was conducted within the context of a schoolwide RTI effort to improve reading instruction for all students. We provided all content-area teachers professional development on vocabulary and comprehension practices. Students in both treatment and control groups were equally exposed to this enhanced reading focus and their special education treatment was not altered. We found moderate and statistically significant effects in favor of the students receiving the supplemental intervention on sight word reading fluency, and small effects on phonemic decoding fluency. There were no significant differences between the treatment and comparison groups for the untimed measures of word reading, word attack, or passage comprehension, though a small effect size was reported in favor of the treatment group on passage comprehension. Four months after the intervention was completed, the treatment group still significantly outperformed the comparison group on sight word fluency. In addition, the treatment group maintained standard scores seen at posttest on all measures except phonemic decoding fluency.

These results suggest that the students in the treatment group may have obtained more automatic or fluent word reading skills than students in the comparison group. Although progress in reading words was similar between groups on the untimed word reading measures, the treatment group performed better on timed measures of these skills and continued to do so for sight word fluency at the 4-month follow-up as well. Simple accuracy of reading subskills, such as word reading or decoding, is typically thought to occur prior to the automaticity of these skills, but it is the automaticity of the skills that may be more important in predicting student reading success (Wolf & Katzir-Cohen, 2001). Thus, both groups of students demonstrated similar accuracy in word reading, but the treatment group also demonstrated an ability to read words with more fluency than the comparison group at posttest. However, these increased timed word reading skills were not associated with statistically significantly higher outcomes on comprehension, though there was a small effect size noted in favor of the treatment condition at both posttest and follow-up.

Overall, the differences between groups were smaller in this study than those reported in Scammacca and colleagues' (2007) meta-analysis. Scammacca et al. reported a mean-weighted effect of .51 (moderate) on norm-referenced measures for studies with students with learning disabilities. The effects in the current study were small to moderate. None of the studies reviewed by Scammacca et al. that included a full sample of students with LD administered a norm-referenced comprehension measure so it is not possible to compare the comprehension outcome effects from the current study to the previous LD research.

However, for studies with students with reading difficulties or a mix of students with reading difficulties and LD, Scammacca et al. (2007) reported a mean-weighted effect size of .35 on norm-referenced comprehension measures. Similarly, we found a small effect size for comprehension in this study. Our intervention was provided for a substantially longer amount of time than any of the studies synthesized by Scammacca et al. The studies with students with LD in Scammacca et al. ranged from two to 20 sessions (50–800 min), with one study providing 90 sessions (4,500 min), whereas the current study provided approximately 165 sessions (7,425-8,250 min). Paradoxically, larger effects have been noted in previous research with shorter intervention periods (Elbaum, Vaughn, Hughes, & Moody, 2000).

We did not deny ongoing special education services to any of the students in the study. About half the sample was receiving one or more remedial reading classes as part of their special education program. Thus, the comparison group in this study provided a rigorous test of the supplemental intervention allowing examination of whether additional time in reading instruction can assist students with LD who struggle with reading. In addition, we provided assistance to the teachers in improving their instruction throughout the content areas and we incorporated several strategies taking place in our intervention in this professional development. This design was the most practical test of the additional intervention, in that schools would want to provide strong remedial intervention in their existing classes before providing an additional intervention to students.

Despite some of the accelerated gains in the treatment group, many students in both treatment and comparison conditions demonstrated reading outcomes well below expected grade levels at posttest. About half of the students in each of the study conditions continued to demonstrate standard scores below 85 on decoding and word reading measures. Similarly, 54% of treatment students and 55% of the comparison students scored below a standard score of 85 on the passage comprehension measure at posttest. Clearly, many of the students participating in this study continued to demonstrate significant difficulties reading and understanding text and will continue to need intervention to successfully read to learn in secondary settings.

We believe that this study provides initial evidence that many of the well-intentioned programs designed to enhance reading outcomes for students with significant reading problems are unlikely to adequately meet the needs of students with LD when provided in standard ways (e.g., one class period per day and with moderate group sizes [10-15]). These findings are consistent with other studies of students with LD who are provided traditional special education services (Bentum & Aaron, 2003; Foorman et al., 1997; Hanushek et al., 1998). Although improved outcomes were realized in a few skill areas, overall gains were small to moderate and did not appreciably close the gap between the treatment and comparison group performance.

Limitations

This study examined the effects of a supplemental intervention in comparison to students with LD who did not receive the supplemental intervention. It is not known whether the additional time in intervention or the specific instruction that was provided in the intervention or both are related to the students' improved outcomes. More of the students in the comparison group received supplemental remedial instruction provided by the school than did students in the treatment group. This may have been an artifact of our presence in the school in the sense that the school allocated more resources to students who were not already a part of the treatment group and receiving the researcher-provided supplemental remedial reading class.

Our measure of reading comprehension is limited to word-level inferencing based on context. It is possible that measures of comprehension addressing more complex skills such as identifying main idea, summarizing, or making text connections may have been more sensitive to differences in comprehension between the study groups. However, it is clear from the group means after treatment that even with the gains made by both groups from pretest to posttest, the majority of students were still severely impaired in their reading comprehension abilities.

Implications and Future Research

Our results suggest that a supplemental intervention for students with LD may increase the intensity of intervention for students, allowing them to make additional gains in reading. However, the gains seen were in automaticity of basic reading skills (i.e., word reading fluency); the small effect in comprehension suggests that even more intensity is needed for students to accelerate their reading achievement gains. One possible way to further increase the intensity may be to provide supplemental intervention in smaller groups. The students in this study received the supplemental intervention in class sizes of 10 to 15 students. Using small-group instruction for the supplemental intervention may assist students with LD in making additional gains.

In addition, the intervention we implemented was standardized in nature. Although movement through the lessons was based on student mastery, the overall sequence of instruction and the amount of time spent on each component of the intervention was standardized for all students. It may be possible to achieve more significant gains in student outcomes by providing a more individualized, responsive approach to remediation, with lesson structure and application of instruction designed to respond to the varying needs of the students (Vaughn et al., 2008). This individualization could include emphasizing specific reading strategies over others based on student need including specific language issues. This type of implementation would also require smaller group sizes.

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POINTS FOR DISCUSSIONS / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification. Note down those points:-

Points for Discussion

Points for Clarification

- References / Further Readings

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Unit 4:SCIENCE

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**
- References / Further Readings

- **Introduction**

The past decade has witnessed a profound advancement in the understanding of phonological processing – the kind of auditory processing that is most strongly related to mastery of written language (reading and writing), and is clearly implicated as the most common cause of reading disabilities. Phonological awareness, phonological memory, and rapid naming represent three correlated, yet distinct kinds of phonological processing abilities. Deficits in phonological awareness, phonological memory, and/or rapid naming are common in children with reading disabilities. These deficits appear to be the root of many decoding difficulties faced by individuals with reading disabilities.

- **Objectives**

Phonological core deficits entail difficulties making use of phonological information when processing written or oral language. The major components of phonological deficits involve phonemic awareness (one's understanding of and access to the sound structure of language), sound-symbol relationships, and storage and retrieval of phonological information in memory.

Three Kind of Phonological Processing

Phonological Awareness: Phonological awareness refers to an individual's awareness of and access to the sound structure of his/her oral language. This awareness proceeds from word length phonological units in compound words (e.g., cowboy), to syllables within words, to onset-rimes units within syllables to individual phonemes within rimes, and finally to individual phonemes within consonant clusters.

- **Definitions**

Phonological Memory: Phonological memory refers to coding information phonologically for temporary storage in working memory. A deficient phonological memory does not appear to impair either reading or listening to a noticeable extent, provided the words involved are already in the individual's vocabulary. However, phonological memory impairments can constrain the ability to learn new written or spoken vocabulary.

Rapid Naming: Rapid naming of objects, colors, digits, or letters requires efficient retrieval of phonological information from long-term memory. The efficiency with

which individuals are able to retrieve phonological codes associated with individual phonemes, word segments, or entire words should influence the degree to which phonological information is useful in decoding printed words. Measures of rapid naming require speed and processing of visual as well as phonological information. The skills involved include efficient retrieval of phonological information from long-term memory and executing a sequence of operations quickly and repeatedly.

Double Deficit Hypothesis: It has been hypothesized that individuals who have double deficits – that is, deficits in both rapid naming and phonological awareness – appear to have greater difficulties learning to read than do individuals with deficits in either rapid naming or phonological awareness alone.

Link to Achievement

Reading: Deficits in phonological awareness are viewed as the hallmark of basic word reading disabilities. It is, however, the most responsive to intervention of the phonological processing skill areas. Phonological awareness skills should proceed from sensitivity to same verses, different or phonological segments, to an ability to identify and count phonological segments, to an ability to manipulate phonological segments.

Storage of phonological information during reading involves creating a sound-based representation of written words in working memory. Deficits in storage of phonological information result in faulty representations in memory, which lead to inaccurate application of sound rules during reading tasks. A deficit in phonological memory does not inevitably lead to poor reading of familiar material, but is more likely to impair decoding of new words, particularly words that are long enough to decode bit by bit as a means of storing intermediate sounds. A deficit in phonological memory may impair reading comprehension for more complex sentences.

Naming facility or "rapid automatic naming" is very important to reading achievement. Retrieval of phonological information from long-term memory refers to how the child remembers pronunciations of letters, word segments, or entire words. Reading disabled children may have difficulty in this area, which leads to slow and inaccurate recall of phonological codes from memory. Efficient retrieval of phonological information and execution of sequences of operations are required when readers attempt to decode unfamiliar words. Deficits in this area often result in difficulties with reading fluency.

Math: Some literature suggests that phonological deficits may be related to math disabilities. Phonological processing problems have been associated with difficulties memorizing basic math facts. The research, however, is not conclusive.

Written Expression: Phonological awareness provides students with an important tool for understanding the link between written and spoken language. Phonological memory impairments can constrain the ability to learn new written vocabulary.

Oral Language: Phonological memory impairments can constrain the ability to learn new oral vocabulary. It is likely to impair listening comprehension for complex sentences.

- **Summary**

Technical Definition

Fluid reasoning is the ability to use and engage in various mental operations when faced with a relatively novel task that cannot be performed automatically. It includes the ability to discover the underlying characteristic that governs a problem or set of materials, the ability to start with stated rules, premises, or conditions, and engage in one or more steps to reach a solution to a problem. It also affects the ability to reason inductively and deductively with concepts involving mathematical relations and properties.

User Friendly Description

Fluid Reasoning refers to a type of thinking that an individual may use when faced with a relatively new task that cannot be performed automatically. This type of thinking includes such things as forming and recognizing concepts (e.g., how are a dog, cat, and cow alike?), identifying and perceiving relationships (e.g., *sun is to morning* as *moon is to night*), drawing inferences (e.g., after reading a story, answer the question), and reorganizing or transforming information. Overall, this ability can be thought of as a problem-solving type of intelligence.

Link to Achievement

Reading: Fluid reasoning or reasoning abilities have been shown to play a moderate role in reading. For example, the ability to reach general conclusions from specific information is important for reading comprehension.

Math: Fluid reasoning is related to mathematical activities at all ages. For example, figuring out how to set up math problems by using information in a word problem is important for math reasoning.

Written Expression: Fluid Reasoning skills are related to basic writing skills primarily in the elementary school years and are consistently related to written expression at all ages.

Crystallized Intelligence

(Comprehension Knowledge or Verbal Comprehension)

Technical Definition

Crystallized intelligence is the breadth and depth of a person's acquired knowledge of a culture and the effective application of this knowledge. It includes general language development or the understanding of words, sentences, and paragraphs (not requiring reading) in spoken native language, the extent of vocabulary that can be understood in terms of correct word meanings, the ability to listen to and comprehend oral communication, the range of general concepts, and the range of cultural knowledge (e.g., music, art).

User Friendly Description

Crystallized abilities refer to a person's knowledge base (or general fund of information) that has been accumulated over time. It involves knowledge of one's culture, as well as verbal or language-based knowledge that has been developed during general life experiences and formal schooling.

Link to Achievement

Reading: Crystallized abilities, especially one's language development, vocabulary knowledge, and the ability to listen are important for reading. This ability is related to reading comprehension in particular. Low crystallized abilities may hamper an individual's ability to comprehend written text due to a lack of vocabulary knowledge, basic concepts, and general life experiences that are needed to understand the text.

Math: Crystallized abilities, including language development, vocabulary knowledge, and listening abilities are important to math achievement at all ages. These abilities become increasingly more important with age. Low crystallized abilities may hamper an individual's ability to comprehend word problems due to a lack of vocabulary knowledge. They may hamper one's ability to learn basic math processes, such as long division, due to impairments in one's ability to listen to and follow sequential directions.

Written Expression: Crystallized abilities, such as language development, vocabulary knowledge, and general information are important to writing achievement primarily after age seven (7). These abilities become increasingly more important with age.

Oral Language: Crystallized abilities, especially one's language development, vocabulary knowledge, and the ability to listen are important for both listening comprehension and oral expression. Low crystallized abilities may hamper an individual's ability to comprehend oral communications due to a lack of vocabulary knowledge, basic concepts, and general life experiences that are needed to understand the information being presented.

Visual Processing

Technical Definition

Visual Processing is the ability to generate, perceive, analyze, synthesize, manipulate, transform, and think with visual patterns and stimuli. It includes the ability to perceive and manipulate visual patterns rapidly or to maintain orientation with respect to objects in space; the ability to manipulate objects or visual patterns mentally and to "see" how they would appear under altered conditions; the ability to combine disconnected, vague, or partially obscured visual stimuli or patterns quickly into a meaningful whole, without knowing in advance what the pattern is. It also includes the ability to survey a spatial field or pattern accurately and quickly, and identify a path through the visual field or pattern; the ability to form and store mental representations or images of visual stimulus and then recognize or recall it later; the ability to identify a visual pattern embedded in a complex visual array, when knowing in advance what the pattern is; and the ability to identify a pictorial or visual pattern when parts of the pattern are presented rapidly in order.

User Friendly Description

Visual processing is an individual's ability to think about visual patterns and visual stimuli (e.g., What is the shortest route from your house to school?). This type of cognitive processing ability also involves the ability to generate, perceive, analyze, synthesize, manipulate, and transform visual patterns and stimuli (e.g., Draw a picture of how this shape would look if I turned it upside-down.). Additionally, examples of this type of ability include putting puzzles together, completing a maze, and interpreting graphs or charts.

Link to Achievement

Math: Visual Processing may be important for tasks that require abstract reasoning or mathematical skills.

Short-Term Memory

Technical Definition

Short-term memory is the ability to apprehend and hold information in immediate awareness and then use it within a few seconds. Working memory, a subcomponent of short-term memory, includes the ability to attend to and immediately recall temporally ordered elements in corrected order after a single presentation, as well as the ability to store temporarily and perform a set of cognitive operations on information that requires divided attention.

User Friendly Description

Short-term memory is the ability to hold information in one's mind and then use it within a few seconds. A component of short-term memory is working memory. Working memory relates to an individual's ability to attend to verbally- or visually-presented information, to process information in memory, and then to formulate a response. Difficulties with working memory may make the processing of complex information more time-consuming, draining a student's mental energies more quickly and perhaps result in more frequent errors on a variety of tasks.

Link to Achievement

Reading: Short-term memory is important to reading achievement. Reading comprehension, involving long reading passages, may be affected by skills specifically related to working memory. Basic word reading may be impacted by deficits in short-term memory because it may interfere with acquiring letter and word identification skills.

Math: Short-term memory is important to math computation skills. For example, deficits in short-term memory may impact one's ability to remember a sequence of orally presented steps required to solve long math problems (i.e., first multiply, then add, then subtract).

Written Expression: Short-term memory is important to writing. Memory span is especially important to spelling skills, where working memory has shown relations with advanced writing skills (e.g., written expression).

Oral Language: A student with short-term memory deficits may have problems following oral directions because they are unable to retain the information long enough to be acted upon. A student with short-term memory deficits also may have problems with oral expression because of difficulties with word-find or being unable to retain information long enough to verbally express it.

Long-Term Retrieval

Technical Definition

Long-term retrieval is the ability to store information (e.g., concepts, ideas, items or names) in long-term memory and to retrieve it later fluently through association. It includes the ability to recall part of a previously learned unrelated pair of items when the other part is presented (i.e., paired-associative learning); the ability to produce rapidly a series of ideas, words, or phrases related to specific conditions or objects; the ability to draw or sketch several examples or elaborations rapidly when given a starting visual stimulus; and the ability to produce names for concepts rapidly. It also includes the ability to recall as many unrelated items as possible in any order after a large collection of items is presented; and the ability to recall a set of items where there is a meaningful relationship between items or the items create a meaningful connected discourse.

User Friendly Description

Long-term retrieval refers to an individual's ability to take and store a variety of information (e.g., ideas, names, concepts) in one's mind, and then later retrieve it quickly and easily at a later time using association. This ability does not represent what is stored in long-term memory. Rather, it represents the process of storing and retrieving information.

Link to Achievement

Reading: Long-term retrieval abilities are particularly important for reading. For example, elementary school children who have difficulty naming objects or categories of objects rapidly may have difficulty in reading. Associative memory abilities also play a role in reading achievement (i.e., being able to associate a letter shape to its name and its sound).

Math: Long-term retrieval abilities are important to math calculation skills. For example, students with deficits in long-term retrieval may have difficulty recalling basic addition, subtraction, multiplication, and/or division facts when encountered within a math problem.

Written Expression: Long-term retrieval abilities and naming facility in particular have demonstrated relations with written expression, primarily with the fluency aspect of writing.

Auditory Processing

Technical Definition

Auditory processing is the ability to perceive, analyze, and synthesize patterns among auditory stimuli. It includes the ability to process sounds, as in identifying, isolating, and analyzing sounds; the ability to process speech sounds, as in identifying, isolating, and blending or synthesizing sounds; and the ability to detect differences in speech sounds under conditions of little distraction or distortion.

User Friendly Description

Auditory processing refers to the ability to perceive, analyze, and synthesize a variety of auditory stimuli (e.g., sounds).

Link to Achievement

Reading: Auditory processing or "phonological awareness/processing" is very important to reading achievement or reading development. Students who have difficulty with processing auditory stimuli may experience problems with learning grapheme-to-phoneme correspondence, reading non-sense words, and decoding words due to an inability to segment, analyze, and synthesize speech sounds. Older students will usually have continued problems with decoding unfamiliar words.

Written Expression: Auditory processing is also very important for both writing skills and written expression. Students who are weak in auditory processing abilities may have difficulty spelling since this skill requires the ability to attend to the detailed sequence of sounds in words.

Oral Language: Auditory processing deficits may be linked to academic difficulties with listening comprehension. Students may have difficulty interpreting lectures, under-standing oral directions, and learning a foreign language.

Processing Speed

Technical Definition

Processing speed is the ability to perform cognitive tasks fluently and automatically, especially when under pressure to maintain focused attention and concentration. It includes the ability to search for and compare visual symbols rapidly, when presented side-by-side or separated in a visual field; the ability to perform tests that are relatively easy or that require very simple decisions rapidly; and the ability to manipulate and deal with numbers rapidly and accurately.

User Friendly Description

Processing speed provides a measure of an individual's ability to process simple or routine visual information quickly and effectively and to quickly perform tasks based on that information. When information is processed slowly, competing stimuli in immediate awareness may cause overload stress on short-term memory. Tasks that involve multiple, complex processes can be particularly confusing and frustrating. Completing tests and assignments within the usual time constraints can also be difficult even when the student has adequate skills and knowledge.

Link to Achievement

Reading: Perceptual speed is important during all school years, particularly the elementary school years. Slow processing speed may impact upon reasoning skills since the basic rapid process of symbols (e.g., letters) is often necessary for fluent reading.

Math: Processing speed is important to math achievement during all school years, particularly the elementary school years. Slow processing speed leads to a lack of automaticity in basic math operations (e.g., addition, subtraction, and multiplication).

Written Expression: Perceptual speed is important during all school years for basic writing and related to all ages for written expression.

- **Revision**

Attention/Executive Functions

Attention involves the regulation of arousal and vigilance, selective attention, sustained attention, attention span, as well as inhibition and control of behavior. Executive functioning allows for the planning and implementation of complex tasks. In so doing, one is able to monitor performance and correct errors while simultaneously maintaining awareness of task relevant information in the presence of irrelevant information. These abilities are essential to virtually all areas of academic performance.

Language Functions

Language functions include phonological processing, receptive language comprehension, understanding of the syntactic structure of language, automaticity with which semantic memory can be accessed (naming) and ease and facility of language production. Cognitive processing deficits in this area may be related to

difficulty recognizing phonological segments of words, difficulty in decoding, difficulty in word find or naming (accessing semantic memory automatically), and language comprehension. Academic areas affected by these weaknesses would include basic reading skills, reading comprehension, written expression, listening comprehension, oral expression, and math reasoning where the math problem is encoded in language.

Sensory Functions

Sensory functions are those functions or systems that mediate or bring about the production of speed, smooth and efficient limb and whole body movement, and dexterous movements of the hands and fingers, as well as systems that mediate equilibrium and sensory input at the tactile level and eye movement. Deficits in these areas are primarily related to math calculations and penmanship. Some studies have reported significant correlations between performance on finger discrimination and reading ability.

Visuospatial Processing

Visuospatial processing could be succinctly defined as visual comprehension, problem solving, and reasoning. It consists of many distinct but interrelated subcomponents, (e.g. visualization, location, directionality, copying, rotating objects mentally, understanding symbolic representations of external space, etc.). Deficits in these processing abilities have been associated with difficulties performing math calculations that present the student with numbers, charts, and math signs, as well as penmanship.

Memory and Learning

Memory includes the ability to encode, store, and retrieve verbal and nonverbal information. While classic definitions of learning may be viewed as synonymous with memory, psychologists frequently view learning as changes in the amount of information remembered from one trial to the next. Specific memory problems appear to be rare in children with developmental learning disorders. Memory problems occur more frequently as secondary deficits in attention, verbal processing and visual perception, or are a function of low global intelligence. Nevertheless, children with reading disabilities frequently have limited auditory memory span.

- **Assignment/Activity**

POINTS FOR DISCUSSIONS / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification. Note down those points:-

Points for Discussion

Points for Clarification

- References / Further Readings

UNIT 5: SOCIAL STUDIES

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**
- References / Further Readings

- **Introduction**

The purpose of a comprehensive assessment and evaluation is to accurately identify a student's patterns of strengths and needs. The term assessment is used in many different contexts for a variety of purposes in educational settings including individual and group, standardized and informal, and formative and summative. Some professionals use assessment broadly to include both assessment and evaluation. For this paper, we are differentiating assessment and evaluation to underscore the sequence, procedures, and decisions involved in a comprehensive process.

Assessment is used in this paper to refer to the collection of data through the use of multiple measures, including standardized and informal instruments and procedures. These measures yield comprehensive quantitative and qualitative data about an individual student. The results of continuous progress monitoring also may be used as part of individual and classroom assessments. Information from many of these sources of assessment data can and should be used to help ensure that the comprehensive assessment and evaluation accurately reflects how an individual student is performing.

Evaluation follows assessment and incorporates information from all data sources. In this paper, evaluation refers to the process of integrating, interpreting, and summarizing the comprehensive assessment data, including indirect and preexisting sources. The major goal of assessment and evaluation is to enable team members to use data to create a profile of a student's strengths and needs. The student profile informs decisions about identification, eligibility, services, and instruction. Comprehensive assessment and evaluation procedures are both critical for making an accurate diagnosis of students with learning disabilities. Procedures that are not comprehensive can result in identification of some individuals as having learning disabilities when they do not, and conversely, exclude some individuals who do have specific learning disabilities.

A Decade of Change in Legislation, Research, and Education

Over the past two decades since completion of NJCLD papers in 1987 and 1997, changes in legislation,

research, and education have not only brought change to many aspects of assessment and evaluation of all students, including students with learning disabilities, but also stimulated continued efforts to further enhance the assessment and evaluation process, as well as link it to instruction.

Legislation. Two U.S. federal education laws, the Elementary and Secondary Education Act (ESEA—recently called the No Child Left Behind Act of 2001) and the Individuals with Disabilities Education Improvement Act of 2004 (IDEA 2004), have had a major impact on instruction, as well as on the assessment, evaluation, identification, and eligibility of students suspected of having learning disabilities. A main goal of IDEA 2004 was to align special education law more closely with ESEA, the general education law, so the two could work together. Although both laws address the education of students who are struggling and students with disabilities, each law has a different On ESEA provides for a group entitlement (i.e., providing programming regulations for all learners), while IDEA is an entitlement for states to provide individual students who are found eligible with special education and related services.

ESEA recognizes the importance of aligning curriculum and assessment at the state and school levels by requiring that all students, including those with learning disabilities, participate in both the general education curriculum and statewide achievement tests, although some flexibility is permitted through alternate and modified assessment procedures for students with disabilities. In addition, ESEA emphasizes school achievement for all students by specifying that subgroups (disability subgroup, low socioeconomic status subgroup,

race/ethnicity subgroup, and English language learner [ELL] subgroup) be considered in the calculation of a school district's adequate yearly progress (AYP). Students identified as having learning disabilities are part of the disability subgroup. With more students with learning disabilities receiving their education in general education settings, a majority now participate in the standards-based curriculum and statewide achievement tests (U. S. Department of Education, 2009).

Now IDEA 2004 and ESEA complement each other. IDEA requires students with learning disabilities to have academic and/or functional individualized education programs (IEP) goals and participate in the general education curriculum. ESEA requires measurement of student progress in that curriculum. As a result, participation in state assessment programs measures student performance both in the general curriculum and on state standards that can provide helpful data as part of a student's special education assessment and evaluation process.

ESEA and IDEA also have a joint focus that has greatly strengthened the alignment of curriculum and assessment. ESEA calls for the use of research-based instruction and appropriate accommodations in assessment and instruction, while IDEA addresses the need for assessment and evaluation procedures that are intended to rule out underachievement due to inadequate instruction, modifies the basis for determining specific learning disabilities, and permits the use of data from research-based interventions during the assessment/evaluation process and prior to determining eligibility. Teams assessing individual students should provide assurance that appropriate core reading and

mathematics instruction was received prior to determination of a learning disability.

In addition, IDEA now permits state and local agencies "to use a process that determines if the child responds to scientific, research-based interventions" as part of the evaluation procedures for identifying children with specific learning disabilities (34 CFR 300.307(a)(2)). Data from such a process usually include the results of universal highrisk screening and use of an RTI approach, coupled with continuous progress monitoring. These represent new tools that previously were not specified for use when determining eligibility for special education services. Instead of eligibility being based primarily on a student's performance on individual standardized measures, IDEA has permitted states to expand the assessment and evaluation process to include information about the student's learning rate and level of performance.

IDEA also modified the basis for determining that a student has a specific learning disability and added *reading fluency* as an eighth instructional area to be considered as a criterion for determining eligibility. The 2004 reauthorization states that a child may be determined to have a specific learning disability only when the child does not achieve adequately for the child's age or to meet State-approved grade-level standards in one or more of the following areas, when provided with learning experiences and instruction appropriate for the child's age or State-approved grade-level standards:

i. oral expression

ii. listening comprehension

iii. written expression

iv. basic reading skill

v. reading fluency skills

vi. reading comprehension

vii. mathematics calculation

viii. mathematics problem solving

(34 CFR 300.309 (a)(1))

- **Objectives**

When conducting a multidisciplinary team assessment for IDEA purposes, the requirement for observation has been broadened to include "the child's learning environment," but a written evaluation report continues to be a required part of the evaluation process.

These changes in ESEA and IDEA legislation clearly provide opportunities for students to participate in quality core instruction in reading and mathematics designed to ensure that poor achievement is not a result of inappropriate or inadequate instruction. Thus, recent legislation has provided an alternative to reliance on a model based primarily on a severe discrepancy between achievement and ability in the learning disabilities identification and eligibility process.

Other legislative changes have influenced the assessment and evaluation process. These include provision for funding early intervening services as well as recognition of the importance of assistive technology, universal

design for learning, and postsecondary transition to educational success for many students with disabilities, including learning disabilities.

IDEA also has led to other changes in educational practices. The emphasis on use of state standards for educational planning and participation in accountability systems for all students has led to increased use of inclusive practices. The link to accountability is evident in IDEA requirements that incorporate statewide assessment results into the development of IEPs. In addition, goals for IEPs also are standards-based, and monitoring the progress toward these goals is often based on classroom formative and summative assessments.

Research. Several areas of research have influenced comprehensive assessment and evaluation components and processes. These focused on use of the discrepancy model, skills critical to reading success in the early grades, and development of a team-based problem-solving approach to assist students who are struggling academically. More recent research has emerged in many areas, including, but not limited to, implementation of response-based problem-solving models in literacy, complexities of reading, noncognitive influences, brain function, genetics, and accountability measures. These advances in research show promise for further enhancing effective comprehensive assessment and evaluation of students with learning disabilities, as well as impacting future assessment and instruction processes.

Because research did not support the rigid application of the commonly used discrepancy formula as the sole criterion for determination of specific learning disabilities (Fletcher et al., 1998; Foorman, Francis, Fletcher, &

Lynn, 1996; Francis, Fletcher, & Stuebing, 2005; Stanovich & Siegel, 1994), alternative approaches to classification decisions were needed. In the late 1990s, clinical research on critical beginning reading skills such as phonemic awareness, phonics, and explicit instruction (e.g., Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998; Fuchs & Fuchs, 2000; Fuchs et al., 2001; Fuchs & Fuchs, 2005; Torgesen, 2004; Torgesen et al., 1999) demonstrated that earlier identification and quality instruction could make a difference for students struggling with reading. As a result, RTI and other approaches to support student success prior to the determination of learning disabilities were proposed (Bradley, Danielson, & Hallahan, 2002; Gresham, 2002; Hallahan & Mercer, 2002; President's Commission on Excellence in Special Education, 2002; Ysseldyke, 2002). A key feature of RTI and similar approaches is assessment through universal screening and frequent monitoring of student progress that links to instruction (Fletcher, Lyons, Fuchs, & Barnes, 2007, pp. 263–264).

The call for a response-based problem-solving process has raised new questions about the role of RTI in a comprehensive assessment and evaluation process. A growing body of research concerns specific aspects of the process, including frequency of monitoring; intervention fidelity and intensity; effects in scaled-up models; longitudinal results; cost effectiveness; and maintenance of change over time. For example, a recent study comparing RTI continuous progress monitoring procedures (Jenkins, Graff, & Miglioretti, 2009) found that frequent, brief, timed assessments were no more useful in predicting success than assessments conducted two or three times per year. In mathematics, the specific

language, cognitive processes, and academic skills, which may or may not be impaired in students with learning disabilities, are not as well developed as those in reading and writing (Fletcher et al., 2007, p. 208). However, research is emerging on how mathematical computation and problem solving can be effectively integrated into an RTI or problem-solving process. Such research is reported to be "just beginning" based on careful review of nine studies of procedures intended to be implemented in Tier 2 (Newman- Gonchar, Clarke, & Gersten, 2009, p. 30).

Emerging reading research is providing new understanding about how specific complex reading components interact with language (Fletcher et al., 2007). For example, the fluency component of reading is often narrowly defined as automatic, and therefore, rapid word recognition, but "...there is a growing consensus that accuracy, automaticity, and [pitch, or] prosody all..." contribute to fluency and comprehension (Kuhn, Schwanenflugel, & Meisinger, 2010). In a recent related study, Wanzek, Roberts, and Linan-Thompson (2010) compared oral reading fluency performance in primary grade students with third grade reading comprehension measured on both state and nationally normed tests. Earlier data demonstrating that oral reading fluency has predictive validity for reading comprehension (Stage & Jacobson, 2001; Wiley & Deno, 2005) was not only confirmed, but extended to both assessments. However, students were more likely to show proficiency on state-normed than on nationally-normed tests, suggesting that students passing a state test may still be at risk for problems in reading achievement.

In contrast, literacy research has evolved beyond reading and writing to include how oral and written language interacts with cognitive processes within classroom, family, and community contexts. The focus also has expanded to address literacy across the age-span from early and emerging literacy, to adolescent, adult, workforce, and lifelong literacy. Because assessment instruments and data are developed to reflect the ways in which reading is defined (Altwerger, Jordan, & Shelton, 2007), continued research focusing on the components and interconnectedness of language, reading, and literacy and their components promises to influence the assessment and evaluation process, as well as intervention from primary grades through high school and beyond.

- **Definitions**

Sensitivity to cultural and linguistic diversity in assessments and assessment procedures is another factor that is receiving attention in reading and literacy research (Figueroa & Newsome, 2006; Wilkinson, Ortiz, Robertson, & Kushner, 2006). Although assessment instruments are now translated into Spanish, Chinese, and other languages, particular care must be taken when assessing ELL students whose native language is not English. Identifying learning disabilities in such students requires sensitivity, knowledge, and skill on the part of team members (Klingner & Harry, 2006; Macswan & Rolstad, 2006). Recent research has begun to address the importance of understanding the interactive factors of language and literacy development in bilingual students

(Petrovic, 2010). Other recent research is exploring how noncognitive variables such as motivation (Marinak & Gambrell, 2008), engagement (Guthrie & Wigfield, 2000), students' interests and self-efficacy (Hampton & Mason, 2003), influence student learning, including reading and literacy development (Afflerbach, 2007). In addition to confirming the complexity of learning and literacy processes, research suggests the need for a variety of assessment instruments, tools, and procedures to determine if, when, and how such variables affect learning in students with learning disabilities, as well as ensuring that instructional approaches are selected that enhance noncognitive variables in students.

New advances in medical research in areas such as brain function and genetics are also contributing to the understanding and identification of learning disabilities. For example, the use of brain imaging as a tool to relate brain activity to specific language behaviors is showing promise in contributing information to the learning disabilities identification process (Price & McCrory, 2005; Pugh et al., 2000; Shaywitz et al., 2002). Similarly, recent progress in research on genetic influences is contributing to a greater understanding of the bases of learning disabilities (Olson, 2005; Tapia-Páez, Tammimies, Massinen, Roy, & Kere, 2008).

IDEA also has stimulated cutting-edge research on applying new statistical models to document changes in student proficiency more clearly than the model mandated by ESEA for determining accountability and adequate yearly progress (AYP). There is particular interest in growth models that incorporate changes in achievement of individual students into statewide accountability data for calculation of AYP (Goldschmidt et

al., 2005). Following pilot programs in two states during the 2005–2006 school year, nine states submitted proposals for implementing growth models in the 2007-2008 school year (U. S. Department of Education, 2008). The chosen pilot programs can vary in method and characteristics, but must meet nine specific required design characteristics. Careful examination of data from large scale pilot projects is intended to guide states with basic questions such as "How much growth is enough?" and "How do we report growth?" and with technical issues such as precision, reliability, stability, and validity (Auty et al., 2008, p. 16).

The increased attention to research in these and other new and challenging assessment contexts can be expected to continue shedding new light on the assessment/instructional process for all students, including those with learning disabilities.

Education. Growth in the number of students receiving special education services and who are identified as having disabilities remained relatively stable for a number of years (60 million in 1995 and 65 million in 2004). During the same period, the percentage of students with learning disabilities in the general school age population (ages 6–21 years) dropped from 4.3 % in 1995 to 4.2% in 2004 (U.S. Department of Education, 2009). Concomitantly, the number of students from "minority backgrounds" identified with intellectual disabilities, behavior disorders, and to a lesser degree, learning disabilities, has been found to be disproportionately represented in special programs (Gamm, 2007). The issue of disproportionality has led to increased attention to RTI and other approaches intended to reduce over identification.

Given the increasing diversity of the population in the United States, educators and related service providers are becoming familiar with nonbiased assessment techniques, assessment tools that are available in different languages, and protocols for selecting assessment tools that include norms that are sensitive to cultural and linguistic differences. Professionals also are becoming more aware of the need to be able to interpret assessment results for parents and families, as well as other professionals on the team. Professional development opportunities are available that include more training in multicultural issues and nonbiased assessments for school personnel. Increasing recruitment of professionals from culturally and linguistically diverse backgrounds is another means of improving services for an increasingly diverse student population.

Other educational practice trends have implications for appropriate comprehensive assessment and evaluation practices. These include the following:

1. Increased access to and participation in the general education curriculum requires that assessment personnel and related service providers are familiar with academic achievement standards and expectations.

2. Increased emphasis on the use of instructionally linked assessments, such as the progress-monitoring data component of RTI and formative and summative classroom and school assessments, in addition to individualized standardized assessment measurement tools, means that team members must understand the nature, purpose,

potential, and limitations of such data for instruction.

3. Increased understanding of how students learn and demonstrate their knowledge and skills has resulted in the development of evidence-based instructional strategies, techniques, and curricula, which may either prevent the need for eligibility determination or enhance instructional access following such determination.

4. Increased attention to individual differences in learning has improved our understanding of how to individualize help for low achieving students. Following the earlier work of many educators, recent practitioners (e.g., Clay, 1998, 2002; Goodman, Watson, & Burke, 2005) have recognized that no two children take the same path to becoming independent readers and writers and have developed assessment tools and instructional guides for teachers. Systematic standardized observations of emergent and struggling readers are used to map literacy growth. Areas such as oral language, concepts about print, phonemic awareness, vocabulary knowledge, reading text, reliance on semantic or syntactic clues in oral reading, and use of strategies in written expression are assessed and often also linked to or embedded in instruction (e.g., Clay, 2002; Goodman et al., 2005). Thus, educators are more aware that group assessments are not sufficient to guide instruction, but must be supplemented by assessments that illuminate individual differences, including authentic learning materials observed in natural conditions.

5. Ongoing recognition of issues related to assessment of ELLs includes factors such as a lack of valid and reliable assessment tools, limited English skills masking disabilities, and the poor match of cultural/linguistic characteristics with instruction or significant life events (Liu, Ortiz, Wilkinson, Robertson, & Kushner, 2008).

6. The age at which each student receiving special education services must have an individual transition plan (ITP) has changed from age 14 to age 16 years (IDEA 2004). Because states may retain the earlier required age for an ITP, or move to the later age, the timing of re-evaluations for students varies from state to state. The possibility of delaying ITP decisions until age 16 brings concerns about the usefulness of the assessment and evaluation processes. Delay in linking assessment to timely decisions about courses, curriculum, services, and postsecondary options also raises questions about the shorter planning time to support a successful transition from high school for each student.

7. The shift to the development of a summary of performance (SOP) for reporting student academic achievement and functional performance instead of the previously mandated re-evaluation means that school personnel need to be aware of their state's SOP requirements. IDEA now mandates that the SOP include recommendations to assist the student in meeting individual postsecondary goals. Because the SOP must meet the needs of all students with disabilities, the format states adopt requires a breadth of academic and functional information that

can reflect individual performance and recommendations for students with mild, moderate, and severe learning disabilities. In addition, teachers, related service providers, families, and students (as appropriate) will need to be prepared to work together to describe academic achievement and behavioral and functional skills, and recommend accommodations for postsecondary education and/or employment goals.

8. A provision of IDEA 2004 that discourages the use of a severe discrepancy between achievement and ability as a criterion for identification of students with learning disabilities has led to less reliance on a single data source. As a result, a broader range of measurement tools and data is used to inform assessment, evaluation, and eligibility processes. Important questions of the occurrence of other special learning needs along with learning disabilities also can be more clearly delineated with such assessment procedures.

9. Increased access to technological advances serves to simplify, streamline, and standardize data collection for assessment and data interpretation for evaluation. In some places, teachers are using technological devices to record and store progress-monitoring data. Computer software provides online achievement testing, automated interpretations of standardized test data, and banks of goals that can be incorporated into IEPs, individualized family service plans (IFSPs), and ITPs. Some teachers are using software to generate or select instructional objectives and activities that are correlated with state standards. However, teachers still need to

individualize objectives based on a combination of evaluation reports, state-specific general education curriculum objectives, and the particular needs and interests of the student. In addition, use of principles of universal design for learning and accommodations using assistive technology are changing the landscape of both assessment instruments and instructional material options.

10. Recent efforts spearheaded by the Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA) have focused on the need for Common Core State Standards (CCSSO, 2009). The standards would initially address (1) English-language arts and mathematics for grades K–12 and (2) College and Career-Readiness. As noted by Phillips and Wong (2010), "Having a set of common standards ... lays the groundwork for developing assessments aligned with those college-ready standards and for developing teaching tools that are aligned with both the standards and the assessments" (p. 37).

- **Summary**

Guiding Principles for Comprehensive Assessment and Evaluation

The NJCLD views adherence to the following guiding principles as vital to a comprehensive assessment and evaluation for students with learning disabilities:

1. Assessment and evaluation are guided by a consistent understanding of learning disabilities that recognizes intra-individual differences, wide variation in severity, and the need for specialized instruction and accommodations to inform instruction.

2. No single data source is sufficient for identifying students with learning disabilities; this includes the data from any one quantitative formula such as a discrepancy between standardized ability and achievement scores.

3. Professionals with expertise in learning disabilities are necessary to conduct a comprehensive assessment and evaluation system for students suspected of having learning disabilities. These professionals from various disciplines make up a multidisciplinary team along with the family, and the student (as appropriate). To make identification and eligibility decisions, the team must possess the range of competencies necessary for evaluation and identification.

4. Multidisciplinary teams that include the child's parents are expected to consider all aspects of a student's learning and behavior that assist or interfere with school performance. Following eligibility determination, the development of goals based on identified needs will lead to selection of appropriate services. Development of specialized instruction should be a collaborative process that ensures meaningful participation of families under the guidance and direction of a person designated as a team chair, case manager, service coordinator, or

similar position. Such a person should ensure that germane content from the evaluation is shared with and considered by all relevant parties for implementation.

5. Comprehensive assessment measures, procedures, and practices are necessary to enable multidisciplinary teams to differentiate learning disabilities from underachievement and other types of learning and behavior problems. Underachievement is common among students with learning disabilities, but it is not synonymous with learning disabilities.

6. Multidisciplinary teams need the information, opportunity, and time to consider and integrate assessment findings in order to engage in a team evaluation that informs identification, eligibility, services, and instruction.

7. Multidisciplinary teams work to ensure that administrators and families recognize the benefit of an accurate diagnosis to inform instruction. Historically, NJCLD (2001a) noted that, at times, families or teams may choose to select an eligibility category for purposes of special education identification that seems preferable to another eligibility category that may seem to be less desirable (e.g., learning disability vs. mental retardation).

Response to Intervention

The shift from use of a discrepancy model to an RTI model is still in progress across the country. How RTI is used when determining whether a student has learning

disabilities and in what ways to alter interventions when student responses are inadequate remain emerging areas of practice. A key feature of an RTI process is the use of continuous progress monitoring in general education classrooms to provide frequent, brief, direct assessment of individual students (NJCLD, 2005). Typically, such intervention is in the area of reading and mathematics or behavior and includes criteria to indicate whether the student is making sufficient progress. Performance on such assessment tasks is intended to determine when academic or behavioral instruction should be provided in a smaller group, with greater intensity, using a different method, or if additional comprehensive assessment is indicated. Although RTI data can provide useful information about specific early reading skills, it cannot be used as the sole basis for determining whether a student has learning disabilities. Indeed, IDEA 2004 regulations specify that RTI data can be a component of the identification process for learning disabilities. As indicated in the analysis of comments and changes that accompanied the IDEA 2004 regulations, an RTI process does not replace the need for a comprehensive evaluation. A public agency must use a variety of data gathering tools and strategies even if an RTI process is used. The results of an RTI process may be one component of the information reviewed as part of the [required] evaluation procedures (Assistance to States for the Education of Children with Disabilities and Preschool Grants for Children with Disabilities; Final Rule, 2006, pp. 46648).

Whenever RTI processes are considered for implementation in various states and localities, in academic and behavioral areas beyond reading, and at

levels beyond the primary grades, it is also important to note that an effective RTI process can provide valuable, but not sufficient data for the comprehensive assessment and evaluation required to identify learning disabilities. Data from an RTI process should be part of the analysis, synthesis, and recommendations used for evaluation, identification, eligibility, and program planning.

Instruments and Procedures for Comprehensive Assessment and Evaluation

To obtain a comprehensive set of quantitative and qualitative data, accurate and useful information about an individual student's status and needs must be derived from a variety of assessment instruments and procedures including RTI data, if available. A comprehensive assessment and evaluation should

1. Use a valid and the most current version of any standardized assessment.
2. Use multiple measures, including both standardized and nonstandardized assessments, and other data sources, such as
    - case history and interviews with parents, educators, related professionals, and the student (if appropriate);
    - evaluations and information provided by parents;
    - direct observations that yield informal (e.g., anecdotal reports) or data-based information (e.g., frequency recordings) in multiple settings and on more than one occasion;

- standardized tests that are reliable and valid, as well as culturally, linguistically, developmentally, and age appropriate;
- curriculum-based assessments, task and error pattern analysis (e.g., miscue analysis), portfolios, diagnostic teaching, and other nonstandardized approaches;
- continuous progress monitoring repeated during instruction and over time.

3. Consider all components of the definition of specific learning disabilities in IDEA 2004 and/or its regulations, including
   - exclusionary factors;
   - inclusionary factors;
   - the eight areas of specific learning disabilities (i.e., oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, reading fluency, mathematics calculation, mathematics problem solving);
   - the intra-individual differences in a student, as demonstrated by "a pattern of strengths and weaknesses in performance, achievement, or both relative to age, State-approved grade level standards or intellectual development" 34 CFR 300.309(a)(2)(ii).
4. Examine functioning and/or ability levels across domains of motor, sensory, cognitive, communication, and behavior, including specific areas of cognitive and integrative difficulties in

perception; memory; attention; sequencing; motor planning and coordination; and thinking, reasoning, and organization.

5. Adhere to the accepted and recommended procedures for administration, scoring, and reporting of standardized measures. Express results that maximize comparability across measures (i.e., standard scores). Age or grade equivalents are not appropriate to report.
6. Provide confidence interval and standard error of measure, if available.
7. Integrate the standardized and informal data collected.
8. Balance and discuss the information gathered from both standardized and nonstandardized data, which describes the student's current level of academic performance and functional skills and informs decisions about identification, eligibility, services, and instructional planning.

- **Revision**

Diagnosis: Determining Whether a Student Has Learning Disabilities

Consideration of Learning Disability Characteristics. A comprehensive assessment is conducted to determine eligibility for special education and to identify the specific areas of strength and unique educational needs. The

reason that comprehensive assessment and evaluation procedures are needed is because learning disabilities may be manifested differently among individuals over time, in severity, and across settings. Furthermore, the manifestations of learning disabilities are often subtle and may be hidden when students use compensatory or avoidance strategies. Consequently, it is important for the team to consider the following characteristics of learning disabilities in the course of the assessment and evaluation processes:

1. Learning disabilities, like other disabilities, vary with the individual. Intra-individual differences may include strengths and weaknesses in performance, achievement, or both. In addition, each of these differences must be considered relative to age, grade, or intellectual level across and within areas pertinent to learning (e.g., listening, reading, writing, reasoning, and mathematics).

2. Learning disabilities exist on a continuum from mild to severe.

3. Learning disabilities can appear differently in various academic and nonacademic settings.

4. Learning disabilities vary in their manifestations depending on task demands and may include difficulties in language (i.e., listening, written and oral expression, spelling, reading), mathematics, handwriting, memory, perception, cognition, fine motor expression, social skills, and executive functions (e.g., attention, organization, reasoning).

5. Learning disabilities can occur in students who are also gifted and/or talented. These "twice

exceptional" students often achieve at age and grade expectations and are thus not considered to be struggling in school (Callard-Szulgit, 2008), despite showing academic and social problems characteristic of students with learning disabilities, Often these students can perform above age- and/or grade-based achievement levels, if provided with needed individualized learning opportunities.

Distinguishing Between Learning Disabilities and Other Conditions

Differential diagnosis is necessary to distinguish among disorders, syndromes, and factors that can interfere with academic performance. Teams including the child's parents need to determine the nature of the presenting problem and factors contributing to academic or behavioral difficulties. The following factors need to be considered to make an accurate differential diagnosis:

1. Definitions of learning disabilities always include acknowledgment of exclusionary factors, meaning that the students' learning needs are not due primarily to intellectual disabilities, sensory impairments, emotional/social difficulties, cultural and linguistic factors, or adverse environmental conditions.

2. Documentation of underachievement in one or more areas is a necessary, but not a sufficient criterion, for the diagnosis of learning disabilities.

3. Cultural and linguistic differences do not preclude the possibility that an individual also has learning disabilities.

4. Continued learning problems following high-quality, research-based instruction can be an indication of learning disabilities; however, inadequate instruction does not preclude the possibility that a student has learning disabilities.

5. Factors such as poor self-regulatory behaviors (e.g., inattention, lack of motivation, and impulsivity), poor social perception (e.g., inappropriate social judgment), and inappropriate social interaction (e.g., problems relating to peers) are not in themselves considered learning disabilities, but they may be concomitant with learning disabilities. A comprehensive assessment must address all areas of suspected disability, so if these conditions exist it is presumed that they would have been considered and addressed during the assessment. If this is the case, such information would be integrated into the comprehensive assessment report and may affect the program, curriculum, and/or instructional recommendations for the individual student.

6. Students with other conditions (e.g., autism, sensory impairment, emotional disturbance) also may be diagnosed as having concomitant learning disabilities.

7. Evidence of intra-individual differences in skills and performance can suggest learning disabilities.

8. Although a student with learning disabilities may show a severe discrepancy between ability and achievement, discrepancy formulas cannot be the sole basis for determining a learning disability under IDEA 2004.

9. Because scores on intelligence tests may not be an accurate reflection of intellectual ability, they may not be needed for a comprehensive assessment to determine the presence of a learning disability. Language impairment, for example, can reduce performance on intelligence tests and other achievement measures. Caution must be used in the selection of intelligence tests and interpretation of results for learning disability determination.

10. Sensitivity to validity and reliability issues must be considered when assessing students from culturally and linguistically diverse backgrounds, including ELLs.

Eligibility: Determining Whether a Student Needs Special Education and Related Services

Comprehensive assessment and evaluation processes are intended to assist the IEP team in determining whether an individual should be identified or diagnosed as having a learning disability or disabilities (i.e., meets eligibility criteria). Eligibility criteria should guide the assessment team. If the student does meet criteria, the results of the assessment will be used to assist the team in identifying strengths and needs, establishing goals and, finally, determining the combination of services that might best meet the identified needs. The multidisciplinary team conducting the assessment and evaluation is expected to identify a student without regard to the prospects of the services needed to address the student's identified needs. Therefore, the decision about diagnosis should not be based on any of the following factors:

1. Absence of an appropriate placement or availability of services;
2. Lack of funds or resources;
3. Desire or intention to generate special education funds.

Diagnostic Summary and Eligibility Decision

The data from the comprehensive assessment and evaluation are key elements for making the decision about eligibility of an individual who is identified as having learning disabilities. The decision-making alternatives include the following:

1. If the student is found eligible for special education and in need of special education and/or related services, that determination is communicated to the team responsible for developing the IEP for the student, if this team is not the same team as the one conducting the assessment.
2. If the student is determined not to meet criteria or be in need of special education and/or related services, pertinent curricular and instructional information should be forwarded to the student's general education classroom with specific, practical suggestions for implementation in appropriate educational/behavioral areas.
3. If the student is found not to require special education and related services under IDEA 2004 at the time, the possibility of requiring support or services under Section 504 of the U.S.Vocational Rehabilitation Act of 1973 may need to be explored.

However, 504 eligibility should not be a default of not meeting IDEA criteria.

4. If it is decided that the student needs no special considerations at the present time, the parents, student (if appropriate), and teacher are so informed. The assessment team should make instructional and other recommendations, if needed, for students who do not quality for IDEA services based on the information gathered during the assessment.

5.

Multidisciplinary Team Documentation

IDEA 2004 requires a written evaluation report as part of the assessment and evaluation processes. Teams may develop an integrated multidisciplinary assessment report that contains all of the information on assessments completed by the various professionals. This allows for integration of all perspectives. The multidisciplinary team at the IEP meeting must make a determination of eligibility using the criteria set forth under IDEA and applying any appropriate state criteria. Once eligibility is determined, teams need to identify areas of strength and need, set goals to address each area of need and capitalize on strengths, and determine appropriate services from a continuum of options.

The documentation developed from the comprehensive assessment and evaluation by the multidisciplinary team should be linked directly to the IEP, IFSP, ITP, and implementation of interventions and instruction. Data from continuous progress monitoring and curriculum-based measures, as well as data concerning

developmental, cognitive, communication, learning, academic, and behavioral/social areas are important in program planning for young children. For older students, functional, organizational, self-advocacy, intrapersonal, work-related, and independent living areas also should be summarized to inform the program planning process.

The documentation should include both quantitative and qualitative data from both broad and specifically targeted assessment instruments and techniques appropriate to the individual student. The data should reflect the multiple perspectives of general education curricular and academic skills, as well as more specific areas that can create the unexpectedly low performance typical of individuals with learning disabilities despite appropriate instruction.

- **Assignment/Activity**

POINTS FOR DISCUSSIONS / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification. Note down those points:-

Points for Discussion

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_____

_____

Points for Clarification

- References / Further Readings

BLOCK 3: INSTRUCTIONAL PLANNING

UNIT 1: MODELS OF INSTRUCTIONAL PLANNING – ADDIE

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**
- References / Further Readings

- **Introduction**

Linking Evaluation With Instruction and Transition

Data from the assessment and evaluation should guide both instruction and transition as appropriate. If the eligibility determination is made at a transition point from early childhood, elementary, middle, or secondary school (NJCLD, 2007), or from public to private school, the data also should be used to inform the IFSP, IEP, ITP, or SOP.

As various service options and interventions emerge through discussion, each professional should represent

his or her own discipline-specific expertise and strive to integrate it with the multiple perspectives of other professionals. The variety of perspectives provided by multidisciplinary input into the evaluation should suggest multiple implications and assist in projecting student goals and plans.

Team members including the child's parents participating in the assessment and evaluation processes should provide suggestions about student strengths and needs, accommodations, and assistive technology, support from related service providers, as well as suggested instructional, classroom management, and motivational strategies on the IEP. Recommendations about how and why specific instructional settings and teaching approaches might be beneficial also should be addressed.

When each professional's own background and expertise is brought to and respected by the team and valued along with input from the child's parents, the team maximizes the integration of individual contributions. In this way, the multidisciplinary identification/eligibility/educational planning processes are greatly enhanced by the collegial thoroughness of multiple, comprehensive input at every level. Sufficient time should be provided to allow a thorough and thoughtful analysis and synthesis of relevant content so that the evaluation can be shared among participating parties.

The instruction and transition plans developed from the evaluation should be based on information about both the student's learning strengths and learning needs, as well as information about mismatches between the student's abilities and expectations in the educational context.

Plans should be relevant to meeting specific contextually based needs.

Recommendations

Strides have been made over the past decade in legislation, research, and education to refine and enhance the comprehensive assessment and evaluation process. The requirements for comprehensive assessment and evaluation are codified in the special education regulations of every State Education Agency (SEA), according to IDEA 2004.

The assessment and evaluation process is an integral part of educational decisions concerning students who may have learning disabilities.

To assure the continued advancement of professional practice in comprehensive assessment and evaluation of students with, or suspected of having, learning disabilities, the NJCLD strongly supports and advocates for the following recommendations:

Research:

1. Researchers should conduct studies to guide the selection of the most relevant and appropriate battery of assessment measures to identify students with learning disabilities and inform instruction.

2. Ongoing research should be undertaken to identify and expand approaches to alternative models of assessment of students with learning disabilities (e.g., dynamic assessment, principles of universal design for learning, growth models).

3. Developmental data should be collected on older students on a variety of complex skills, such as

subsystems of language, literacy, and academic content areas.

4. Significant attention should be given to research in the development of assessment measures with adequate sensitivity and specificity for students with learning disabilities across ages. Such research should include a focus on the critical issue of disproportionality in special education, especially the overrepresentation of students from culturally and linguistically diverse backgrounds.

5. Large scale, longitudinal studies across states and local districts are needed to systematically explore comprehensive assessment and evaluation processes. This research would include collecting and examining RTI data, making comparisons to previously relied-upon data, and implementing needed changes.

6. Additional research in RTI is needed in such areas as intervention fidelity, effects in scaled-up models, longitudinal results, cost effectiveness, and maintenance of change over time.

7. Researchers and school district personnel should collaborate to establish and expand the longitudinal data bases to inform the field about optimal assessment protocols that are linked to student progress and outcomes.

8. Researchers and educators should continue to examine new technologies, including universal design characteristics, that may enhance the gathering and use of accurate, meaningful, and reliable data for the assessment and evaluation

processes. New technologies that increase the amount, types, and complexity of assessment data may lead to greater understanding of relationships between data collection and effectiveness of instructional decision making.

- **Objectives**

Professional Development

1. Ongoing education should occur for all professionals who are expected to participate in team decision making so they may consistently demonstrate the ability to partner with other professionals, families, and students in all phases of the assessment, evaluation, and program planning processes.

2. Administrative, teaching, and related service providers should be made aware of the potential impact of cultural and linguistic diversity on the selection, administration, and interpretation of assessment measures, as well as on identification, eligibility, and instructional processes. Planned, periodic professional development activities, including, but not limited to, opportunities for video observations, discussions, and interactive sessions, along with printed information, written reminders on relevant documents, and other experiences are needed to ensure both understanding and application by all professionals in education settings.

3. Professional development should be provided for middle and secondary school personnel that focuses on the implications of recent legislation and increased practical assessment information that

supports families and students as they prepare for transition from high school to postsecondary options. Understanding the role of assessment in shaping student goals, courses, and curriculum; and in developing and finalizing the SOP under IDEA mandates is critical. Equally important are knowing the protections of the Americans with Disabilities Act Amendment Act of 2008 (ADAAA), meeting admission criteria including a psycho educational or medical evaluation, and accessing needed support services such as accommodations, assistive technology, and universal design for learning.

4. State and local agencies should provide professional development for all educators, including general education teachers and school and district administrators, to ensure understanding of the parameters for the determination of learning disabilities, comprehensive assessment and evaluation, and instructional practices.

5. Educators should keep up-to-date about legislation, research, and education that impact their level of involvement in such areas as data collection, assessment, and evaluation components. An individual professional growth plan developed in collaboration with appropriate education personnel may be useful.

- **Definitions**

Families and Advocates

1. School district personnel should expand meaningful ways in which families and other advocates can be

involved in the comprehensive assessment and evaluation of learning disabilities for their children.

2. School districts and other entities should increase information and training for families and other advocates of both mandated and recommended components of the comprehensive assessment and evaluation process for individual students whose learning difficulties may be due to learning disabilities.

3. School districts should ensure that educational personnel understand and can communicate to families the necessity for early, collaborative, and focused transition assessment and planning. Families of students who may seek admission to postsecondary education need to be aware that although the SOP document required under IDEA can be helpful, "most colleges still require a current psycho educational evaluation or a medical report from a qualified physician to determine eligibility and protection under the ADA" (Shaw, Madaus, & Dukes, 2010, p. 239).

- **Summary**

Administration/Leadership

1. School administrators must provide the infrastructure and resources for effective assessment and evaluation (e.g., appropriate and current assessment tools, current materials, continuing professional development), data-driven and high quality instruction, time for data collection

and analysis, and collaboration (e.g. sufficient joint planning time for teams).

2. School and district administrators should provide needed leadership and logistical support to multidisciplinary assessment team members to ensure the appropriate application of the comprehensive assessment and evaluation processes.

3. Educators should critically examine the relationship between curriculum, standards, and accountability measures and the multidimensional nature of comprehensive assessment and evaluation to ensure that meaningful information is available for decision making.

4. Researchers, educators, and policy makers should examine assessment practices to ensure that students from culturally and linguistically diverse backgrounds, particularly ELLs, are provided with nonbiased assessment measures.

5. School districts should take responsibility for providing school administrators with experiences, information, and supports that foster implementation of positive school practices based on research.

6. Policy makers, administrators, and educators should examine assessment, evaluation, and services practices to ensure that gifted students with learning disabilities are provided with learning opportunities to perform at achievement levels beyond their chronological age or grade.

7. State and district administrators need to clarify that intra-individual differences occur as a pattern of strengths and weaknesses in performance and/or achievement within specific domains, such as behavior, cognition, communication, and academics. IDEA 2004 does not specify the areas of performance and/or achievement that constitute these intra-individual differences or patterns.

- **Revision**
- **Assignment/Activity**

POINTS FOR DISCUSSIONS / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification. Note down those points:-

Points for Discussion

Points for Clarification

UNIT 2: TAXONOMIES OF LEARNING – COGNITIVE (BLOOM'S AND AN AND ANDERSON), PSYCHOMOTOR & AFFECTIVE

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**
- References / Further Readings

The definition of learning disability has varied over time, across jurisdictions and among disciplines. In 2002, the Ministry of Education adopted the following definition of learning disabilities, consistent with the definition adopted by the Learning Disabilities Association of Canada and the BC Association of School Psychologists.

Learning Disabilities refer to a number of conditions that might affect the acquisition, organization, retention, understanding or use of verbal or nonverbal information. These disorders affect learning in individuals who otherwise demonstrate at least average abilities essential for thinking and/or reasoning. As such, learning disabilities are distinct from global intellectual disabilities.

Learning disabilities result from impairments in one or more processes related to perceiving, thinking, remembering or learning. These include, but are not limited to language processing, phonological processing, visual spatial processing, processing speed, memory, attention and executive functions (e.g. planning and decision making).

Learning disabilities vary in severity and may interfere with the acquisition and use of one or more of the following:

oral language (e.g., listening, speaking, understanding)
reading (e.g., decoding, phonetic knowledge, word recognition, comprehension)
written language (e.g., spelling and written expression)
mathematics (e.g., computation, problem solving)

Learning disabilities may also involve difficulties with organizational skills, social perception, social interaction and perspective taking. Learning disabilities are life-long. The way in which they are expressed may vary over an individual's lifetime, depending on the interaction between the demands of the environment and the individual's strengths and needs. Learning disabilities are suggested by unexpected academic under-achievement or achievement that is maintained only by unusually high levels of effort and support.

Supporting Students with Learning Disabilities PAGE | 7 What is a Learning Disabi lity? *Learning disabilities are due to genetic and/or neurological factors or injury that alters brain function in a manner that affects one or more processes relate to learning. These disorders are not due primarily to hearing and/or vision problems, social-economic factors, cultural or linguistic differences, lack of motivation, inadequate or insufficient instruction, although these factors may further complicate the challenges faced by individuals with learning disabilities. Learning disabilities may co-exist with other disorders such as attention, behavioural or emotional disorders, sensory impairments, or other medical conditions.*

Learning disabilities can interfere with a student meeting his or her intellectual and life potential. Learning disabilities result in unexpected academic underachievement. Learning disabilities may impact the acquisition, organization, understanding, retention and/or use of information.

Learning disabilities are complex and go beyond the stereotypical perceptions of the disorder as simply reading difficulties, or letter reversals. They vary considerably, both in terms of the functions they impact and the severity of the impact experienced. The appropriate accommodations depend upon the individual's strengths as well as his/her specific difficulties.

Frequently, learning disabilities are not detected before children start school. Many students with learning disabilities display no signs of difficulty, except when they attempt the specific academic tasks that challenge their particular area of cognitive processing difficulty.

Unlike many other disabilities, identifying a learning disability poses some particular challenges since processing disorders are assessed through inference based on student responses. It might not be obvious that a student's learning difficulties are due to a learning

disability. The specific needs of individuals with learning disabilities change and evolve throughout their lifetime. This does not mean the disability no longer exists, but by varying the activities they undertake and the strategies they develop to address their particular learning disabilities, students may experience different challenges at different times. Supporting Students with Learning Disabilities PAGE | 8 What is a Learning Disabi lity?

Prevalence of Learning Disabilities

Although estimates of their prevalence vary according to the definition and diagnostic criteria used in to identify them, learning disabilities are relatively common.

In BC, the number of students identified as receiving services for learning disabilities is reported to be about three percent of the student population across school districts. In this province, boards of education only report students as having a learning disability when they are receiving services.

Students with mild to moderate learning disabilities will often have their learning needs met within regular learning environments without supplementary special education services, particularly where learning environments and instructional strategies are in place that accommodate a range of learning differences, or when students have developed strategies that enable them to independently compensate for their learning disabilities. If students do not receive special services, they are not reported to the Ministry of Education by boards or reflected in BC's provincial learning disability statistics. Supporting Students with Learning Disabilities PAGE | 9 What is a Learning Disabi lity?

Common Features

Although there is considerable diversity among individuals with learning disabilities, the literature consistently identifies some common characteristics of learning disabilities.

Due to individual differences, no single description or profile can represent all individuals with learning disabilities. Since learning disabilities occur along a spectrum of severity, people can experience mild to significant impacts.

Students with learning disabilities have average to above average intelligence and potential, and while they may demonstrate unexpected underachievement compared to their abilities, they can experience academic success and lead happy, successful lives.

Self-advocacy helps students gain higher self-perceptions, stronger self-esteem and independence. Students are most likely to experience success in secondary and post-secondary studies if they understand and know how to explain their disabilities, can describe the accommodations that support their learning and engage with an adult to support them in navigating their school experience.

Early identification and intervention, appropriate adaptations and supports are keys to success. If a student's performance is assessed in the absence of appropriate adaptations, the assessment may not accurately measure the student's knowledge.

Success for a student with learning disabilities does not mean the disorder disappears. It means that the student makes effective use of strengths and compensatory strategies to accomplish personal and educational goals.

Learning Disability and Behaviour

Teachers should explore the possible existence of a learning disability when a student who appears to be capable has a history of struggling with specific components of school and/or begins to demonstrate behavioural difficulties.

Students with undetected learning disabilities might demonstrate undesirable behaviour for a variety of reasons. They might feel angry, sad, lonely, frustrated, or hopeless as a result of focusing on their difficulties. Frustration might arise out of the students' level of performance compared to their level of actual ability, lack of understanding of why they struggle to perform the task or sometimes the inability to communicate in an appropriate way.

A student might also exhibit inappropriate behaviour in order to avoid the frustrating task itself. At other times behaviour might result from poor self-esteem, connected to the student's focus on what he/she can't do; or a student might quit trying, believing that no matter how hard they try they will never attain success. Other behaviour might be the result of an emotional disturbance. However the learning difficulty presents itself, students with learning disabilities can experience success in school if appropriate supports are provided. It is important to focus on early identification and remediation and utilize research-based, effective strategies to assist students before behavioural or emotional issues emerge.

See Emotions and Learning (page 50) and Self Regulation (page 92) for strategies to assist with behaviour.

Attention Difficulty

Some students with learning disabilities have difficulties focusing, sustaining and shifting attention. These difficulties might result from physical discomfort, emotional issues, interest and motivational factors or from challenges with self-regulation. Persistent patterns of difficulties such as inattention, hyperactivity, or impulsivity, or any combination of these, might be the result of a biologically based condition known as Attention Deficit Hyperactivity Disorder. ADHD is a regulatory problem of attention, activity level and impulse control, and it can have a significant impact on a student's ability to learn.

A student with self regulation or attention challenges might exhibit difficulties

- organizing supplies, managing time or categorizing and/or classifying information
- managing social interactions, taking turns, refraining from calling answers out, controlling emotions, attaining, maintaining and changing levels of arousal
- developing and using strategies to address academic challenges, and making and following through with a plan or task
- understanding personal strengths and weaknesses
- maintaining thought patterns and managing sensory stimulation, e.g. fidgeting, making noises (tapping etc.) or touching people/things.

See Organization (page 90), Self Regulation (page 92), Learning Strategies (page 83), and Emotions and Learning (page 50) for strategies to assist students with attention difficulties.

The American Speech-Language-Hearing Association states that learning disabilities can be a cause of speech-language difficulties. A language disorder is defined as "impaired comprehension and/or use of spoken, written, and/or other symbol systems. The impairment might involve; the form of language, the content of language and the function of language in communication in any combination." (American Speech-Language-Hearing Association (2005)

Language development has a profound impact on communication, both expressive (the ability to send messages) and receptive (the ability to understand messages), in both verbal and written form.

Some of the speech and language related disorders commonly referred to in educational circles include: phonological processing disorder (see page 60), central auditory processing disorder (see page 17), expressive language disorder (see page 71), receptive language processing disorder (see page 65) and language delay.

Strategies for students with these disorders will include not only those that address a learning disability but also the consultation and/or services of a speech/language pathologist.

For more information about speech and language disorders and their relationship to learning problems, see Chapter Two of Pierangelo, R. & Giuliani, G. *The educator's diagnostic manual of disabilities and disorders.* Jossey-Bass. San Francisco, CA. (2007).

- **Objectives**

Students with learning disabilities might demonstrate problems with one or more types of memory.

Working memory is a component of memory in which information is stored and/or manipulated for brief periods of time in order to perform another activity. It enables learners to hold on to pieces of information until the pieces blend into a full thought or concept. Working memory is important for a range of activities, such as controlling attention, problem-solving, and listening and reading comprehension. A student with working memory difficulties might have forgotten the first part of an instruction by the time the full instruction has been given. Or the student might be unable to recall the beginning of a sentence by the time he/she has read to the end. Some students will be unable to hold material in working memory in order to complete a task or understand a concept. **Short term Memory** is a component of memory where information is stored briefly until it is either forgotten or integrated into long term memory. It is similar to working memory, however more passive as information is not manipulated. A student with short term memory challenges might not be able to remember information long enough to copy it down from one place to another.

Long-term memory refers to information that has been stored and is available over a long period of time. Effective short-term memory is critical to move information into long-term memory. A student with long-term memory difficulties might find it necessary to review and study information over a longer period of time in order for it to become part of his or her general body of knowledge. Rehearsal, repetition and association are well-known paths to improving long-term memory.

See Learning Strategies (page 83) and Comprehension (page 62) for strategies to address memory difficulties.

- **Definitions**

Although students with learning disabilities may share some common attributes, there are many different types of learning disabilities. Some of the most common learning disabilities are outlined below. It should be pointed out that, in many cases, a student will demonstrate qualities which indicate a disability in a number of different areas, not just one.

Important note: *The material here is descriptive only, not to be used for diagnostic purposes.*

Arithmetic Disorder

Arithmetic Disorder (Dyscalculia) is generally characterized by difficulty in learning or comprehending mathematics. It affects a person's ability to understand and manipulate numbers or understand numbers themselves.

A student with arithmetic disorder might have difficulty with

- organizing problems on the page, keeping numbers lined up
- following through on multiple step calculations, such as long division
- transposing numbers accurately on paper or on to a calculator, such as turning 56 into 65

• distinguishing right from left
• using the mathematical calculation signs, confusing basic operations and facts

□ applying logic but not accurately completing calculations
• understanding and solving word problems
• being hesitant, refusing or experiencing anxiety when asked to engage with mathematical concepts
• remembering and applying mathematical functions in various ways
- recalling math rules, formulas or sequences
- being able to perform an operation one day but not the next
- understanding abstract concepts like time and direction
- checking change, reading analog clocks, keeping score during games, budgeting, estimating
- remembering dance step sequences or rules for playing sports
- visualizing the face of a clock or places on a map
- recalling dates, addresses, schedules and sequences of past or future events.

See Numeracy and Mathematics (page 86) for strategies to address Arithmetic Disorder.

Writing Disorder

Writing Disorder (Dysgraphia) is generally characterized by distorted writing in spite of thorough instruction.
A student with writing disorder might experience some of the following difficulties:
• inconsistent and sometimes illegible writing; e.g., mixing print and cursive, upper and lower case, irregular sizes, shapes or slant of letters
• inconsistent positioning on the page, with respect to lines and margins
• unfinished words or letters, omitted words and many spelling mistakes
• fine motor difficulty, such as inability to reproduce letters or remembering motor patterns
• inconsistent speed in writing, either extremely laboured or quick
• writing that doesn't communicate at the same level as the student's other language skills

- **Summary**

Reading Disorder

Reading Disorder (Dyslexia) is generally characterized by difficulties with the alphabet, word recognition, decoding, spelling, and comprehension.
A student with reading disorder might have difficulty with the following:
• naming, learning the sequence of or printing the alphabet
• memorizing non-phonetic words
• reading words that cannot be translated into a mental picture (and, a, the, etc.)

- sound/symbol correspondence, or sequencing of letters to create a word
- reading aloud without repeated mistakes and pauses
- comprehending reading material, grasp of vocabulary
- reading numbers and confusing math symbols
- organizing what he or she wants to say verbally, or not being able to think of the word needed
- retelling a story in sequence of events
- finding a word in the dictionary, naming the days of the week and months of the year
- understanding inferences, jokes or sarcasm.

See Receptive Language Processing (page 65), Phonological Processing (page 60) and Learning to Read (page 54) for strategies to address Reading Disorder (decoding, fluency and comprehension).

Spelling Disorder

Spelling disorders (Dysorthographia) are generally characterized by difficulties with spelling. They stem from weak awareness or memory of language structures and letters in words.
A student with a spelling disorder might present some of the following difficulties, often in conjunction with poor skills in reading and/or arithmetic:

- arbitrary misspellings, such as addition, omission and/or substitution of letters in words
- reversal of vowels and/or syllables
- slow, hesitant or poor written expression
- errors in conjugation and grammar
- phonetic spelling of non-phonetic words
- misunderstanding the correspondence between sounds and letters.

See Spelling (page 73) for strategies to address Spelling Disorder.

Auditory Processing Disorder

Auditory processing disorder describes a variety of disorders that affect the way the brain processes or interprets what it hears even though the student might have adequate hearing.
A student with an auditory processing disorder might have difficulty with the following:

- listening, particularly where there is background noise or when attention is divided
- processing information if the speaker is speaking quickly
- understanding what is said
- recalling what they have heard or following a sequence of directions
- recognizing and interpreting distinct sounds or attributing meaning to sounds in words
- using phonemes incorrectly when speaking
- applying phonics, encoding (spelling) and decoding (sounding out) words

• reading comprehension, vocabulary and basic literacy.

See Decoding (page 54), Spelling (page 73), Organization (page 90), Learning to Read (page 54), and self regulation (page 92) for strategies associated with addressing aspects of Auditory Processing Disorder.

Visual Processing Disorder

A visual perception disorder involves difficulty making sense of what is seen, even though vision is intact.

A student with visual processing disorder might find the following tasks challenging:

• recalling and using visual information, e.g. remembering the order or meaning of symbols, words or pictures

• differentiating colours, letters or numbers that are similar

• recognizing objects or parts of an object

• noting and comparing features of different items

• distinguishing a particular shape from its background and/or understanding how objects are positioned in relation to one another

• attending when there is competing visual information

• perceiving distances, depth or movement

• accurately identifying information from books, pictures, charts, graphs and maps

• organizing essays with information from different sources into one cohesive document, or solving math problems

• writing within margins or on lines, or aligning numbers in math problems

• fine motor tasks, such as writing or copying

• tracking and/or reading with speed and precision.

See Decoding (page 54), Fluency (page 57), Phonological Processing (page 60), Comprehension (page 62) Receptive Language Processing (page 65), Motor Control (page 75) and Organization

Sensory Integration (or Processing) Disorder

Sensory Integration Disorder is associated with the ability to integrate information from the body's sensory systems (visual input, auditory input, olfactory input, taste, tactile input, vestibular input (balance/movement), and proprioceptive input (position). Information from the senses are not interpreted in ways that it can be used efficiently by the brain.

A student with a sensory integration disorder might present some of the following difficulties:

- extremely over- or under-reactive to senses, such as touch, sound, light, smells or anything put into the mouth
- strong over- or under-responsiveness to movement: e.g. avoids movement or craves it, startles easily, seems clumsy, careless or very physical
- having a strong attraction to or dislike for getting messy
- knowing where one's body is in space
- knowing how much physical pressure to apply to something
- unusually high or low activity level, or rapidly moving from one to the other
- calming oneself or unwinding
- social emotional problems, e.g. easily frustrated, tantrums, acting out, poor self concept,
- making smooth transitions
- being easily distracted
- carrying out small or large motor tasks
- determining physical characteristics of objects
- putting ideas into words, delays in speech/language development, articulation .

See Self Regulation (page 92), Emotions and Learning (page 50), Receptive Language Processing (page 65), Motor Control (page 75) and Organization (page 90) for strategies to assist students with Sensory Integration (or Processing) Disorder.

- **Revision**

Organizational Learning Disorder

An organizational learning disorder is a type of learning disability related to challenges with executive functions and frequently accompanies other learning disabilities. Organizational learning disorder might include difficulties in handling too much stimuli or information at one time, thinking in an orderly and logical way, distinguishing direction, or organizing materials and time.

A student with an organizational learning disorder might present some of the following difficulties:

- allocating or organizing time
- arranging, or locating the beginning, middle and end
- setting priorities, time management, estimating time
- following schedules and meeting deadlines
- solving problems in stages

- organizing desks or notebooks, finding materials
- settling down and functioning effectively when settings or expectations change
- remembering what they are required to do
- drafting an outline or assembling materials for presentations.

See Organization (page 90) and Learning Strategies (page 83) for strategies to assist Organizational Learning Disorder.

Social Cue Disorder

Individuals with social cue disorder have difficulty behaving in an automatic way. Picking up on spoken and unspoken cues is a complex process. Information must be detected, processed, have meaning extracted; then a response must be formulated.
A student with social cue disorder might present some of the following difficulties:

- poor impulse control and/or needs immediate gratification
- illogical reasons for actions and/or little thought about logical consequences
- inappropriate conclusions or goals, due to deficient reasoning ability
- inability to interpret environmental and social cues: e.g. body language, pitch of voice, personal space and/or facial expressions
- trying too hard or inappropriately to be accepted socially
- being disruptive due to low tolerance for frustration
- not understanding social conventions such as standing too close or turn taking.

See Self Regulation (page 92) and Emotions and Learning (page 50) for strategies to assist Social Cue Disorder.

- **Assignment/Activity**

POINTS FOR DISCUSSIONS / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification. Note down those points:-

Points for Discussion

Points for Clarification

- References / Further Readings

UNIT 3: ELEMENTS OF LESSON PLAN - 5 E PLAN

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**
- References / Further Readings

- **Introduction**

Differentiated Instruction

Differentiated instruction is a flexible approach to teaching in which a teacher plans and carries out varied approaches to address content, learning processes, learning style, practical procedures, presentation strategies, and assessment tools. It results in a more personal, proactive learning environment, inclusive of a wide variety of learners. The graphic on the right, outlines various aspects of differentiated instruction that are described in this chapter of the guide.

When teachers differentiate instruction, they provide students with the structures to maximize strengths, work around weaknesses, and experience timely remediation. This enables students to take advantage of effective learning strategies as they begin to understand their own personal learning styles, interests, needs, and engage with their learning. As a result, student motivation increases.

The various aspects of differentiated instruction mentioned here should be seen as complementary to one another and not mutually exclusive or competing. The following chart outlines one way that aspects of differentiation can be used together to provide effective, well planned instruction and intervention for all students. Various aspects of differentiation can be used together to plan for diversity and provide robust interventions for students with learning disabilities.

Universal Design for Learning (UDL)

Universal design for learning (UDL) is a framework of instructional approaches that recognizes and accommodates varied learning styles. It provides learning activities that expand students' opportunities for acquiring information and demonstrating learning, as well as for enhancing social participation and inclusion.

The driver for universal design is the philosophy of proactively addressing needs. Universal design for learning is integrated into regular instructional planning as a mechanism to make diversity the norm. It provides support for all students and motivates through the element of choice.

The following assumptions underpin universal design:

- Teachers make adjustments to personalize learning for all students, not just those with disabilities.
- Flexibility is the key to providing a curriculum that does not stigmatize or penalize students for having learning differences.
- Curriculum materials are as varied and diverse as the learning style and needs of students.
- Groups of student include a continuum of learner differences with evolving strengths and needs.

The principles of universal design are clearly illustrated in the world of architecture and building. The automatic door at the local grocery store provides access for patrons with disabilities. There is a subtle presence of the feature – it is not labelled "for persons with disabilities" – and it provides a benefit to all patrons, those with temporary disabilities such as a sore arm, or those who appreciate making the management of a heavily

In an educational context, UDL emphasizes

- multiple means of presentation, to provide various ways of acquiring information and knowledge (e.g. buddy activities, use of concrete manipulatives, video, computer technology, audio texts)

• multiple means of expression to provide students with alternatives for representing learning beyond written work (e.g. video, teaching a peer, information booth, presentation, drawing, sculpture and drama)

• multiple means of engagement to tap into students' interests, offer appropriate challenges and/or increase motivation

• respect for students' learning styles and personal attributes, while still focusing on the required learning outcomes.

UDL is strongly linked to technology because digital formats can be so flexible. Once a text is in digital format, it is transformable – i.e. easily translated from text to speech or expanded with insertions of pictures or video. It is transportable – i.e. easily stored and used again or made available to other students. It is also recordable – i.e. easily stored and played again at will and as necessary for the student. Software applications (advanced organizers and/or graphic organizers for planning, word-prediction software, and spell checkers) provide access to information and the means to respond, so students' work reflects their learning. When students know how to use these software applications, they can be more self-reliant and independent in completing their work.

UDL is not technology for the sake of technology, an add-on at the end of unit planning, or specific only to students with learning disabilities or other special needs.

Adaptations

Adaptations are teaching and assessment strategies especially designed to accommodate a student's needs so he or she can achieve the learning outcomes of the curriculum and demonstrate mastery of concepts. Accommodations in the form of adaptations occur when teachers differentiate instruction, assessment and materials in order to create a flexible, personalized learning experience for a student or group of students. Adaptations can be made available to all students, both with and without a learning disability.

Adaptations might be thought of as adjustments to how students:

• take in information (input)

• participate in learning activities (engagement/process)

• demonstrate their learning (output)

Adaptations might include alternate formats, strategies or settings, and may involve changes to:

• the social and/or physical learning environment

• instruction methods

• learning materials, resources and topics

• response formats and assessment procedures

• time frames for learning

Creating and Implementing Adaptations

In a learning environment where differentiated instruction and assessment has already been implemented, the diverse needs of learners are often already met. In non-differentiated learning environments, adaptations should be provided on an individual basis. In both kinds of settings, the accommodations, whether universal or individual, should endeavour to meet students' needs while focusing on personal learning and active engagement.

The process of creating and implementing adaptations includes finding an appropriate, personalized student-strategy fit. The teacher should consider the individual student's strengths and needs, as well as the learning environment, and look for ways to improve performance in areas of weakness and bypass student challenges, to minimize their impact on overall progress.

To decide the types of adaptations that might help students succeed, the following questions might be posed:

What do students say about

- their interests
- their learning
- what they need/want to learn
- what they feel good about
- what frustrates them
- their preferred learning strategies?

Based on assessment results and student records, as well as parent and teacher knowledge of a student, **what are a student's**

- learning needs
- processing weaknesses
- skill deficits
- social or emotional issues

Potential Adaptations

Some typical types of adaptations might be

- audio tapes, electronic texts, or a peer helper to assist with assigned readings
- access to a computer for written assignments (e.g. use of word-prediction software, spell checker, idea generator)
- alternatives to written assignments for demonstrating knowledge and understanding
- advance organizers/graphic organizers to assist with following directions
- extended time to complete assignments or tests
- direct instruction and practice of study skills
- use of computer software which provides text-to-speech/speech-to-text capabilities
- pre-teaching key vocabulary or concepts; multiple exposure to materials
- working on the learning outcomes for a lower grade level.

This chart provides examples of adaptations that personalize teaching and learning. As adaptations are introduced, the student's performance should be carefully monitored to ensure the adaptation is effective.

Adaptations can be envisioned as scaffolding. The scaffold provides a step up to the task, and the student does the work with the scaffold's support. By providing a scaffold, teachers foster students' willingness to take risks, make sustained efforts and take personal responsibility for their learning. For example, a student might lack the task-approach strategies and memory of routines required to begin a task. The teacher can make organization and routines explicit by providing a graphic organizer, such as a reading guide or a visual schedule of steps to follow. The graphic organizer provides a scaffold to help the student complete the task with greater success. The same graphic organizer might be used during tests or across a variety of other subject areas.

Adaptations that introduce an element of student dependency should be used only as short-term measures, while the student acquires the skills necessary to function independently. For example, the adaptation of providing peer or adult readers or scribes should be temporary, until the student learns to access readers and scribes using technology.

In some circumstances, providing adaptations might require staged implementation. For example, a fine motor deficit and illegible handwriting might lead the teacher to conclude that the student should use a laptop to complete assignments. However, if the student does not yet have adequate keyboarding skills, the development of necessary keyboarding skills becomes a goal and other optional response formats are employed in the interim.

Adaptations that minimize the impact of skill deficits sometimes reduce students' opportunities to apply and practice skills. Students with learning disabilities can experience an increasing gap in performance compared to their peers, who continue to progress. Remediation of those missing skills might be necessary. For example, a student who is provided the adaptation of using a calculator when completing complex math problems is not likely to improve basic calculation skills, so the teacher still needs to provide remediation.

Some adaptations might be required on a long-term basis while others might be necessary only until the student acquires effective strategies to compensate for his/her learning disabilities. For example, students with deficits in organizational skills might be provided with a model or step-by-step directions until they learn the necessary organizational strategies to enable them to perform without that tool.

A record of successful adaptations for any student should be kept in a student's file to both document current practice and support future instructional planning.

For Ministry of Education guidelines and clarification about adaptations see, *A Guide to Adaptations and Modifications* at: www.bced.gov.bc.ca/specialed/docs/adaptations_and_modifications_guide.pdf

For examples of non-technology based adaptations, see *Non-Technology/Low-Technology Solutions to Support Networks of Learning* at:

- **Objectives**

In general, early intervention employs highly systematic approaches that involve monitoring student response to instruction and documenting difficulties to inform prompt, appropriate intervention decisions. Early intervention often takes the form of literacy and numeracy instruction tailored to a student's current functional level, paired with accommodations to prevent the literacy and numeracy difficulties from impeding progress in the other areas.
Because intervening early is so critical, schools use various means to assess students to identify those who might need early intervention in Kindergarten and Grade 1. It is often from within this group of students identified through early assessment that learning disabilities are eventually identified. Robust early intervention can reduce the impact of processing difficulties for some students with learning disabilities, moderating the long-term impacts.

A University of British Columbia research study has shown that strategic literacy instruction paired with supplemental small group instruction for the lowest-performing 20 percent of Kindergarten and Grade 1 students can reduce the percentage of students reading below grade level in Grade 4 to between two and three percent. This is compelling evidence to justify the investment of time and effort involved in early intervention. For more information about this research, see *Firm Foundations: Early Literacy Teaching and Learning* at
Direct instruction is an approach to teaching where the particular skill or content to be learned is presented explicitly.
For some students with a learning disability, exploration or discovery methods of teaching might be ineffective for acquiring core content and developing foundational academic skills. This could be due to a students' inability to make connections from existing knowledge to new learning, learn new vocabulary, develop fluency with a particular skill, create mental frameworks for organizing and remembering content, and/or develop strategies for learning. Direct instruction does not assume students will implicitly, intuitively or indirectly acquire a particular skill or set of facts.
Research has shown that direct instruction can be an effective strategy for teaching mathematical procedures and computations, reading (decoding), explicit reading comprehension strategies, science facts, concepts and rules, foreign language vocabulary and grammar. Direct instruction involves explaining a concept, skill or strategy, modeling how to perform a task or approach a problem, providing feedback, guiding practice, reinforcing success, shaping understanding, providing a scaffold to the next steps, fostering mastery through practice and positive reinforcement and promoting generalization of skills.

Direct instruction can be employed as seven steps in a teaching and learning sequence. Together, the steps make the skills to be learned explicit and provide feedback during the acquisition phase. It is an effective approach in promoting student success and confidence.
Information and Communications Technologies can enable teachers to personalize the learning experience by delivering instruction in a variety of modes. A wide array of technology has been specifically designed to support students' active engagement in learning tasks, skill development and ability to demonstrate learning.

Technology is not a strategy in and of itself; rather, it is an adaptable and powerful tool for providing appropriate personalized learning activities and adaptations. Technology can enhance student independence and self-reliance with reading and writing tasks and provide valuable opportunities to practice skills specifically tailored to a student's instructional level. Technology can provide the opportunity for students to explore reading materials that match their individual interest rather than limit them to their ability – thus helping them learn new vocabulary, make connections with new knowledge and maintain enjoyment, curiosity and motivation.

- **Definitions**

Formative assessment is a model that uses feedback from the continuous monitoring of student progress to identify learning strengths and weaknesses and to guide instruction, enabling teachers to recognize the needs of their students and plan accordingly. The assessment/teaching cycle is continuous and involves

- assessing what a student can do and needs to learn
- considering student needs, learning styles and interests when planning appropriate instructional techniques and resources
- providing instructional support
- monitoring progress and using small group or personalized instruction as required
- reflecting and identifying areas where adjustment in strategy is necessary
- continuously monitoring one's instructional techniques and student response.

An application of this process used in a reading program is a continuous cycle of running records (assessing and monitoring progress) paired with guided-reading lessons (direct teaching of academic skills, task-approach strategies, modeling and constructive feedback).

Response to Intervention (RTI) is a framework for formative assessment that involves collecting data on a regular basis to make instructional decisions in a multi-tier model. RTI is based on the principle of prevention and early intervention. By using ongoing assessment to inform teaching practice and allocate instructional resources, teachers are able to provide appropriate, evidence-based interventions. RTI research and practice set a high standard for documenting the extent of students' learning difficulties, and focuses attention on data about each student's progress and use of research and evidence-based practices.
Central elements of all RTI models include early screening of all students to identify those at risk for academic difficulties, implementing research-based interventions matched to student need and increasing intensity of intervention when needed. RTI also involves continuous monitoring and recording of student progress during interventions to guide decisions for both the student (e.g. further assessment, individualized planning) and the

teacher (e.g. using small group or one-to-one learning contexts, topics for professional development).

Although RTI originates from special education, it is intended for use with all students in general education. The three tiers of RTI could be described as a triangle divided horizontally into three unequal sections.

- **Summary**

In the Response to Intervention model, students who do not demonstrate success in Tier 1 are provided additional differentiated instruction at the Tier 2 level. This instruction is delivered with greater frequency, duration and intensity in the areas of difficulty and is usually given within the class setting. Students who continue to demonstrate lack of success in Tier 2 then receive intensive interventions at the Tier 3 level, usually within individualized or small-group situations.

Thorough recording of students' response to intervention helps identify learning strengths and challenges. It also provides a clear representation of the persistence of learning difficulty even though teachers use various teaching strategies, accommodations and interventions. This persistent difficulty may be an indication that further formal assessment is needed.

Teachers should consult with parents when children experience educational difficulties. Parents know a great deal about their children and play a vital role in their education. Parents will be able to provide pertinent information about the student's unique strengths and learning needs.
In addition to considering the information associated with such questions and from parent input, teachers might also want to consult with colleagues and other professionals to find out more about the learner and some new ideas about how to best support him or her. Consultation might begin with a support /learning assistance teacher or with the school-based team, depending on the local school or district processes.
Consultation with colleagues and school-based team members can provide teachers with valuable insight into strategies and supports that might be more effective and alert the teacher to other considerations that might impact learning. If the student's parents were not directly involved in the consultation, it is a good idea to talk with them about new strategies being tried and perhaps how they might be applied to homework.

As part of planning, teachers try a range of strategies and monitor student responses to these interventions to see how useful they are. Frequently, strategies and interventions generated through a consultation process are very helpful in supporting student success. When a student's difficulties persist despite intervention efforts, a more comprehensive assessment involving district-level and/or community-based personnel might be warranted.

Teachers, schools and boards of education are responsible for assessing students for the purposes of planning instruction, providing support services and identifying students with special needs. Even if a student is suspected of having a learning disability, teachers should provide a variety of personalized interventions and accommodations prior to being considering a referral for a formal psycho-educational assessment.

Informal assessment--such as classroom assessments, systematic observation, file review and interviews--are as important as administering formal instruments to determine levels of academic skill development and identify strengths and weaknesses in learning processes. Because it is so important to intervene as early as possible, teachers should not wait for formal assessment to occur before they put strategies in place.

Referrals for psycho-educational assessment by a school psychologist follow district guidelines. *Special Education Services: A Manual of Policies, Procedures and Guidelines* (online at www.bced.gov.bc.ca/specialed/ppandg.htm) provides Ministry guidelines for district processes regarding identification of a student as having a learning disability. Assessment to identify a learning disability should integrate information from a number of sources, including the family, teachers, counsellors (if involved), learning assistance or other records, and any relevant medical reports (such as speech and language pathology). Once a student has been referred for a formal assessment, a teacher or principal will need to obtain parent permission and assist the student and their parents in understanding what will occur during the formal assessment process.

School psychologists usually select assessment instruments that they will use for the formal assessment based on the referral information received and the questions posed in the referral. For students with learning disabilities, psycho-educational assessments reveal difficulties in the areas of perceptual and information processing, language and auditory processing, attention and other areas of executive function, motor abilities and/or social skills as well as reading, written language, or mathematics, This technical information augments that gathered by teachers at the school level and can help school-based teams in understanding a students' difficulties and strengths in order to plan appropriate accommodations and remediation strategies. The findings should be shared with the student, parents and teachers, who may need assistance translating the information into practical strategies.

Based on the psycho-educational assessment, a decision is usually made about whether or not a student is formally identified as having a learning disability. In many cases, the assessment does not indicate the presence of a learning disability. In this case, teachers and the school-based team would still develop a personalized approach that addresses the student's assessed needs, strengths, talents and interests.

If results from a psycho-educational assessment indicate the existence of a learning disability, the board of education is responsible for identifying that student as a student with special needs. If the student is reported to the Ministry as having a learning disability then the district is responsible for developing an Individual Education Plan (IEP) and for delivering educational programs and related services in accordance with that plan.

- **Revision**

An IEP is a documented plan developed for a student with special needs that describes individualized goals, adaptations, modifications, services to be provided, and measures for tracking achievement. It must include the goals or outcomes set for that student for the school year, if they are different from the learning outcomes set out in an applicable educational program or guide. An IEP usually list supports required to achieve goals established for the student and significant adaptations to educational materials, instructional strategies or assessment methods. It documents the special education services being provided as they relate to the student's identified needs and how those services will be delivered. An IEP assists with:

Planning

• formalizing the decision making process

• providing a collaborative tool for all people involved, including parents and students, to provide input into the plan

• linking formal and informal assessment results with programming strategies

• providing guidance about transitions

Tracking

• serving as a tool for monitoring individual student learning

• providing an ongoing record to assist with continuity in programming, and

Recording

• providing a record for the student's file and all involved about the student's special education program, and

• serving as the basis for reporting the student's progress on goals and objectives.

IEPs do not describe every aspect of students' education programs, but they should describe those aspects that require individualization. IEPs reflect the complexity of students' learning profiles; they might be brief or more detailed. For example, the IEP for a student who needs adaptations only for taking tests might be relatively simple. In contrast, a student with a complex array of accommodations and interventions requires a more extensive IEP.

Because students with learning disabilities by definition have average or better ability, IEP goals should be set at a high but attainable level. Individualized learning outcomes (goals and objectives) typically focus on the acquisition of basic skills (e.g. literacy or numeracy skills) and the development of compensatory and learning strategies. Socio-emotional goals focusing on such things as self-esteem and friendship skills might also be included. IEPs might also identify strategies for minimizing the impact of learning disabilities and skill deficits.

IEP planning should carefully consider significant transitions that students will experience during their school career – from home to Kindergarten, grade to grade, elementary to secondary, program to program, one school to another and from graduation to adulthood.

- **Assignment/Activity**

POINTS FOR DISCUSSIONS / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification. Note down those points:-

Points for Discussion

Points for Clarification

- References / Further Readings

UNIT 4: MODELS OF TEACHING - CAM,

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**
- References / Further Readings

• Introduction

Selecting the most appropriate accommodations, interventions, or remedial approaches to assist a struggling learner requires consideration of the student's learning profile, educational history and the resources available. Based on all the available information, teachers try out strategies and carefully monitor their effectiveness. Students with learning disabilities respond differently, as no two are affected in exactly the same way.

The lists of strategies and resources in this section are intended to serve as a starting point for selecting ways to support the learning of students with learning disabilities. No one strategy can be assumed to address the needs of all students with learning disabilities. Resources and strategies chosen for this section have been suggested from the literature on learning disabilities or by teachers in BC who are commonly using them for both as universal, small-group and as targeted interventions. School-based learning assistance/support teachers as well as district administrators, speech and language pathologists or reading and mathematics specialists may recommend additional effective assessment tools, strategies, resources and assessment tools for addressing the needs of students with learning disabilities.

It may be possible to determine which instructional approaches did not work for a student in the past by reviewing school records or talking with previous teachers. However, previous instructional strategies and interventions might have occurred at a time when the child was not developmentally ready to benefit from the approach being used. If developmental factors contributed to learning difficulty in the past, it could mean that the same or similar approach might be successful now. Therefore, it is not always a good idea to discount strategies that have not worked in the past.

Direct instruction for specific skill development is important for most students with learning disabilities, but they should not be restricted to working on skills in isolation. A balanced approach provides a focus on reading, writing, thinking, speaking and listening within a rich context. Teaching skills, practicing strategies in context, and building in opportunities to transfer, apply and practice is particularly important for many students with learning disabilities who do not generalize knowledge without specific instruction.

Initial interventions could take the form of an adaptation that is made available for all students and be very informal. Meanwhile, a teacher might use error analysis, conduct a learning interview, and/or ask the student about the difficulties being experienced. Based on this, more individualized instruction, practice and monitoring should occur. Teachers will often find that no one intervention strategy will address the needs of all learners. To personalize learning for students with various learning profiles, various types of differentiation and variety of approaches and resources may be needed.

In general, teachers should address challenges arising from the student's learning disability by employing the student's strengths whenever possible:

- remediating basic skills through direct instruction, multi-sensory instruction, and specific training designed to help the learner generalize the skill to multiple applications
- bypassing the processing deficit by providing adapted teaching and learning strategies, supplementary learning materials, alternate instructional and/or evaluation strategies, and use of technology
- teaching compensatory strategies to minimize the degree to which future learning is impeded
- addressing the affective domain

The term affective domain refers to the way people react emotionally. Some students who have learning disabilities are particularly vulnerable to emotions that interfere with learning. These emotions arise for a variety of reasons such as frustration due to their difficulties, feeling left out or left behind when compared with their peers, anger and self-doubt when their progress is slow, confusion or embarrassment when they give wrong answers or get a low mark, shame and anxiety resulting from focusing on their difficulties while de-emphasizing or negating their strengths, and lack of self-regulation skills.

The potential benefits of adaptations, interventions and remediation might have little effect unless the affective domain is also addressed. Support from caring adults helps develop the personal attributes of motivation, self-advocacy and self-regulation over time. Students can develop insight into their strengths, learning needs, talents, interests and challenges. They can also develop strategies to advocate for themselves and address their needs. These

strategies have a direct link to students' motivation, optimism about learning and how they see themselves as learners.

Strategies

Provide classroom structures that accommodate a variety of learning strengths and needs:

• modeling and providing practice in asking for clarification and asking for help, to enable students to get beyond being "stuck"

• beginning with strengths when evaluating, and debriefing with students after assessments

• recognizing progress explicitly, by graphing or charting progress, setting goals, or planning and tracking achievement

• celebrating success

• providing positive role models and experiences with trusting, and respectful, adults

• modeling problem solving and discussing productive and unproductive strategies

• encouraging self-evaluation as part of the process

• providing consistent routines, clear rules and understandable, logical consequences.

Help students with learning disabilities develop insight about their strengths and challenges:

• modeling the practice of viewing mistakes as a normal part of learning that provide opportunities to self-correct and improve (Comparing struggles and mistakes practicing a sport is a helpful strategy.)

• digging deeper when negative statements are made (Find out what "I'm bored" really means. It could mean the task is too difficult or that a different strategy is necessary.)

• orchestrating opportunities for students to explain their learning strengths and needs to others

• structuring opportunities for the student to relate subsequent learning tasks to what they know about their strengths and needs, building the awareness of any need for accommodation

• promoting self-advocacy and facilitating opportunities for the student to practice

• discourage comparisons to othe

• Objectives

Many students with learning disabilities experience considerable difficulty with reading. Proficient reading is a highly complex task that requires extensive knowledge and a broad range of skills:

• rapid, sequential processing of visual symbols to recognize letters and word forms

• forming virtually instantaneous associations between visual word forms and oral word forms

• understanding vocabulary

• drawing upon linguistic knowledge to attain meaning from the word order

• mastery of writing conventions to know the significance of punctuation

• gathering and holding sufficient basic material in working memory to access the ideas being expressed

• collecting and holding the ideas to facilitate comprehension.

Teachers' should focus on enabling the students to acquire skills, such as encoding and decoding, increasing fluency and improving comprehension. To meet with success in school and in the world, students need assistance in "learning to read" and in acquiring skills to actively engage in "reading to learn".

Decoding is the process of using one's knowledge of letters, sounds and word patterns to determine an unknown word. Effective decoding depends on knowledge of letter/sound relationships, the meanings of roots, prefixes and suffixes, and word patterns.

Fluency

Reading fluency includes the ability to read with expression, while accessing meaning, at an appropriate speed or rate of reading. It involves reading text smoothly, effortlessly and automatically with little conscious attention to the mechanics of reading, at a pace appropriate to the reading purpose. Fluency requires automatic accurate decoding with appropriate phrasing and expression to convey meaning.

Students who have limited fluency read less text than their peers and are less likely to remember, review and comprehend the text or to integrate information with their own prior knowledge.

A lack of fluency could be the result of slow processing speed and/or inadequate sight vocabulary.

Strategies

• Provide practice in reading lists of high-frequency words. Many lists are available in printed resources and online. Ask the student to read continuously from the list for one minute and record the number of correctly read words. Repeat the activity every day. An acceptable rate, established by Fischer (1999), is:

- Grades 1 and 2 – 30 words per minute
- Grades 3 – 40 words per minute
- Grade 4 and up – 60 words per minute

• Extend this practice to include recognition of words with irregular spelling patterns, such as "physical" and "know", or "said" and "one". A simple way to do this is to create a matrix of five rows. Each row contains lists of the same words in different order. Students review the words and are then timed for 1 minute as they read the words in each list. After each session, record the number of words read correctly.

• Help identify one-letter, two-letter and other small words that cannot be visualized mentally. Assist the student with understanding the definitions and functions in a sentence or phrase, until the student knows the word and is comfortable with the way the word is used.

• Read aloud together – or choral reading. The teacher or peer reads aloud with the student for 10 to 15 minutes daily. The helper takes a position beside and slightly behind the student and points to each word, reading at a slightly faster pace than the student. This can help the student practice phrasing and intonation. Choral reading can be done with a large copy of text and the whole class or with a peer or older student mentor/buddy.

• Provide an opportunity for repeated readings. Choose a text of between 50 and 100 words in length. The text should be slightly above the student's present independent reading level. The student reads the selection orally while the teacher times the reading and tallies the number of correct or incorrect words. Together, the teacher and student set a realistic goal for improvement. Students can look over the passage and practice reading difficult words at any time. The re-reading occurs daily for a week. Then a new passage is selected. Teachers can choose readings from a collection of levelled reading texts. This strategy is useful to focus on reading skills and to introduce text relevant to subjects such as science, math and social studies.

• Provide an opportunity for students to listen to recordings of books while reading along. Use text reading programs, such as Kurzweil or WordQ. Students can read along with the text on the computer monitor while hearing the text read aloud by a computer generated voice.

- **Definitions**

Phonological Processing

Phonological processing consists of the analysis and synthesis of phonemes (the smallest unit of recognized sounds). A student with a phonological processing disorder might demonstrate errors in speech production (omitting a sound in a word, mispronunciation of words, difficulty rhyming words), misperception of spoken words (confusing words that sound similar), or challenges with reading and writing (sounding out, learning conventional spelling, omitting vowel sounds when spelling).

Strategies

Provide direct instruction involving:

• rhyming words

• breaking compound words into individual words and words into syllables

• identifying beginning, middle and end sounds on words:

- teach the tapping technique, where students identify speech sounds before they spell words by touching the thumb to successive fingers as they segment and pronounce the speech sounds

• phonemic games:

- teach students to move a token for each sound segment in a word

- reverse-a-word (Say "cat", then say it with the first sound last and the last sound first – e.g. "tac")

- remove-a-part (Say "cat", then say it without the beginning sound – e.g. "at")

- add a beginning sound to make phoneme blends. (Say "cat", then say it again, adding the "s" sound at the beginning – e.g. "scat")

• charts and visuals of phonics skills throughout the class

• word-walls to illustrate a phonetic component.

Comprehension

Comprehension is the process of constructing meaning from text. It involves a range of executive functions and requires knowledge of word meanings, formation of conceptual relationships, understanding factual and/or literal content, and making inferences. A variety of factors can interfere with reading comprehension, including:

• insufficient processing speed, resulting in reading that is so slow the reader is unable to recall the initial portions of the reading

• inadequate:

- sight vocabulary, resulting in the need to decode each word thus slowing reading and interfering with constructing meaning

- receptive vocabulary, resulting in failure to recognize words even when accurately decoded

- oral language skills, and/or

- connections to prior knowledge

• failure to recognize printed words learned in isolation or in other contexts, resulting from poor visual perception skills or a lack of generalization

• poor fluency, resulting in word-by-word reading rather than the recognition of phrases essential to accessing meaning

• poor working memory resulting in the inability to construct meaning

Strategies

Develop vocabulary by:

• pre-teaching vocabulary using analogies, synonyms or visual aids

• having students create sentences and then look up the key words in the dictionary to confirm they have used correctly

• teaching meanings of prefixes, suffixes and roots of words, or providing illustrations to help students define and learn a word

• having students explain word meanings to one another in a" walk-and-talk" format (students walk side-by-side and discuss what they are learning, connecting ideas to previously learned ideas and information.)

Help students understand text by:

• teaching students how to generate questions about a text. Students can generate questions before they read, such as in a K-W-L (Know–Wonder–Learn) chart

• helping students relate a passage to an experience, another book, or other facts

• teaching "Think-Pair-Share" strategy (after students spend a minute thinking about a particular topic, they pair with another student to discuss their ideas, and then share their ideas with the larger group)

• teaching and modeling how to visualize and construct images to represent ideas in the text

• helping students make connections to personal experience, knowledge and previous reading

Help students see the connections within the text and understand how different parts of the story or text relate to one another by:

• explicitly teaching and modeling how to summarize important parts of a passage

• providing a cut up version of the text for them to organize as a re-telling of the main points

• teaching and modeling how to predict upcoming content by relating prior knowledge to what has already been read in the text or by using illustrations to identify themes and content

Help students learn to stop and analyze their understanding by:

• teaching them to summarize periodically as they read

• modeling how to notice when they are lost, how to re-read for clarification, speak to another reader about the text, read more slowly or more quickly as appropriate

- **Summary**

As students move through grade levels, the task of learning to read changes to reading for pleasure and information or reading to learn. The challenge for many students with learning disabilities is that the process of reading might not become automated.

Transferring Skills

Students with learning disabilities might demonstrate significant growth in their reading skills as a result of direct instruction provided in an individualized setting but fail to transfer the skills they have acquired to other learning situations. They might require specific instruction in ways to adapt their reading skills to fit a variety of applications.
For all students, but particularly for students with learning disabilities, teachers should teach specific reading strategies in the context of content learning, and across a variety of content areas, so students learn to apply strategies in more than one circumstance. For example use the same graphic organizers for making sense of a social studies text as well as for developing an outline for a report.

Reading in the Content Areas

A major challenge in reading in the content areas is that words become less patterned, and less familiar. There are often fewer pictures and unfamiliar context, or textual structures.

Strategies

• Pre-teach vocabulary relevant to the content areas

• Deliberately use new words as often as possible in conversation and in context of relevant subject matter

• Model use of context to derive meanings, finding root morphemes, mapping word derivations, understanding word origins, and paraphrasing idiomatic or special uses for words

• Teach explicitly about structure of text such as headings and subheadings, paragraphing, starting sentences and supporting ideas Use questioning techniques as a framework for reading for information

• Use graphic organizers before during and after reading to organize ideas

• Use concept definition mapping-describe a concept and provide examples and non-examples of it to develop understanding

• Have students read and summarize longer materials in chunks, then put the summaries together to create a whole

Expressive Language Processing

Individuals with expressive language disorders have difficulty in language production or formulating and using spoken or written language. (Hunt & Marshall as cited in Educator's Diagnostic Manual of Disabilities and Disorders, 2007). A person with an expressive language disorder may understand what is being said, or what they read but have difficulty making the connection between their ideas and the words used to express them.

Strategies

Provide a framework for language and idea development by:

• thinking aloud as you problem solve or work through a process

• using visual with oral instructions

• using learning strategies such as:

- KWL

- Think-Pair- Share

Expand on students' verbal responses by:

• responding to them using correct grammar

• elaborating on students' ideas

• encouraging students to practice using words in sentences, listen for new words throughout their day

• encouraging discussions using higher level questions

- **Revision**

Learning Strategies

Students with learning disabilities sometimes do not intuitively pick up on learning strategies. Introducing a variety of strategies, using them across a number of learning environments and discussing with the student which ones work best and where is a valuable exercise which provides insight into learning styles, different ways to organize thinking, and ways to make effective plans.

Study Skills

• Provide study guides or help students to create their own.

• Encourage study groups, in order to support auditory learners and provide context for learning information.

• Have students generate possible test questions from which to study.

• Have students put one fact only on post-it notes, and then organize them into clusters/clumps on their desks. Discuss why each clump has been assembled and how the facts relate to one another.

• Have students use a highlighter and work as group to identify key words or ideas. Discuss how the highlighted text relates to the overall topic and sub-topics of the piece.

Test Taking

• Help students learn how to identify which questions to answer first.

• Teach students to skim through the test and answer the easiest questions first, before proceeding to the more challenging questions.

• Show them how to use a watch to judge how much time to spend on a question depending on the mark value.

• Teach the process of elimination for multiple choice or true and false questions.

• Teach the use of a mini map or outline for essay questions.

• Encourage students to highlight key or signal words in test questions.

• Teach the strategy of explicitly identifying the steps in multi-step questions.

Memory

• Teach visualization, cognitive mapping and mnemonic strategies.

- Provide advance notice for tests, to allow for longer study time.
- Teach students to divide information into categories.
- Exaggerate and use humour in presentations and studying tasks.
- Use visual, auditory and kineasthetic modes of presenting and exploring material.
- Provide frequent, regular opportunities to practice.

Note-taking

Taking notes involves a combination of quickly processing language, recalling spelling and engaging fine motor skills. Students with learning disabilities can have immense difficulty with this kind of writing. Teachers should directly teach learning strategies that enable students to develop skills in taking useful notes and at the same time consider arranging for students to have access to peer helper notes.

Strategies

Before lesson presentations

- Provide students with a table format where the left-hand column includes the teacher's key points and the right-hand column has space for students to add phrases, additional words, pictures or graphics.
- Prepare a standard outline for the whole group that includes a spot to record the key topic, main points and a summary.
- Provide text materials, vocabulary and abbreviations for vocabulary ahead of time.
- Provide a peer helper with carbon paper for duplicating notes.
- During presentations
- Slow the presentation and cue students to important points with wait time or verbal cues.
- Use a SMARTBoard or an interactive whiteboard. Notes written on the board can be saved and downloaded to student files. Students can then open the file and rewind/fast forward to specific points in the lesson for review.
- Provide word prediction software so students can save files or print them

- **Assignment/Activity**

POINTS FOR DISCUSSIONS / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification. Note down those points:-

Points for Discussion

Points for Clarification

- References / Further Readings

UNIT 5: PYRAMID PLAN

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**
- References / Further Readings

- **Introduction**

The focus of this article is intervention for third - grade students with serious mathematics deficits at third grade. In third grade, such deficits are clearly established, and identification of mathematics disabilities typically begins. We provide background information on two aspects of mathematical cognition that present major challenges for students in the primary grades: number combinations and story problems. We then focus on seven principles of effective intervention. First, we describe a validated, intensive remedial intervention for number combinations and another for story problems. Then, we use these interventions to illustrate the first six principles for designing intensive tutoring protocols for students with mathematics disabilities. Next, using the same validated interventions, we report the percentage of students whose learning outcomes were inadequate despite the overall efficacy of the interventions and explain how ongoing progress monitoring represents a seventh, and perhaps the most essential, principle of

intensive intervention. We conclude by identifying issues and directions for future research in the primary and later grades.

Approximately 5-9% of the school-age population may be identified with mathematics disability (e.g., Badian, 1983; Gross-Tsur, Manor, & Shalev, 1996). Although this estimate is similar to the prevalence of reading disability, less systematic study has been directed at mathematics disability (Rasanen & Ahonen, 1995), even though poor mathematics skills are associated with life-long difficulties in school and in the workplace. For example, mathematics competence accounts for variance in employment, income, and work productivity even after intelligence and reading have been explained (Rivera-Batiz, 1992).

Some research illustrates how prevention activities at preschool (e.g., Clements & Sarama, 2007), kindergarten (e.g., Griffin, Case, & Siegler, 1994), or first grade (e.g., Fuchs, Fuchs, Yazdian, & Powell, 2002) can substantially improve math performance. For example, at the beginning of first grade, Fuchs and colleagues (2005) identified 169 students in 41 classrooms as being at risk for math difficulties based on their low initial performance. These children were randomly assigned to a control group or to receive small-group tutoring three times per week for 16 weeks. Results showed that math development across first grade was significantly and substantially superior for the tutored group than for the control group on computation, concepts, applications, and story problems. In addition, the incidence of students with mathematics disability was substantially reduced at the end of first grade, and this reduction in mathematics disability remained in the spring of second grade, one year after tutoring ended (Compton, Fuchs, & Fuchs, 2006).

Nevertheless, despite the efficacy of tutoring, students were not universally responsive. A subset of the tutored students, approximately 3-6% of the school population (depending on the measure and cut-point for the severity of mathematics performance used), manifested severe mathematics deficits. As this example illustrates, the need for intensive remedial intervention persists even when prevention services are generally effective.

In this article, we focus on serious mathematics deficits at third grade. In third grade, serious mathematics deficits are clearly established, and identification of mathematics disabilities typically begins (Fletcher, Lyon, Fuchs, & Barnes, 2007). We provide background information on two aspects of mathematical cognition that present major challenges for students in the primary grades: number combinations and story problems. We describe validated, intensive interventions for number combinations and another for story problems and use these interventions to illustrate six principles for designing interventions for students with mathematics disabilities. Next, using the same validated interventions, we report the percentage of students whose learning outcomes were inadequate despite the overall efficacy of the

interventions and we how ongoing progress monitoring therefore represents a seventh and perhaps the most essential principle for intensive intervention. We conclude by identifying issues and directions for future research in the primary and later grades.

Number Combinations and Story Problems

Number combinations refer to problems with single-digit operands, which can be solved by counting or committing to long-term memory for automatic retrieval. Widespread agreement exists that number combination skill is essential for all children to acquire. The National Research Council (Kilpatrick, Swafford, & Findell, 2001), for example, identified number combination skill as a key component of math proficiency. Moreover, research shows that number combination skill is a significant path to procedural computation and story-problem performance (Fuchs et al., 2006).

To answer number combination problems, typical children gradually develop procedural efficiency in counting. First they count the two sets (e.g., 2+3) in their entirety (i.e., 1, 2, 3, 4, 5); then they count from the first number (i.e., 2, 3, 4, 5); and eventually they count from the larger number (i.e., 3, 4, 5). Also, as their conceptual knowledge about number becomes more sophisticated, children develop additional back-up strategies for deriving answers (e.g., decomposition: [2+2] = 4 + 1 = 5). As increasingly efficient counting and back-up strategies help children consistently and quickly pair problems with correct answers in working memory, associations become established in long-term memory, and children gradually favor memory-based retrieval of answers, although most continue to use a mix of strategies over time.

Students with mathematics disabilities, on the other hand, manifest greater difficulty with counting (e.g., Geary, Bow-Thomas, & Yao, 1992; Geary, Hoard, Byrd-Craven, Nugent, & Numtee, in press). They also persist with immature back-up strategies. Not surprisingly, therefore, they fail to make the shift to memory-based retrieval of answers (Fleishner, Garnett, & Shepherd, 1982; Geary, Widaman, Little, & Cormier, 1987; Goldman, Pellegrino, & Mertz, 1988). When children with mathematics disabilities do retrieve answers from memory, they commit more errors and manifest unsystematic retrieval speeds compared to younger, typically developing counterparts (e.g., Geary et al., in press; Geary, Brown, & Samaranayake, 1991; Gross-Tsur et al., 1996; Ostad, 1997). In fact, number combinations constitute a signature deficit of students with mathematics disabilities (e.g., Fleishner et al., 1982; Geary et al., 1987; Goldman et al., 1988).

Conventionally, number combinations are incorporated into the curriculum at kindergarten through second grade, although most general education programs do not allocate systematic attention to developing strategies for fluent number

combination performance. Nevertheless, most typically developing students are well on their way toward automatic retrieval of number combinations as their major solution strategy by the beginning of third grade. Therefore, when students still manifest deficiencies involving number combinations at the beginning of third grade, a pressing need exists for remediation.

In contrast to number combinations and other aspects of calculation skill, story problems incorporate linguistic information that requires children to construct a problem model. Whereas a calculation problem is already set up for solution, a story problem requires students to use text to identify missing information, construct the number sentence, and derive the calculation problem for finding the missing information. This transparent difference would seem to alter the nature of the task and, in fact, some research suggests that computation and math problem solving may be distinct aspects of mathematical cognition (Fuchs et al., in press).

Four large-scale studies have addressed indirectly the distinction between computation and problem solving by examining the cognitive correlates of these domains of mathematical cognition in large representative samples.

In a study of 353 first through third graders, Swanson and Beebe-Frankenberger (2004) identified working memory as an ability that contributed to strong performance across both areas of mathematical cognition, but some unique cognitive abilities were also important, including phonological processing for computation and fluid intelligence as well as short-term memory for story problems.

In the second study, Swanson (2006) followed these students' development of calculation and problem-solving skill over one year. He identified predictors of computation (inhibition or controlled attention, vocabulary knowledge, visual-spatial working memory) that differed from problem solving (working memory's executive system; i.e., listening span, backward digit span, and digit/sentence span).

The third study involved a sample of 312 third graders. Here Fuchs et al. (2006) examined the concurrent cognitive correlates of computation versus story problems, this time controlling for the role of arithmetic skill within story problems. Teacher ratings of inattentive behavior emerged as a correlate common to both domains of math, but the remaining abilities differed: for computation, phonological decoding and processing speed; and for story problems, nonverbal problem solving, concept formation, sight word efficiency, and language.

Finally, the fourth study (Fuchs et al., 2005) used beginning-of-the-year cognitive abilities to predict the development of skill across the year among 272 first graders. Results again suggested some common and some unique patterns of cognitive abilities. The common predictors were working memory and ratings of attentive

behavior. The unique predictors were phonological processing for computation and nonverbal problem solving for simple word problems.

Across these studies, some findings recur; others are idiosyncratic. But together, results indicate that some abilities underlying these aspects of mathematical cognition are unique. This provides the basis for hypothesizing that the cognitive dimensions underlying difficulty in each of these domains may also be distinct.

More recently, Fuchs et al. (in press) assessed this question directly. Using a sample of 924 third graders from 89 classrooms, we (a) assessed the students on computation and problem solving; (b) classified them as having difficulty with computation, problem solving, both domains, or neither domain; and (c) measured them on nine cognitive dimensions. Difficulty occurred across the two math domains with the same prevalence as difficulty with a single domain, and specific difficulty with calculation occurred as frequently as specific difficulty with story problems. Moreover, specific computational difficulty was associated with a strength in language and weaknesses in attentive behavior and processing speed. By contrast, problem-solving difficulty was associated with poverty and deficient language.

These findings lend support to the hypothesis that computation and problem solving represent distinct domains of mathematical cognition in students at the lower ranges of performance, who might be identified with mathematics learning disabilities in the schools. Together, therefore, these lines of research suggest that practitioners need to consider computational skill and problem-solving skill separately in diagnosing and instructing students with learning disabilities.

- **Objectives**

Math Flash

The number combinations intervention we researched is referred to as Math Flash because number combinations "flash" during the computerized practice activity. The Math Flash protocol relies on scripts (a) to clarify for tutors how to frame precise, effective explanations; and (b) to provide tutors a concrete model for how to implement the lessons. Tutors study scripts; they do not read them. Each lesson lasts 20-25 minutes, and the Math Flash standard protocol runs 16 weeks, with three sessions per week.

Math Flash addresses the 200 number combinations with addends and subtrahends from 0 to 9. Math facts are introduced in a deliberate order. For the first two lessons,

tutors address facts of + 1 and - 1, using manipulatives and the number line, teaching the commutative property of addition, and emphasizing that this property does not apply to subtraction. In the next two lessons, facts of + 0 and - 0 are introduced, again using manipulatives and the number line. In lessons five and six, + 1, - 1, + 0, and - 0 math facts are reviewed.

In lesson seven, students begin learning doubles that run from 0 through 6 (i.e., 0 + 0, 1 + 1, 2 + 2, 3 + 3, 4 + 4, 5 + 5, 6 + 6, 0 - 0, 2 - 1, 4 - 2, 6 - 3, 8 - 4, 10 - 5, 12 - 6). Students work on these doubles using manipulatives and rehearsing doubles chants. At this point in Math Flash, mastery criteria are introduced, and students spend a minimum of one day on each lesson topic (so they do not waste time on facts they already know) and a maximum of four days on each lesson topic (to avoid students getting "stuck" on a topic and losing content coverage). Mastery is assessed in each lesson during computerized practice (see below). After doubles, students learn facts with + 2 and - 2. Manipulatives and the number line practice are used again.

Next, students are taught to use two strategies for answering a math fact. They are taught that if they "just know" the math fact, they "pull it out of your head." However, if they do not know an answer immediately, they count up. Counting-up strategies for addition and subtraction are taught using the number line and their fingers. To count up addition problems, students start with the bigger number and count up the smaller number on their fingers. The answer is the last number spoken.

For subtraction counting-up, new math vocabulary is introduced. The minus number is the number directly after the minus sign. The number you start with is the first number in the equation. To count up subtraction problems, students start with the minus number and count up to the number you start with. The answer is the number of fingers used to count up. From this point on, during every subsequent lesson, students are reminded to "Know It or Count Up."

Because students are now equipped with two strategies for answering math facts, the tutor introduces additional sets of number combinations, beginning with the 5 set. This includes all addition problems equaling 5 and all subtraction problems with 5 as the minuend: 0 + 5, 1 + 4, 2 + 3, 3 + 2, 4 + 1, 5 + 0, 5 - 0, 5 - 1, 5 - 2, 5 - 3, 5 - 4, 5 - 5. After mastery of the 5 set, students progress to the 6 set, then the 7 set, and so on: 8, 9, 10, 11, 12, 13, 14, 15, 16, and 17-18. The tutor works with the student on each set for a maximum of four days. Between the 12 set and the 13 set, students work on doubles of 7 through 10 (i.e., 7 + 7, 8 + 8, 9 + 9, 10 + 10, 14 - 7, 16 - 8, 18 - 9, 20 - 10). If a student masters all sets before session 48, he/she reviews for the remaining Math Flash sessions.

Each of the 48 Math Flash daily lessons comprises five activities: flash card warm-up, conceptual and strategic instruction, lesson-specific flash card practice,

computerized practice with mastery assessment, and paper-pencil review. In addition, throughout every lesson, a systematic reinforcement program is used to motivate good attention, hard work, and accurate work.

With *flash card warm-up*, tutors show flash cards, one at a time, for 2 minutes. The cards are a representative sample of the pool of the 200 number combinations addressed in Math Flash. Flash cards answered correctly are placed in a "correct" pile. When students answer incorrectly, the tutor instructs them to "count up." Students count up to produce the correct answer, but the card is placed in the "incorrect" pile. At the end of 2 minutes, the flash cards answered correctly are counted, and the student graphs this number on his/her flash card graph.

During *conceptual and strategic instruction*, tutors introduce or review concepts and strategies. Throughout, tutors emphasize the two strategies for deriving answers – "Know It or Count Up"– provide practice in counting up, and require students to explain how to count up addition and subtraction problems. Tutors then work with students on the day's number combinations set (e.g., +1 and -1, doubles 0-6, combinations of 12) using the number line and manipulatives.

After the tutor-led lesson, tutors conduct *lesson-specific flash card practice* for 1 minute. Lesson-specific flash cards consist of the math facts that are the focus of the day's lesson. (For example, if a lesson focuses on the 5 set, lesson-specific flash cards are facts with addends that sum to 5 and with minuends of 5.) Correctly answered flash cards are placed in the "correct" pile. When students answer incorrectly, tutors require them to "count up." The cards for which an incorrect answer is given are placed in the "incorrect" pile. After 1 minute, the lesson-specific flash cards answered correctly are counted, but the score is not graphed. On the second, third, and fourth days of a given lesson topic, students get a chance to beat their lesson-specific flash card score. Tutors remind students what their score on the first minute was and encourage them to answer more cards during the upcoming minute. Scoring and feedback are the same as in the first minute. Tutors praise students when they beat their score.

For the next 7.5 minutes, students complete *computerized practice* to build fluency with number combinations and to assess their mastery of the day's number combination set. Math facts presented on the computer game include 10 lesson-specific facts and 5 review facts.

The game goes like this. A math fact flashes on the screen for 1.3 seconds. Students rehearse the fact (e.g., 3 + 2 = 5) while it briefly appears; when the fact disappears, students retype the entire fact (e.g., addends and answer). If the answer is correct, the student hears applause and earns a point. If it is incorrect, the student has another chance to enter the problem correctly. The computer game ends after the student has

answered each of the 10 lesson-specific facts correctly twice or after 7.5 minutes. The student then receives feedback on his/her mastery of correctly answered number combinations for that day's session.

Mastery on the lesson-specific number combinations set is assessed automatically as the student completes the computer game. Immediately after the game ends, the computer provides a report to the tutor. If the student answers each of the 10 lesson-specific facts correctly twice before 7.5 minutes elapses, mastered appears on the screen. If not, *review* appears on the screen. The tutor takes note of the student's mastery status, moving students onto the next number combinations set when mastery occurs, or after four days on a given set.

Finally, students complete a *paper-and-pencil review*. The student has 1 minute to complete 15 lesson-specific facts on one side of a paper and then has another minute to complete 15 review facts on the other side of the paper. At the end of 2 minutes, tutors circle correct answers and write the score at the top of the paper. Students take home these papers each day.

A systematic *reinforcement program* is also incorporated. Tutors award gold stars following each component of the tutoring session, with the option to withhold stars for inattention or poor effort. At the end of a session, each gold star is placed on a "Star Chart." Sixteen stars lead to a picture of a treasure box and, when this goal is reached, the student chooses a small prize from a real treasure box. The student keeps the Star Chart, and a new chart is provided during the next lesson.

Evaluation of Math Flash

During the 2006-2007 school year, Fuchs et al. (2007) randomly assigned 133 students in the Nashville Metropolitan Public Schools and in the Houston Independent School District who experienced substantial difficulty with computation and story problems (a) to receive the Math Flash standard intervention protocol, as just described; (b) to receive the Pirate Math standard intervention protocol addressing story problems, as described next; or (c) to continue in school without any additional math tutoring.

Half of the students in each intervention condition had math difficulties without reading difficulties; the other half experienced concurrent difficulty with math and reading. Each session was audiotaped. A representative sample of lessons was coded for fidelity against the tutoring scripts: fidelity was strong for both interventions. Students were pre- and posttested on measures of fluency with number combinations and on measures of problem solving. Math Flash and Pirate Math students (which incorporated instruction and practice on counting-up strategies, but less drill and practice and less conceptual instruction on number combinations) improved on

number combinations fluency significantly more than students in the control group. The effect size comparing Math Flash to the control group was large: 0.85 standard deviation units. The effect size comparing Pirate Math to the control group was somewhat smaller but also substantial: 0.72. The difference in effect sizes may reflect less practice and less conceptual instruction on number combinations in Pirate Math.

- **Definitions**

Pirate Math

The story-problem intervention is referred to as Pirate Math because posters and materials rely on a pirate theme. Again, scripts are studied, not read. Each lesson lasts 25-30 minutes, and the Pirate Math standard protocol runs 16 weeks, with three sessions per week. The 48 lessons are divided into four units. An introductory unit addresses skills foundational to story-problem instruction. Specifically, tutors (a) teach students the counting-up strategy for solving addition and subtraction number combinations; (b) review double-digit addition and subtraction; (c) teach students to solve for "X" in any position in simple algebraic equations (i.e., a + b = c; x - y = z); and (d) teach students to check their story-problem work.

The remaining three units focus on solving story problems while incorporating and reviewing the foundational skills taught in the introductory unit. Each unit introduces one story-problem type and, after the first problem-type unit, subsequent units provide systematic, mixed cumulative review that includes previously taught problem types. The problem types are Total (two or more amounts being combined), Difference (two amounts being compared), and Change (initial amounts that increase or decrease). In the Total unit, the first of the three problem types taught, tutors teach students to RUN through a problem: a three-step strategy prompting students to Read the problem, Underline the question, and Name the problem type. Students use the RUN strategy across all three problem types.

Next, for each problem type, students are taught to identify and circle relevant information. For example, for Total problems, students circle the item being combined and the numerical values representing that item, and then label the circled numerical values as "P1" (i.e., for part one), "P2" (i.e., for part two), and "T" (i.e., for the combined total). Students mark the missing information with an "X" and construct an algebraic equation representing the underlying mathematical structure of the problem type. For Total problems, the algebraic equation takes the form of

"P1 + P2 = T." The "X" can appear in any of the three variable positions. Students are taught to solve for X, to provide a word label for the answer, and to check the reasonableness and accuracy of work. The strategy for Difference problems and Change problems follows similar steps but uses variables and equations specific to those problem types. For Difference problems, students are taught to look for the bigger amount (labeled "B"), the smaller amount (labeled "s"), and the difference between amounts (labeled "D"), and to use the algebraic equation "B - s = D." For Change problems, students are taught to locate the starting amount (labeled "St"), the changed amount (labeled "C"), and the ending amount (labeled "E"); the algebraic equation for Change problems is "St +/- C = E" (+/- depends on whether the change is an increase or decrease in amount).

Across problem types, explicit instruction to identify transfer features occurs in four ways. First, students are taught that because not all numerical values in story problems are relevant for finding solutions, they should identify and cross out irrelevant information. Second, students are taught to recognize and solve problems with the missing information in the first or second position. Third, students learn to apply the problem-solving strategies to problems that involve addition and subtraction with double-digit numbers, including those requiring regrouping. Finally, students are taught to find relevant information for solving problems in pictographs, bar charts, and pictures. Across the three problem-type units, previously taught problem types are included for review and practice.

Following the introductory unit (six lessons), each Pirate Math daily lesson comprises four activities: flash card warm-up, conceptual and strategic instruction, problem-type flash card practice, and paper-pencil review. Also, throughout every lesson, a systematic reinforcement program is used to motivate good attention, hard work, and accurate work.

The first activity, *flash card warm-up*, is identical to the flash card warm-up used for Math Flash. The second activity, *conceptual and strategic instruction*, lasts 15-20 minutes. Tutors provide scaffolded instruction in solving the three types of story problems, along with instruction on identifying and integrating transfer features, using role-playing, manipulatives, instructional posters, modeling, and guided practice. In each lesson, students solve three problems, with decreasing amounts of support from the tutor.

The third activity is *sorting word problems*. Tutors read aloud flash cards; one word problem is printed on each card. The student listens to the problem, identifies the word-problem type, and places the card on a mat with four boxes labeled "Total," "Difference," "Change," or "?." Students do not solve problems. They simply sort the problems into problem type. To discourage students from associating a particular cover story with a problem type, the cards use similar cover stories but with varied

numbers, actions, and placement of missing information. After 2 minutes, the tutor notes the number of correctly sorted cards and provides corrective feedback for up to three errors.

For the last activity, *paper-and-pencil review*, students work independently. They have 2 minutes to complete 10 addition and subtraction number combinations and four addition and subtraction double-digit computation items, two of which require regrouping. Then, students have 2 minutes to complete one story problem on the back of the paper. Tutors provide corrective feedback and note the number of correct problems on the top of sheet. Students take home the paper-and-pencil review sheets. The Pirate Math reinforcement program is similar to the one used for Math Flash.

Evaluation of Pirate Math

In the efficacy study described earlier for Math Flash (Fuchs et al., 2007), one of the three conditions was Pirate Math. In that study, story-problem performance improved significantly more for Pirate Math than for both Math Flash and the control group. The effect size comparing Pirate Math to Math Flash was large (0.72). The effect size comparing Pirate Math to the control group was somewhat larger but in the same range (0.89).

- **Summary**

The First Six Principles of Effective Intervention for Students with Mathematics Disabilities

The Math Flash and Pirate Math interventions illustrate six principles of effective intervention for students with mathematics disabilities (see Table 1). The first is *instructional explicitness*. Typically developing students profit from the general education mathematics program, which relies, at least in part, on a constructivist, inductive instructional style. Students who accrue serious mathematics deficits, however, fail to profit from those programs in a way that produces understanding of the structure, meaning, and operational requirements of mathematics.

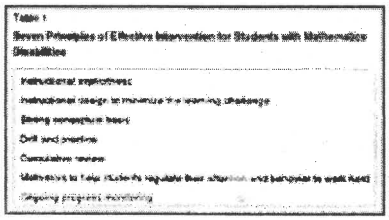

Table 1

Seven Principles of Effective Intervention for Students with Mathematics Disabilities

A meta-analysis of 58 math studies (Kroesbergen & Van Luit, 2003) revealed that students with math disability benefit more from explicit instruction than from discovery-oriented methods. Therefore, effective intervention for students with math disability requires an explicit, didactic form of instruction, in which the teacher directly shares the information the child needs to learn.

Explicitness is not sufficient, however. A second and often overlooked principle of effective intensive mathematics intervention is *instructional design to minimize the learning challenge*. The goal is to anticipate and eliminate misunderstandings with precise explanations and the use of carefully sequenced and integrated instruction so that the achievement gap can be closed as early as possible. This may be especially important for mathematics, which involves many branches and strands that may be distinct, each with its own conceptual and procedural demands. So, given the ever-changing and multiple demands of the mathematics curriculum, instructional efficiency is critical, creating the need for the tutor, or the program on which the tutor relies, to minimize the learning challenges for the student.

Careful instructional design is illustrated in Math Flash in terms of sequencing, where the introduction of number combination sets is ordered to capitalize on the knowledge the student possesses, while maximizing the student's rate of acquisition and sense of accomplishment. So, for example, we introduce + 1/ - 1 first for three reasons: It corresponds well to a basic number line concept that is easy to teach, if not already mastered; it eases counting demands; and it results in the student mastering 29 of the 200 number combinations in the first week of the program. We introduce + 0/- 0 next for three reasons: Although conceptually demanding, it builds well on + 1/- 1; it presents no counting demands; and it efficiently creates mastery of another large group of number combinations. In a related way, foundational concepts are presented only as they become instrumental to learning, and strategies are taught only as they become broadly applicable. So, for example, "Know It or Count Up" is introduced (a) after enough "Know It" combinations (+ 1/- 1, + 0,- 0, easy doubles) have been addressed to make the "Know It" strategy salient for the student and (b)

after enough number combinations for which counting-up is an efficient strategy have been introduced.

Instructional design that minimizes the learning challenge is also illustrated in Pirate Math. Take three examples. Pirate Math begins by teaching a set of foundational skills the student can apply across the entire program: counting up for number combinations, two-digit calculations, solving algebraic equations, and checking work. Once story-problem instruction begins, these foundational skills can be taught as intact instructional targets and then applied efficiently across subsequent units.

A second example is that Pirate Math purposefully conceptualizes, organizes, and teaches students to recognize problem types that pertain broadly to the kinds of problems found in the general education curriculum and in high-stakes tests. That way, novel story problems are not random events, each requiring the student to create a solution strategy. Rather, the student recognizes novel problems as familiar, using schemas for problem types the program teaches, and thereby deciphers when to apply which set of solution rules they have learned.

A third example is that Pirate Math conceptualizes transfer within the same problem-type structure, so that irrelevant information, finding missing information in any of the three slots of an equation, and finding relevant information within charts/graphs recur predictably and efficiently across problem-type instructional units.

The third principle of effective intensive mathematics intervention is the requirement that instruction provide a *strong conceptual basis* for the procedures that are taught. Special education is already strong in emphasizing *drill and practice*, a critical and fourth principle of effective practice. However, it has sometimes neglected the conceptual foundation of mathematics, and such neglect can result in confusion, learning gaps, and a failure to maintain and integrate previously mastered content. Math Flash illustrates the need for conceptual instruction as it relies strongly on manipulatives and the number line to introduce and review each number combination set. Pirate Math illustrates the need for conceptual foundation with its use of role-playing for each problem type.

Drill and practice, the fourth principle of effective intensive mathematics intervention, is also evident in our sample interventions: in Math Flash, with the use of flash cards, computerized practice, and daily review; in Pirate Math, with practice in sorting problems into problem types, the mixing of problem types within the daily lesson (once at least two problem types have been introduced), and daily review.

We note that this practice is rich in *cumulative review*, a fifth principle of effective intensive mathematics intervention. This is reflected in Math Flash's flash card warm-up activity, computerized practice, and paper-pencil review. It is also

incorporated in Pirate Math's continual reliance on the foundational skills taught in the introductory unit, the use of mixed problem types within conceptual instruction, sorting practice, and paper-pencil review.

Finally, intensive mathematics interventions need to incorporate *motivators to help students regulate their attention and behavior and to work hard.* Students with learning disabilities often display attention, motivation, and self-regulation difficulties, which may adversely affect their behavior and learning (Fuchs et al., 2005, 2006; Montague, 2007). By the time students enter intensive intervention, they have experienced repeated failure, causing many to avoid the emotional stress associated with mathematics. As a result, they no longer try to learn for fear of failing. For this reason, intensive intervention must incorporate systematic self-regulation and motivators, and for many students, tangible reinforcers are required. Math Flash illustrates this principle (a) using the "beat your score" flash card activity, where goal-directed behavior is required; (b) when students graph scores they achieve; and (c) in the use of stars as rewards. Pirate Math incorporates similar activities to help students regulate attention and behavior and to work hard.

Valid Is Not the Same as Universally Effective: Progress Monitoring as the Most Essential Principle of Intensive Intervention

As summarized in this article (see Fuchs et al., 2007, for a full report), Math Flash and Pirate Math are demonstrably efficacious, resulting in statistically significant and practically important effects on number combinations fluency (i.e., Math Flash and Pirate Math, each compared to a control group) and on problem solving (i.e., Pirate Math, compared both to a control group and to the Math Flash group). Yet, no instructional method, even those validated using randomized control studies, works for all students.

We use Math Flash and Pirate Math to illustrate this point. Although Math Flash resulted in statistically significantly better improvement in number combinations fluency compared to the control group, with an effect size of 0.88, 3 of 21 Math Flash students failed to realize improvement that exceeded the 30th percentile among the 66 study participants. Moreover, although the effects for Pirate Math were statistically significant (effect sizes of 0.82 and 0.97), the improvement/outcome scores of 8 of 22 students did not exceed the 30th percentile – this time, using a comparison group of 159 students whose math performance was typically developing and who received conventional classroom problem-solving instruction over the course of third grade.

When a standard protocol of validated instruction proves ineffective for a given student, this is unexpected because research has shown that the intervention works for the majority of students. Therefore, when unexpected unresponsiveness occurs, we assume the student has individual needs that are unusual or special, such that he or she requires an individually tailored instructional program.

Because schools must assume that validated intervention protocols will work for most, but not all, students, schools need to monitor the effects of interventions on individual children's learning. That way, children who do not respond adequately can be identified promptly, and the teacher can adjust the intervention to develop an individually tailored instructional program that does work for the student. This leads us to propose a seventh and most essential element of intensive remedial programming: *ongoing progress monitoring*. Progress monitoring is used to determine whether a validated treatment protocol is, in fact, effective for a given student. When progress monitoring reveals that a student is failing to respond as expected to a validated intervention protocol, progress monitoring is then used for a second purpose: to formulate an individually tailored instructional program that is in fact effective for that student.

Curriculum-Based Measurement

In this section, we describe curriculum-based measurement (CBM), the form of progress monitoring for which the preponderance of research has been conducted. CBM differs from most forms of classroom assessment in two major ways (Fuchs & Deno, 1991). First, it is standardized so that the behaviors to be measured and the procedures for measuring them are prescribed, with documented reliability and validity. Second, CBM's testing methods and content remain constant, with equivalent weekly tests that span much, if not all, of the school year. (The primary reason for long-term consistency is so that progress can be monitored systematically and coherently over time.)

To illustrate how CBM is used, let's say Roberto, a hypothetical student, developed sizeable math deficits over the course of first and second grade, despite strong general education programming and despite small-group tutoring implemented during the spring semester of second grade. At the beginning of third grade, Roberto is identified for remedial intervention. Mrs. Hayes, the special education teacher, sets Roberto's mathematics goal for year-end performance as competent second-grade performance (which is transparently connected to the third-grade mathematics curriculum, but includes some easier problem types that create the platform for learning the harder, third-grade problems).

Relying on established methods, Mrs. Hayes creates or identifies enough CBM tests to assess Roberto's performance each week across the school year. Each of these

tests systematically samples the second-grade mathematics curriculum in the same way. Each week, Mrs. Hayes administers one computation test in exactly the same way; Roberto has 3 minutes to complete as many problems as he can. The score is the number of correct digits written in answers. Each week, Mrs. Hayes also administers one concepts/applications test in exactly the same way. Roberto has 6 minutes to complete as many problems as he can; the score is the number of correct points written in answers.

Each progress-monitoring test collected across the school year is of equivalent difficulty, and the score on each week's CBM test is an indicator of mathematics competence at second grade. At the beginning of the year, we expect Roberto's performance to be low. As Mrs. Hayes teaches and Roberto learns the second-grade curriculum, we expect Roberto's score to gradually increase. Because each progress-monitoring test collected across the school year is of equivalent difficulty, each week's computation scores can be graphed and directly compared to each other. Also, each week's concepts/application scores can be graphed and compared to each other. Moreover, on each graph (computation; concepts/applications), a slope can be calculated on the series of scores. This slope quantifies Roberto's rate of mathematics improvement in terms of the weekly increase in score. In addition, because each week's assessment samples the annual curriculum in the same way, Mrs. Hayes can derive a systematic analysis of which skills Roberto has and has not mastered at any point in time, and Mrs. Hayes can look across time at a given skill to determine whether Roberto is retaining mastery.

A large body of work indicates that CBM progress monitoring enhances teachers' capacity to plan mathematics programs and to effect stronger mathematics achievement among students with serious learning problems (Fuchs & Fuchs, 1998). To inform instructional planning, teachers rely on the CBM graphed scores. Once the teacher sets the year-end goal, she draws the desired score on the graph at the date corresponding to the end of the year. The teacher then draws a straight line connecting the student's beginning-of-the-year score with the year-end goal. This line is called the goal line. It represents the approximate rate of weekly improvement (or slope) we hope a student will achieve. When a student's trend line (i.e., the slope through the student's actual scores) is steeper than the goal line, the teacher increases the goal for the student's year-end performance. On the other hand, when a student's trend line is flatter than the goal line, the teacher relies on her knowledge about the student along with her CBM analysis of the student's skills, derived from the CBM data, to revise the instructional program in an attempt to boost the weekly rate of student learning.

Research shows that with CBM decision rules, teachers design more varied instructional programs that are more responsive to individual needs (Fuchs, Fuchs, & Hamlett, 1989b), that incorporate more ambitious student goals (Fuchs, Fuchs, &

Hamlett, 1989a), and that result in stronger end-of-year scores on commercial, standardized reading tests (e.g., Fuchs, Fuchs, Hamlett, & Stecker, 1991).

Let's return to Roberto and Mrs. Hayes to illustrate how a teacher uses CBM in these ways to monitor the effectiveness of a validated treatment protocol and, when that protocol proves ineffective for an individual student, how a teacher uses CBM to inductively develop an individually tailored instructional program. When Mrs. Hayes assumed responsibility for Roberto's math remediation program, she decided to use the validated protocol Pirate Math. This entailed tutoring for 30 minutes per session three times per week. As Mrs. Hayes began to implement this validated protocol, she also began to administer second-grade CBM tests once each week for computation and once each week for concepts/applications.

After the first three weeks, Mrs. Hayes calculated the median of the first three computation test scores (5) and the median of the first three concepts/application test scores (3). These represented Roberto's baseline or beginning-of-the-year scores. Using CBM guidelines for goal setting, Mrs. Hayes decided that her year-end goal for Roberto would seek a weekly increase of .5 digits for computation and a weekly increase of .6 points for concepts/applications. So 25 weeks later, at the end of the school year, Roberto would score 18 digits correct on second-grade CBM computation and 18 points correct on second-grade CBM concepts/applications.

Mrs. Hayes drew these scores onto Roberto's graphs, one for computation and the other for concepts/applications, and then connected Roberto's baseline scores with the year-end goal to show the goal lines, or desired weekly rates of improvement (see Figure 1 for computation; see Figure 2 for concepts/applications). Ten weeks later, Mrs. Hayes then drew lines of best fit through Roberto's actual CBM scores and compared these trend lines to the goal lines. The CBM data showed that Pirate Math, with its focus on the counting-up strategy for number combinations and with its foundational focus and ongoing review of double-digit addition and subtraction, was producing strong growth for Roberto. As shown in Figure 1, Roberto's actual rate of improvement (solid diagonal line) was steeper than the goal line (broken diagonal line).

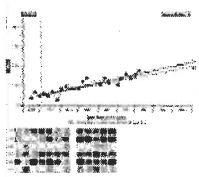

Figure 1

Roberto's progress on CBM computation.

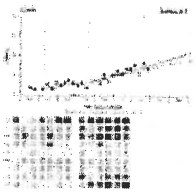

Figure 2

Roberto's progress on CBM concepts and applications.

By contrast, Roberto was proving insufficiently unresponsive to Pirate Math's word-problem instruction. As shown in Figure 2, Roberto's actual rate of improvement was dramatically less steep than the goal line (broken diagonal line), indicating that he was growing slower than hoped and was unlikely to achieve his year-end goal. Therefore, Mrs. Hayes modified the Pirate Math standard protocol. She considered Roberto's performance during tutor sessions and reviewed Roberto's performance on the CBM concepts/applications story problems. She determined that Roberto was having difficulty differentiating problem types when irrelevant information was included in problems and when the missing information in story problems occurred anywhere but in the final position in the number sentence. Based on this analysis, Mrs. Hayes decided (a) to add instruction on mixed problem types, (b) to lengthen the problem-type sorting activity, and (c) to add instructional time on irrelevant information and deriving number sentences when the missing information is in the first or second slot of the equation. This revision in the intervention protocol is signified on Roberto's CBM concepts/applications graph with the dotted vertical line. As she implemented this revision in the intervention protocol, Mrs. Hayes continued to monitor Roberto's responsiveness using weekly CBM concepts/applications assessments. As indicated in Figure 2, Roberto's learning, as shown in the new trend line, improved and was now steeper than the goal line Mrs. Hayes had set for Roberto. It is in this formative, inductive, and recursive way that teachers use CBM to derive individual instructional programs that are effective for individual students and increase the probability of improved student outcomes.

- **Revision**

Implications for Practice

In this article, we have argued for the importance of using seven principles in designing effective intensive interventions for students with mathematics disabilities: instructional explicitness, instructional design to minimize learning challenges, conceptual foundation, drill and practice, cumulative review, systematic motivation

to promote self-regulation and encourage students to work hard, and ongoing progress monitoring to quantify response and formulate individually tailored programs as needed. We noted that two of these principles, instructional design to minimize learning challenges and attention to the conceptual foundation of the mathematics, are often overlooked. We also emphasized that the last principle, ongoing progress monitoring to quantify response and formulate individually tailored programs, may be the most essential principle of intensive intervention.

Issues and Directions for Future Research in the Primary and Later Grades

Although we focused on third grade here, specifically with respect to deficits with number combinations and story problems, similar instructional principles recur in other programs of research (e.g., Allsop, 1997; Jitendra, DiPipi, & Perron-Jones, 2002; Macinni, Mulcahy, & Wilson, 2007; Miller & Hudson, 2007; Montague, 2007) conducted at higher grades and on other aspects of the mathematics curriculum. However, additional work is required. Major aspects of the mathematics curriculum have received inadequate attention. For example, as school systems ratchet up high-school graduation requirements, interventions (see, e.g., Allsop, 1997) need to be expanded to ensure mastery of the algebra curriculum. In a related way, as the demands of a technology-rich environment continue to grow, additional attention is needed to address everyday mathematics problem solving, which requires flexible use of computational skills combined with knowledge about how to find relevant information within real-life situations.

Given the scope of intervention development still needed to ensure intensive intervention in mathematics, a second major issue that warrants the field's attention is professional development. The question is how to prepare new and practicing special educators to master and integrate the principles of effective practice so they (a) can design their own intensive interventions to address the skill deficits their students manifest and (b) have the knowledge to formatively develop effective program revisions when students do not respond as expected to intensive intervention protocols.

Unfortunately, special education training programs in universities and special education professional development opportunities within school districts focus disproportionately on reading intervention, with less attention to mathematics. Given the scope of the mathematics curriculum, along with many teachers' discomfort with their own mathematics skills, coursework and additional texts must be developed to assist university professors and school districts in preparing their trainees and teachers to understand and effectively employ principles of effective intensive mathematics intervention.

Finally, and in a related way, although a sense of urgency for improving student outcomes has been effected for reading, the same is not true for mathematics. The majority of students with learning disabilities suffer large deficits in both domains, but time is allocated disproportionately to reading intervention (Rasanen & Ahonen, 1995). If mathematics difficulties are to be addressed effectively, a similar sense of urgency needs to be mustered to (a) permit adequate opportunity for intensive intervention in mathematics and (b) open doors for researchers to develop and validate intensive tutoring protocols.

- **Assignment/Activity**

POINTS FOR DISCUSSIONS / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification. Note down those points:-

Points for Discussion

Points for Clarification

- References / Further Readings

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BLOCK 4: ADAPTATION, MODIFICATION, ACCOMMODATION

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**
- References / Further Readings

- **Introduction**

The annual class picture is about to be taken. The photographer has carefully situated your students on the risers, and their faces are poised, anticipating the click of the shutter. Just then, the photographer says, "Would the three students with learning disabilities please step aside so I can take a picture?" Click!

Stephen Elliott, an educational psychology professor at the University of Wisconsin, uses this scenario to illustrate the irony of excluding students with disabilities from district and state school assessments. "If you're not counted, you don't count," says Elliott, who has coauthored a guide to help Wisconsin educators fulfill the federal mandate to bring all students into the school testing picture. By including students with disabilities in large-scale assessments, say inclusion advocates. school districts for the first time truly will be held accountable for their education.

Many applaud the involvement of students with learning disabilities in high-stakes testing as the logical outgrowth of the inclusion movement that intensified in the

1980s. At the same time, however, advocates are urging that educators take the proper steps to ensure that the latest inclusion efforts are done well.

Students with learning disabilities constitute more than half of the special education population, and according to the 1997 amendments to the Individuals with Disabilities Education Act (IDEA), they should be allowed accommodations to take district and state tests. The law also directs states to provide alternate assessments for the most severely disabled.

But for special education and general education teachers alike, balancing curriculum content and the need to reinforce necessary skills in reading, writing, and math among LD students has become further complicated by the specter of "teaching to the test."

The main fear for learning disabled students is that they will be thrown into high-stakes tests when they have not been consistently included in general education, says Ann Kornblet, acting executive director of the Learning Disabilities Association of America (LDA).

In the worst-case scenario, she says, a single promotional test or exit exam would determine an ill-equipped LD student's fate. If the student didn't pass, he would be held back or given a certificate of attendance rather than a diploma, preventing him from proving his academic abilities to prospective employers.

"My own personal view is that high-stakes testing is going to be a disaster," says LDA President Larry Silver, with "lots of casualties along the way" as states try to handle the inclusion issue. The casualties could include LD students who drop out, are shunted into the wrong program, or given credentials that somehow mark them as inadequate, says Silver.

The term learning disabilities has long been viewed as vague, even among researchers, because it encompasses a variety of disorders that often overlap. The catch-all quality of the label makes the public's understanding even murkier, if a recent poll of 1,000 adults is any indicator. The Roper survey showed that 48 percent of the parents felt that having their child labeled learning disabled was more harmful than struggling privately with the undiagnosed problem. Another 56 percent of those polled said they believed that learning disabilities were rooted in the environment, while nearly half believed they were sometimes caused by laziness. Indicators like these seem to underscore health experts' worries that parents will be reluctant to seek help for children they suspect of having learning disabilities.

A learning disability is usually designated when a child is not achieving her expected academic potential based on her intelligence quotient (IQ), which is normal or above average, say experts. Medical researchers consider learning disabilities to be rooted in the way the brain processes information. Although there are no cures for learning

disabilities, numerous lifelong compensatory strategies can be used to surmount them.

Learning disabilities cover a variety of disorders in seven areas: (1) listening, (2) speaking, (3) basic reading skills, (4) reading comprehension, (5) written expression, (6) mathematics calculation, and (7) mathematical reasoning. Often these disabilities occur together, and in some cases, they are accompanied by difficulties with social skills, emotional problems, attention-deficit disorder (ADD), or attention-deficit-hyperactivity disorder (ADHD). (See "Living with Attention Deficit Disorder," p. 6.)

About 2.4 million schoolchildren are diagnosed with learning disabilities, accounting for half of all students receiving special education in U.S. public schools—or 5 percent of the total school population, although some researchers consider that percentage too low. Of these students, 80 percent have deficits in basic reading skills, or dyslexia, where much research has been focused.

Dyslexia researcher Reid Lyon, chief of the Child Development and Behavior Branch of the National Institute of Child Health & Human Development, believes the current standard for diagnosing learning disabilities is based on a "wait-to-fail" model. An achievement gap between a student's IQ and scores on standardized reading tests usually does not manifest itself until 3rd grade, by which time other factors such as low self-esteem and lack of motivation make remediation even more difficult, he says. The discrepancy standard also varies from state to state, so that a student might be defined as learning disabled in one place but not in another.

"What many states are doing now is screening all students for powerful reading predictors at age 5," says Lyon, referring to phonological awareness, an auditory skill that allows one to break a word into its individual sounds. For example, a student with normal phonological awareness would be able to suggest words that rhyme with boat or to say boat without the /b/ sound.

Mary Abouzeid, associate professor of reading at the University of Virginia and director of its outreach program in reading, believes that too many children are identified with learning disabilities simply because they are not screened early enough for potential reading difficulties. Virginia's Phonological Awareness and Literacy Screening test, given statewide to 54,000 kindergarten students, assesses their phonological awareness, recognition of letter sounds, and understanding of the concept of printed speech. Students who fall below the benchmark receive specific instruction to compensate for their deficit and take a follow-up test.

- **Objectives**

Identifying the specific problem of poor phonological processing early and "increasing the diet of literacy" for young children should lower the rolls of learning disabled students, says Abouzeid.

Inclusion Versus the Resource Room

Although schools have experimented with various degrees of inclusion of learning disabled students over the last 15 years, cooperation between special education and general education teachers has become a mainstream classroom model.

"When coteaching works, teachers don't want to go back," notes Naomi Zigmond, professor of special education at the University of Pittsburgh. Positive reasons include general education students benefiting from LD learning strategies, role modeling for LD students, and having two teachers collaborating to help all students.

But is full inclusion the best for LD students?

Zigmond points to research that shows that in full-inclusion classrooms, academic achievement rises for about half of the LD students while the other half show no improvement or even regression.

"That lower half is still missing out on the relentless instruction in reading and math that they need to be literate and numerate when they graduate from high school," says Zigmond.

Susan Holloman, a special education teacher at Farmville Middle School in Pitt County, N.C., found that "100 percent" inclusion didn't work. After the first six-week marking period of an inclusion pilot, she rearranged her schedule to create a resource room for half of her LD students who were failing to master the content.

Holloman mainly works with 7th graders in reading, written expression, and math—the three areas that North Carolina recognizes for learning disabilities. Like all special education teachers, she deploys a variety of strategies to help her LD students learn the regular curriculum.

For reading classes, Holloman uses children's literature and the computer program Accelerated Reader and supplements these sources with exercises in phonemic awareness because her students sometimes still "need to break down words and put them back together." But her own enthusiasm for literature fires her students' approach to it, says Holloman, who has spent the summer devouring children's literature for use in her classes. Last year, she read several chapters of a Harry Potter book to her 11 reading students. Surprisingly, seven boys then asked for and received the book for Christmas and finished reading it during the holiday break.

"I like to introduce new authors and let the characters and story line hook the students," she says.

For math instruction, Holloman draws on concepts listed in a student's Individual Education Plan (IEP), a federal requirement for listing a special education student's learning goals. In recent years, she has noticed a rise in the number of students who don't understand multiplication facts and fractions. Drilling multiplication facts fails because by 7th grade, these students have given up on believing they can memorize them, she says—so she allows them to use multiplication charts and calculators.

To meet her students' need for reinforcement, Holloman conducts a running review of math concepts each morning at the start of class. She projects problems pertaining to integers, variables, equations, or other concepts on an overhead for students to solve before the day's lesson on an unrelated topic. The continual reviewing of these concepts will help her students when they enter 8th grade and will prepare them for North Carolina's end-of-grade tests, she says.

Solving one-step equations (e.g., $x + 7 = 12$), two-step equations (e.g., $2y - 6 = -7$), and the standard order of operations (e.g., $6x + 4/n = ?$) has motivated her students because they know the regular math students are doing them also, Holloman says. Her goal is to get her pullout students into the regular class and support them with some modifications, such as testing them for one or two concepts at a time instead of cumulatively.

Holloman's colleague Debbie Metcalf, an LD specialist who teaches across the county at Sam Bundy Elementary School, is a firm believer in the full-inclusion model.

Mainstream classes average about five LD students each, but "we're very sneaky about it, so students never know who's labeled what," says Metcalf. In organizing class activities, "we think of who besides the LD students needs the strategies, based on their reading scores. How we place our students is really quite a complex science."

"Labels can be quite harmful for self-esteem," Metcalf adds. "Sometimes students can figure out who needs more help, but we try to highlight the strengths of all students at different times, so each has a chance to shine."

Metcalf acknowledges that inclusion calls for collaboration among teachers to settle the delicate issue of "turf." "Inclusion can be a nightmare if it's not done right," she says. "The special education teacher doesn't have to be the helper or somebody to give the regular teacher a break. Both teachers need to work together and do grades together. But the quality far exceeds any other situation. LD students see good behavior models and they stay on content."

Metcalf, who is also a teacher-in-residence at East Carolina University's School of Education, has noticed an increase in her LD students' behavior problems linked to social skills deficits, which differ from cognitive disabilities. It is often in the area of behavior where it becomes hard to differentiate between LD students and students

with ADD and ADHD, although they are different, says Metcalf. Students with these deficits fail to understand the subtle cues of social interaction.

"These students can't read the social cues and don't know when to stop," she says. "They push and push without realizing it. Maybe an action was funny the first time, but it's not funny anymore," and they haven't figured it out, she explains. Such students may also fail to understand the limits of "personal space" or be insensitive to others' facial expressions or feelings. As a result, she says, students with these disabilities have a hard time making and keeping friends.

Metcalf recently advised her preservice teachers who were working with high school LD students on job interviewing skills to have students practice making eye contact, walking toward the interviewer, shaking hands, and using the interviewer's name. Cognitive strategies would include making a list of questions and self-monitoring, so that students can regulate their rate of speaking, for example, and change it for the next time.

These interview strategies could, of course, aid any students going for their first job interviews. "Regular education is benefiting from the strategies used in LD," says Metcalf, whether they are as simple as graphic organizers or a specific program developed for students with learning disabilities. After her LD students' math accuracy shot up through the use of a multisensory approach to computation with the Touchmath program—which features touchpoints, or dots marked on numerals physically touched by the learner—teachers asked Metcalf to teach the strategies to their mainstream students. The use of the Touchmath method raised school math scores, says Metcalf.

Technology That Works

Many schools have used computers to aid their LD students, and special education and general education teachers say the technology helps to compensate and put these students on a more equal footing with their mainstream peers.

Melody Bonnette, who coteaches one inclusion class in American history with a special education colleague at Northshore High School in Slidell, La., says technology is a boon to her LD students. Computer work allows LD students to maintain sustained contact with a topic or assignment, and it appeals to visual learners, Bonnette says. Using a keyboard to write means there is less need for the eye-hand coordination demanded for handwriting, and a word processing program's editing and spell-checking functions give students more confidence when sharing their work with others. "These students feel that they're equal when it comes to using technology in the classroom," says Bonnette.

Lori Lekoski, a special education teacher at Robert Frost Middle School in Fairfax, Va., says special education students tend to have more opportunities to use technology than others in the school.

She likes the software program Inspiration because it allows LD students to order their thoughts through computer-generated graphic organizers that use balloons, squares, and other visuals. Lekoski also uses Storybook Weaver, software that enables students to choose from more than 1,500 computer images to create illustrations as a spur for writing their own stories on the computer, which also can involve sound.

A software program used by Metcalf in her writing classes is Co:Writer, which helps dyslexic students compose sentences on the computer with whole words. Students will also be able to hear the words they choose.

Whether technology is involved or not, strategies for helping LD students in reading and writing should neurologically impress a letter or word in the students' minds, says Metcalf. To design multisensory techniques for reinforcing learning and compensatory strategies for LD students, special education teachers often turn to a school's occupational therapist, who devises tactics that help students use their visual, auditory, kinesthetic, tactile, and vestibular systems.

- **Definitions**

The strategies can be as simple as having students trace letters in sand, using masking tape to form them on the floor, or cutting up a sentence and piecing the words back together, says Metcalf.

Lekoski agrees. She says that if you teach to at least three modalities—visual, kinesthetic, and auditory—you'll appeal to some learning style or strength in your student. For example, when she taught prepositions, visual learners worked with huge charts of prepositions, her auditory learners sang a song about them, and her kinesthetic learners bounced a ball or walked around the room as they recited them.

Making Accommodations

For learning disabled students to function well in class, many teachers use a variety of strategies to help them learn. Strategies often involve repetition, breaking activities down into steps, questioning, analysis, and other metacognitive strategies. Special education teachers also recommend controlling the classroom environment by limiting auditory or visual stimulation, meaning that classroom doors are shut, blinds are partly closed, and posters aren't plastered all over the walls.

Accommodations for testing take into account that LD students process information differently from other students, which might require more time or some other aid. Educational psychology professor Stephen Elliott, coauthor with Jeffrey Braden of Educational Assessment and Accountability for All Students: Facilitating the Meaningful Participation of Students with Disabilities in District and Statewide Assessment Programs (Madison, Wisc.: Wisconsin Dept. of Public Instruction, 2000), Wisconsin's guide to inclusive assessment, says the most common testing accommodations are

Reading the test to the student.

Allowing extra time.

Breaking a test into shorter sessions.

Reducing the number of students in a room to minimize distractions.

Providing a quiet room for testing.

Other measures, Braden says, include permitting someone to act as a scribe or using a keyboard. Accommodations that cannot be used, he adds, are shortening the tests, transforming a short-answer style of test to multiple choice, or anything that would otherwise alter the content of the test, thereby compromising its validity.

Ideally, accommodations for large-scale assessments shouldn't differ from what is already done in the class, say educators. An IEP should list what accommodations are appropriate for test taking for a particular student. However, accommodations were not always written into IEPs in the past, so a history of what could be appropriate for high-stakes testing has not been established, according to the LDA's Silver. For example, LD students who routinely use a calculator as a classroom accommodation would be at a distinct disadvantage if their use is banned on statewide math tests.

Elliott maintains that without proper accommodations at testing time, students with disabilities will have lower scores that would then decrease the school's mean scores.

On the other hand, there are legitimate questions about certain accommodations that schools will need to grapple with, he admits. For example, should material be read to a student taking a reading test?

Elliott suggests the following five steps to help teachers and administrators prepare for testing accommodations:

Gather student information.

Call an IEP team meeting to select the accommodations.

Tell the student's parents so they can motivate the child to take part in the test.

Implement the testing accommodations plan.

Report and evaluate what worked and did not work with the accommodations.

Including all students in high-stakes testing will give schools a "more honest picture" of students' achievement, says Elliott.

Preparation Is Key

Inclusion researchers like Naomi Zigmond fear that an intensive focus on preparing LD students for high-stakes testing will be counterproductive because preparation for it will take time away from instruction that students need. "At least for a proportion of students, they need explicit instruction for reading, math, organizational skills, and social skills because they'll need these for the real world when they leave high school," she says.

However, Martha Thurlow, director of the National Center on Educational Outcomes at the University of Minnesota, which monitors national and statewide testing policies, says, "It's critical that everybody be in those state and district assessment systems that determine whether kids are meeting standards."

Thurlow maintains that assessment for all is doable, although a slower phasing-in period is needed for students with disabilities. Thurlow also favors an appeals process that would allow students to demonstrate their skills in alternative ways.

It's the job of a state's directors of special education and assessment to let schools know what they should be doing to involve all students in testing. "It's a significant need," Thurlow says.

In San Diego City Schools, Jan McDaid, manager of psychological services and nonpublic school programs, says there's every intention to have as many special education students as possible take part in standardized tests, and she expects more LD students than ever to be involved this year. "But it's going to take some time and professional development on the part of the teachers. It will also take work with students so they can become good test takers," says McDaid.

- **Summary**
- "Everyone needs to be on task more than ever," says Pitt County's Metcalf. "We're expecting a higher level of performance than ever before."
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Strategies from Kansas

The Center for Research on Learning at the University of Kansas has developed a

series of student-centered learning strategies called the Strategic Instruction Model. Originally for students with learning disabilities, such strategies are also effective with general education students, say educators. Specific strategies exist for reading, writing, and test taking as well as math, motivation, and cooperative thinking. For more information on SIM, see the center's Web site at http://www.ku-crl.org/htmlfiles/core.html.

What Are Learning Disabilities?

"The term 'learning disability' means a disorder in one or more of the basic processes involved in understanding spoken or written language. It may show up as a problem in a person's ability to listen, think, speak, read, write, spell, or do math, despite at least average intelligence. The term 'learning disabled' does not refer to children who have learning problems which are primarily the result of visual, hearing, or physical handicaps, mental retardation, emotional disturbance, or of environmental, cultural, or economic disadvantage."

Source: LDOnline, Web site of the Coordinated Camp-aign for Learning Disabilities, http://www.ldonline.org/ccldinfo/index.html.

Types of Learning Disabilities

Dyscalculia: A severe difficulty in understanding and using the symbols or functions needed for success in mathematics.

Dysgraphia: A severe difficulty in producing handwriting that is legible and written at an age-appropriate speed.

Dyslexia: A severe difficulty in understanding or using one or more areas of language, including listening, speaking, reading, writing, and spelling.

Dysnomia: A marked difficulty in remembering names or recalling words needed for oral or written language.

Dyspraxia: A severe difficulty in performing drawing, writing, buttoning, and other tasks requiring fine motor skill or in sequencing the necessary movement.

Source: From "Learning Disabilities: Glossary of Some Important Terms," by J. D. Lokerson, 2000, ERIC Digest No. E517 [Online]. Available: http://www.ldonline.org /ld_indepth/glossaries/glossary_of_terms.html.

- **Revision**

- **Assignment/Activity**

POINTS FOR DISCUSSIONS / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification. Note down those points:-

Points for Discussion

Points for Clarification

- References / Further Readings

UNIT 1: DEFINITION AND CONCEPT OF ADAPTATION, MODIFICATION, ACCOMMODATION

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**
- References / Further Readings

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Unit 2: Principlesand steps of adaptation

Unit 3:Differentiated instruction

Unit 4: IEP

Unit 5: Classroom management – cooperative, collaborative, arrangement

Block 5: Assessment & Evaluation

Unit 1: Assessment& Evaluation- Concept, definition, scope

Unit 2: Types of Assessment- Alternative, Authentic, Performance based, Subject based portfolio

Unit 3: Evaluation – Formative, Summative, CCE

Unit 4: Development of question paper (table of specifications)

Unit 5: Tools of evaluation- Rubrics grading, marking schemes

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